

Sir Michael Francis Addison Woodruff, FRS, FRCS (3 April 1911 – 10 March 2001) was an English surgeon and scientist principally remembered for his research into organ transplantation. Though born in London, Woodruff spent his youth in Australia, where he earned degrees in electrical engineering and medicine. Having completed his studies shortly after the outbreak of World War II, he joined the Australian Army Medical Corps, but was soon captured by Japanese forces and imprisoned in the Changi Prison Camp. While there, he devised an ingenious method of extracting nutrients from agricultural wastes to prevent malnutrition among his fellow POWs.

At the conclusion of the war, Woodruff returned to England and began a long career as an academic surgeon, mixing clinical work and research. Woodruff principally studied transplant rejection and immunosuppression. His work in these areas of transplantation biology, led Woodruff to perform the first kidney transplant in the United Kingdom, on 30 October 1960. For this and his other scientific contributions, Woodruff was elected a Fellow of the Royal Society in 1968 and made a Knight Bachelor in 1969. Although retiring from surgical work in 1976, he remained an active figure in the scientific community, researching cancer and serving on the boards of various medical and scientific organizations. He died on 10 March 2001, at the age of 89.

[edit] Early life

Michael Woodruff was born on 3 April 1911 in Mill Hill, London, England.[2] In 1913, his father, Harold Woodruff, a professor of veterinary medicine at the Royal Veterinary College in London, moved the family to Australia so he could take up the post of Professor of Veterinary Pathology and Director of the Veterinary Institute at the University of Melbourne. The elder Woodruff later became the Professor of Bacteriology.[2] The family's new life in Australia was interrupted by World War I, which prompted Harold to enlist in the armed services. He became an officer in the Australian Army Veterinary Corps and was sent to Egypt.[2]

The remainder of the Woodruffs returned to London, and the two boys lived with their mother and paternal grandmother in the latter's residence in Finchley. However, Michael and his brother went back to Australia in 1917 after their mother, Margaret, died of a staphylococcal septicaemia. The two then spent a short time under the care of an aunt before being rejoined by their father in 1917.[2][3]

In 1919, Harold remarried and his new wife raised the children from his first marriage. The two boys did their early schooling at Trinity Grammar School in Melbourne. From then on he spent all of his youth in Australia except for a year in Europe in 1924 when his father went on sabbatical leave at Paris's Pasteur Institute. During this time, Woodruff and his brother boarded at Queen's College in Taunton, Somerset on the south coast of England. The headmaster at the school derogatorily regarded Australians as "colonials" who were "backward" and put Woodruff in a year level one year lower than appropriate.[4] Upon returning to Australia, Woodruff attended the private Methodist Wesley College, where he enjoyed mathematics and rowing.[4]

He won a government scholarship to the University of Melbourne and Queen's College, a university residential college.[4] Woodruff studied electrical engineering and mathematics, receiving some instruction from the influential physicist Harrie Massey, then a tutor.[2] Despite success in engineering, Woodruff decided that he would have weak prospects as an engineer in Australia because of the Great Depression.[1] He decided to take up medical studies at the end of his third year of undergraduate study, but his parents wanted him to finish his degree first. Despite his fears regarding his ability to succeed as an engineer, Woodruff placed first in his graduating class with first-class honours. He also completed two years of the maths program with first-class honours.[4]

After graduating in 1933, he entered the medical program at the University of Melbourne. His mentors included Anatomy Professor Frederic Wood Jones. While at the University, he passed the primary exam for the Royal College of Surgeons in

1934, one of only four successful candidates who sat the examination in Melbourne that year. He finished the program in 1937 and received an MBBS with honours as well as two prizes in surgery. After graduation, he studied internal medicine for one more year, and served as a house surgeon at the Royal Melbourne Hospital.[2] Woodruff then started his surgical training.[4]

[edit] World War II

At the outbreak of World War II, Woodruff joined the Australian Army Medical Corps. He stayed in Melbourne until he finished his Master of Surgery Degree in 1941. At that time, he was assigned to the Tenth Australian Army General Hospital in Malaya as a captain in the Medical Corps. According to Woodruff, his time in Malaya was quiet and relatively leisurely as the war in the Pacific was yet to begin in earnest. However, after the Japanese attack on Pearl Harbor changed the situation and he was posted to a casualty clearing station where he worked as an anaesthetist, before being transferred into the Singapore General Hospital. A Japanese offensive resulted in the fall of Singapore and Woodruff was taken prisoner along with thousands of other Australian and British personnel.[1][5]

After being captured, Woodruff was imprisoned in the Changi Prison Camp. In the camp, Woodruff realized that his fellow prisoners were at great risk from vitamin deficiencies due to the poor quality of the rations they were issued by the Japanese. To help fight this threat, Woodruff asked for permission from the Japanese to allow him to take responsibility for the matter, which was granted.[5] He devised a method for extracting important nutrients from grass, soya beans, rice polishings, and agricultural wastes using old machinery that he found at the camp. Woodruff later published an account of his methods through the Medical Research Council titled "Deficiency Diseases in Japanese Prison Camps".[3] Woodruff remained a POW for three and a half years and later during this period he was sent to outlying POW camps to treat his comrades. As the prisoners were not allowed to be transferred, he had to improvise in his practise.[5] During this time he also read Maingot's surgery textbook, as a copy was in the camp, and he later said that reading about the fact that skin allografts were rejected a fortnight after being initially accepted, had stoked his interest in doing research on the topic.[5]

At the conclusion of World War II, Woodruff returned to Melbourne to continue his surgical training. During his studies, he served as the surgical associate to Albert Coates. This position was unpaid, so Woodruff accepted an appointment as a part-time pathology lecturer to support himself.[6] In January 1946, Woodruff participated in an Australian Student Christian Movement meeting, where he met Hazel Ashby, a science graduate from Adelaide. She made a great impression on Woodruff, and he married her half a year later. The couple were research partners for the rest of their lives.[2][6]

[edit] Early career

Soon after his marriage, Woodruff decided to travel to England in order to take the second half of the FRCS Exam. Woodruff took his new wife over with no guarantee of employment, and declined a two-year travelling fellowship to Oxford University offered by the Australian Red Cross because it required him to return home and work.[7] Before departing, he applied for a position as a Tutor of Surgery at the University of Sheffield, and learned en route that they had accepted his application. He took the FRCS exam in 1947 and passed a result that, in Woodruff's view, was certainly not hindered by the fact that one of his examiners, Colonel Julian Taylor, had been with him at Changi.[1]

[edit] Sheffield

After passing his exam, Woodruff entered his position at Sheffield, where he trained in emergency and elective surgery.[7] Originally, he had planned to do surgical research, but Sheffield had no space for him in its surgical lab. Instead, Woodruff was given a place in the pathology laboratory where he studied transplant rejection, a process in which the immune system of a transplant recipient attacks the transplanted tissue. Woodruff was particularly interested in thyroid allografts to the anterior chamber of the eye because they did not appear to meet with rejection.[7] Woodruff's work with the

allografts gave him a solid basis to work in the developing field of transplantation and rejection. To further himself in these areas, Woodruff arranged to meet Peter Medawar, an eminent zoologist and important pioneer in the study of rejection. The two men discussed transplantation and rejection, beginning a lasting professional relationship. Despite his achievements at Sheffield, Woodruff was rejected upon applying for a post at the Royal Melbourne Hospital.[2][7]

[edit] Aberdeen

In 1948, shortly after applying for the position in Melbourne, Woodruff moved from Sheffield to the University of Aberdeen where he was given a post as a senior lecturer,[1] having not known where the Scottish city was beforehand.[7] At Aberdeen, Woodruff was given better laboratory access under Professor Bill Wilson, and was also awarded a grant that allowed his wife to be paid for her services.[8] He took advantage of this access and his wife's skills as a lab assistant to investigate in utero grafts (tissue grafts performed while the recipient was still in the womb). At the time, the surgical community hypothesized that if a recipient were given in utero grafts, he would be able to receive tissue from the donor later in life without risk of rejection. Woodruff's experiments with rats, however, produced negative results.[9] Woodruff also commenced work on antilymphocyte serum for immunosuppression, with little initial success.[9]

While in Aberdeen, Woodruff also visited the United States on a World Health Organization (WHO) Traveling Fellowship. During the visit, he met many of the leading American surgeons, an experience that increased his own desire to continue his work and research. After returning from the US, Woodruff experimented with the effects of cortisone and the impact of blood antigen on rejection. As part of his blood antigen studies, Woodruff found two volunteers with identical blood antigens and arranged for them to exchange skin grafts. When the grafts were rejected, Woodruff determined that rejection must be controlled by additional factors.[2][9] In 1951 Woodruff was bestowed a Hunterian Professorship of the Royal College of Surgeons of England for his lecture The transplantation of homologous tissue and its surgical application.[9]

[edit] Dunedin

In 1953, Woodruff moved to Dunedin to take up a position as the Chair of Surgery at the University of Otago Dunedin School of Medicine, New Zealand's only medical school at that time.[9] Woodruff had earlier failed in his applications for the corresponding position at St Mary's in London and St Andrews University in Edinburgh.[9] While in Dunedin, Woodruff conducted research on the use of white blood cells to increase tolerance for allografts in rats. This line of research proved to be largely unsuccessful, but some of Woodruff's other projects did well. Among his more important accomplishments in the period, Woodruff established a frozen skin bank for burn treatment. As there was no plastic surgeon in the city, Woodruff ended up being responsible for treating burns. He also worked on the phenomenon known as runt disease (graft versus host disease).[2] Although Woodruff had been productive in four years in New Zealand, Dunedin had a population of roughly 100,000, so there were not enough people in the region to supply a clinical medical school, so he began to look for an appointment elsewhere.[10]

[edit] Edinburgh

In 1957, Woodruff was appointed to the Chair of Surgical Science at the University of Edinburgh without requiring an interview.[10] At the university, he split his time equally between his clinical and teaching responsibilities and his research. He was also allowed to appoint two assistant researchers who went on to become prominent in their own right, Donald Michie and James Howard. As a major part of his research, Woodruff served as the honorary director of a Research Group on Transplantation established by the Medical Research Council.[10]

The research group's principal investigations concerned immunological tolerance (the body's acceptance of tissues, as opposed to rejection),

autoimmune haemolytic anaemia (especially in mice), and immune responses to cancer in various animals. In his clinical role, Woodruff started a vascular surgery program and worked with the use of immunotherapy as a cancer treatment as well as the treatment of autoimmune haemolytic anaemia. However, his most important clinical accomplishments were in kidney transplantation.[2][10]

Most notably, he performed the first ever kidney transplant in the UK, at the Edinburgh Royal Infirmary.[11] Woodruff had been waiting for the right patient for some time, hoping to find a patient with an identical twin to act as the donor, as this would significantly reduce the risk of rejection. The patient that Woodruff eventually found was a 49-year-old man suffering from severely impaired kidney function who received one of his identical twin brother's kidneys on 30 October 1960. Both twins lived an additional six years before dying of an unrelated disease.[11] Woodruff thought that he had to be vigilant with his first kidney transplant, as he regarded the British medical community's attitude to be conservative towards transplantation.[10] From then until his retirement in 1976, he performed 127 kidney transplants.[10] Also in 1960, Woodruff published *The Transplantation of Tissues and Organs*, a comprehensive survey of transplant biology and one of seven books he wrote.[2] He was awarded the 1969 Lister Medal for his contributions to surgical science.[12] The corresponding Lister Oration, given at the Royal College of Surgeons of England, was delivered on 8 April 1970, and was titled 'Biological aspects of individuality'.[13]

The success of Woodruff's clinical transplant programme was recognised and enhanced by funding from the Nuffield Foundation to construct and open the Nuffield Transplant Surgery Unit at the Western General Hospital in Edinburgh.[14] In 1970 an outbreak of hepatitis B struck the transplant unit, resulting in the death of several patients and four of Woodruff's employees due to fulminant hepatic failure. Woodruff was deeply shaken by the loss and the unit was closed for a period while an investigation was carried out to develop a contingency plan to avoid such a disaster in future. The unit then resumed operations.[14]

Woodruff retired from the University of Edinburgh in 1976 and joined the MRC Clinical and Population Cytogenetics Unit. He spent the next ten years there, engaged in cancer research with an emphasis on tumor immunology using *Corynebacterium parva*. During that time, Woodruff also published twenty-five papers and two books.[2] After retiring from his cancer research, Woodruff lived quietly with his wife in Edinburgh, traveling occasionally,[3] until his death there on 10 March 2001 at the age of 89.[1]

[edit] Legacy

Woodruff's contributions to surgery were important and long-lasting. In addition to performing the first kidney transplant in the UK, he devised a method of implanting a transplanted ureter in the bladder during transplants that is still used today. Furthermore, he established a large, efficient transplant unit in Edinburgh that remains one of the world's best. Although best known for these clinical accomplishments, Woodruff's contributions to the study of rejection and tolerance induction were equally important. Among these contributions, Woodruff's work with anti-lymphocyte serum has led to its wide use to reduce rejection symptoms in organ transplant recipients up to the current day.[2]

These important contributions to medicine and biology were first seriously honored in 1968 when Woodruff was elected to be a Fellow of the Royal Society. The next year, 1969, Woodruff was knighted by the Queen, a rare accomplishment for a surgeon. Additionally, numerous medical organizations gave Woodruff honorary membership, including the American College of Surgeons, the American Surgical Association, and the Royal College of Physicians of Edinburgh. Woodruff also held office in several scientific organizations, serving as Vice-President of the Royal Society and President of The Transplantation Society. Finally, Woodruff served for many years as a WHO advisor and as a visiting professor at a number of universities.[15]

Despite his profound influence on transplantation and what Peter Morris called

"a commanding presence in any gathering",[16] Woodruff was not known for his ability as a lecturer as he had a rather uncertain style of presentation and had a tendency to mumble.[16] Nevertheless Morris said that Woodruff has "a great turn of phrase and a rather wicked sense of humour".[16] Morris concluded that "What is surprising is that he was not successful in producing many surgeons in his own mould, despite the intellectual talent that was entering surgery and especially transplantation in the 1960s. However, his influence in transplantation at all levels was enormous." [16]

#### [edit] Publications

Woodruff's impact is also apparent in his large volume of publications. In addition to authoring over two hundred scholarly papers, Woodruff wrote seven books during his career, covering numerous aspects of medicine and surgery.

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Surgery for Dental Students. Blackwell, Oxford. (Fourth Ed., 1984 with H.E. Berry) 1954.

The Transplantation of Tissues and Organs. Charles C. Thomas. Springfield, Illinois 1960.

The One and the Many: Edwin Stevens Lectures for the Laity. Royal Society of Medicine, London 1970.

On Science and Surgery. Edinburgh University Press, Edinburgh 1976.

The Interaction of Cancer and Host: Its Therapeutic Significance. Grune Stratton, New York 1980.

Cellular Variation and Adaptation in Cancer: Biological Basis and Therapeutic Consequences. Oxford University Press 1990.

#### [edit] Personal life

The Woodruffs had two sons, followed by a daughter. Their first son completed a medical degree at University College London and became an ophthalmologist. The two younger children both did their tertiary education at Sheffield University. The second son became a civil engineer and the daughter completed a science degree in botany.[16]

Woodruff and his wife were avid tennis players and had a court in their home in Edinburgh.[15] After moving to Edinburgh, Woodruff took up sailing with the Royal Forth Yacht Club, and went on to compete in some races. He owned a boat was known to go sailing on it in the Mediterranean each summer with his wife. During his student years, Woodruff was a keen rower and field hockey player.[16]

Woodruff was a lover of classical music, and after taking up the organ at university and learning from A. E Floyd, the organist of St Paul's Cathedral,[4] he became the college organist at Queen's College in Melbourne; he later learned to play the piano.[17] In his spare time, Woodruff continued to pursue his love of pure mathematics, especially number theory. He periodically attempted to prove Fermat's last theorem, but failed.[17]

#### [edit] References

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<sup>^</sup> a b c d e f Morris, p. 458.

<sup>^</sup> a b c d Morris, p. 459.

<sup>^</sup> a b Morris, p. 460.

<sup>^</sup> a b c d e Morris, p. 461.

<sup>^</sup> Morris, pp. 461â ^462.

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 ^ a b Morris, p. 467.  
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#### Persondata

##### Name

Woodruff, Michael Francis Addison

##### Alternative names

##### Short description

English surgeon and biologist; transplantation and cancer researcher

##### Date of birth

3 April 1911

##### Place of birth

Mill Hill, London, England

##### Date of death

10 March 2001

##### Place of death

Edinburgh, Scotland

The Nyon Conference was a diplomatic conference held in Nyon, Switzerland in September 1937 to address attacks on international shipping in the Mediterranean Sea during the Spanish Civil War. The conference was convened in part because Italy had been carrying out unrestricted submarine warfare, although the final conference agreement did not accuse Italy directly; instead, the attacks were referred to as "piracy" by an unidentified body. Italy was not officially at war, nor did any submarine identify itself. The conference was designed to strengthen non-intervention in the Spanish Civil War. The United Kingdom and France led the conference, which was also attended by Bulgaria, Egypt, Greece, Romania, Turkey, the Soviet Union and Yugoslavia.

The first agreement, signed on 14 September 1937, included plans to counterattack aggressive submarines. Naval patrols were established; the United Kingdom and France were to patrol most of the western Mediterranean and parts of the east, and the other signatories were to patrol their own waters. Italy was to be allowed to join the agreement and patrol the Tyrrhenian Sea if it wished. A second agreement followed three days later, applying similar provisions to surface ships. Italy and Germany did not attend, although the former did take up naval patrols in November. In marked contrast to the Non-Intervention Committee and the League of Nations, this conference did succeed in preventing attacks by submarines.

[edit] Context and organisation

The Non-Intervention Committee, a group of twenty-four nations set up in 1936 and based in London, had attempted to restrict the flow of weapons to the parties of the Spanish Civil War.[1] For the United Kingdom, it formed part of the policy of appeasement towards Germany and Italy and aimed at preventing a proxy warÂ â ^ with Italy and Germany supporting Franco's Nationalist Coalition on one side and the Soviet Union supporting the Republican faction on the otherÂ â ^ from escalating into a major pan-European conflict.[2][3] An Anglo-Italian "Gentleman's Agreement" had been signed on 2 January 1937, with each party respecting the rights of the other in the Mediterranean and aimed at improving Anglo-Italian relations.[3] In May 1937, Neville Chamberlain succeeded Stanley Baldwin as British Prime Minister, and adopted a new policy of dealing directly

with Germany and Italy.[4] The British believed they could convince Italy to abandon Germany through appeasement.[5]

Under a Non-Intervention Committee plan, neutral observers were posted to Spanish ports and borders.[6] The plan also assigned zones of patrol to the United Kingdom, France, Germany and Italy, and patrols began in April.[7] Following attacks on the German cruiser Leipzig on 15 and 18 June, Germany and Italy withdrew from the patrols.[8][9] The United Kingdom and France offered to replace Germany and Italy in patrols of their sections, but the latter powers believed these patrols would be too partial.[10] The British Admiralty proposed four plans in response to attacks on British shipping, favouring sending significant naval resources to the Mediterranean as the best solution;[11] previous control measures had been widely evaded.[1] As suspected by the other powers, Italy was behind some of these attacks.[12] Whilst officially being at peace,[12] the Italian leadership had ordered the commencement of unrestricted submarine warfare, referred to in discussion as a campaign of piracy without mention of Italy.[11] These plans would be the basis for a Mediterranean meeting, suggested by French Foreign Minister Yvon Delbos.[11] Meanwhile, on the night of 31 August to 1 September, the Italian submarine Iride unsuccessfully attacked the British destroyer Havock with torpedoes, between the Gulf of Valencia and the Balearic Islands, strengthening British Foreign Secretary Anthony Eden's sceptical stance towards Italy.[13] The attack led the British representative in Rome to protest to the Italian Minister of Foreign Affairs, but without response.[11]

Up to 60,000 Italian volunteers were now operating in Spain,[14] and the removal of foreign nationals was discussed by the Non-Intervention Committee.[15] Italy had made a declaration that it would stop Italian volunteers from fighting in Spain on 7 January 1937,[16] and put a moratorium on volunteers on 20 January, also agreeing to support limitations on the number of volunteers on the 25th.[17] Italy continued to request that belligerent rights be given to the Nationalists and Republicans, so both would gain the right to search vessels for contraband, thus removing the need for naval patrols.[18] This request was opposed by the United Kingdom, France and the Soviet Union.[19] British recognition of Italian sovereignty over Abyssinia following the Second Italo-Abyssinian War was an important issue during Anglo-Italian discussions in August 1937. However, following Eden's disagreement with Chamberlain and Lord Halifax, Leader of the House of Lords and influential politician, over the issue, any agreement recognising Italian sovereignty was postponed until after the planned shipping conference had taken place.[20]

On 5 or 6 September, the British arranged a conference for all parties with a Mediterranean coastline, along with Germany.[21][22] The conference was to be held at Nyon, Switzerland, but Geneva was avoided because Italians associated it with the actions of the League of Nations over the Abyssinian Crisis.[22] The United Kingdom agreed to France's request to extend an invitation to the Soviet Union, but blocked France's attempt to invite a representative from Republican Spain.[21] Portugal expressed surprise at not being invited.[23] Camille Chautemps, the new French Prime Minister, opposed direct intervention on the Spanish question.[24] The Soviet Union accepted the invitation, indicating that it would use the opportunity to blame Italy for the attacks on shipping.[25] The Soviet government formally accused the Italians of sinking two Soviet merchant vessels, the Tuniyaev and the Blageav,[26] an accusation the Italians described as "aggressive and offensive".[27] This was perhaps an attempt by the Soviet Union to push Italy and Germany away from the conference.[26] Germany rejected the invitation, stating that piracy and other issues the conference was to discuss should be handled only by normal meetings of the Non-Intervention Committee, not a conference like Nyon.[28] The United Kingdom and France rejected this suggestion, and continued to prepare for the conference.[26][28] Soon after, the Italians similarly declined. The Non-Intervention Committee, it said, also had the advantage of including other European powers, notably Poland and Portugal.[29]

[edit] Provisions

British and French naval staffs rejected the idea of a convoy system in draft proposals. The British wanted to curb submarine activity, on the theory that focusing on covert submarine attacks would help avoid confrontation, whereas the French considered surface vessels and aircraft just as important. The French protested at a plan to create multi-nation squadrons, unhappy at the prospect of French ships coming under foreign command.[21] On 8 September, plans were discussed in the British Cabinet, including the setting up of eight groups of three destroyers for the western Mediterranean. Preliminary talks with the French were held on 9 September,[30] and the conference began on the 10th. Proceedings took two forms: discussions between the British and French, and formal meetings of all attending parties. Many of the other nations opposed the participation of the Soviet Navy in the Mediterranean,[30] so the United Kingdom and France agreed to handle Aegean patrols. This was, perhaps surprisingly, accepted by the Soviet Union.[31]

The conference ended on 14 September with the signing of the "Mediterranean Agreement". Signatories were the countries of Bulgaria, Egypt, France, Greece, Romania, Turkey, the United Kingdom, the USSR and Yugoslavia. The agreement noted attacks on neutral shipping by submarines, in contravention of the London Naval Treaty (signed in 1930) and the Submarine Protocol, part of the Second London Naval Treaty (signed in 1936).[32]

The agreement provided that any submarine that attacked neutral shipping was to be sunk if possible, including submarines in the vicinity of a recent attack that were determined to be responsible for the attack.[32] French and British fleets would patrol the seas west of Malta and attack any suspicious submarines,[26] with the division of patrols between the United Kingdom and France to be decided by their governments. Both countries would patrol the high seas and territorial waters of signatory countries in the Mediterranean.[32] The British would provide slightly more than half the 60 destroyers needed, with the French providing the remainder and most of the accompanying aircraft.[33] It was agreed that Italy could participate in patrols of the Tyrrhenian Sea if it wished to do so.[31] In the Eastern Mediterranean, British and French ships would patrol up to the Dardanelles, but not in the Adriatic Sea. In this area, signatory countries would patrol their own territorial waters, and would provide any reasonable assistance to the French and British patrols. The future revision of these provisions, including the way the area had been divided into zones, was specifically allowed.[32] Submarine activity would be banned, subject to two exemptions: travel on the surface accompanied by a surface ship, and activity in certain areas for training purposes. Governments would only allow foreign submarines into each of their territorial waters in extreme situations, such as immediate distress. Merchant shipping would also be advised to stick to particular shipping routes.[32] The agreement repeated the suggestion that Italy join in the proposal.[34] Delbos announced that similar proposals about surface craft would be prepared. The provisions of the agreement would come into force on 20 September.[31] The British and French knew that the secret Italian submarine operations had already been paused,[30] but actions to enforce the conference agreement started at midnight on 19/20 September.[31] The delegates to the agreement were happy; The Times likened them to cricketers, "reviewing their innings, over by over".[31][35]

The French and British naval staffs moved to Geneva, where a second agreement was signed on 17 September 1937.[36] It extended the rules governing submarine warfare to surface vessels, and had the same signatories.[37] Official versions of both agreements were published in French and English.[38] Several proposals were not implemented: for instance, the British Admiral Ernle Chatfield wanted the Spanish parties to be able to verify that the flag a ship was displaying was correct, thereby preventing attacks on British shipping if Republican ships continued to use the British flag as a means of escape. This would have benefited the Nationalists, and the French insisted that this provision be dropped. Greece and Turkey wanted ships with a clear identifying mark to be excluded, so as to avoid being forced to fire on a German or Italian warship.



This was rejected, but an amendment was made allowing nations to issue their preferred orders in their own territorial waters.[36] A suggestion to fire at any attacking aircraft was easily passed. Another suggestion on surface ships (which incorrectly stated no attack had yet been proven) was eventually toughened with the addition of a clause stating aggressors would be attacked, at the request of the French. A Soviet proposal strengthening the effect of the agreement was made.[36]

[edit] Aftermath

Meanwhile, on 13 September, Italy was invited to join in the agreement.[39] Italy unequivocally rejected it, refusing to patrol the Tyrrhenian Sea. It demanded "absolute parity" with the United Kingdom and France, meaning the same right of patrol in the Mediterranean.[40][41] Italy subsequently indicated that its refusal would be reversed if such parity was granted.[42] Meanwhile, on the 15th, Benito Mussolini's government sent two submarines to Francisco Franco's National Faction.[26] The Soviet Union refused to use routes patrolled by the Italians; the Turks, Greeks and Yugoslavs refused to let the Italians use their ports.[40] A compromise was signed on 30 September,[43] and Italian patrols started on 10 November.[44] The British government, and in particular Neville Chamberlain, desired better relations with Italy and these were achieved with the signing of the Anglo-Italian Agreements of 1938.[37]

The patrols were a strain on the Royal Navy and the provisions were relaxed with French agreement, effective from January. However, submarine activity soon returned and full patrols were resumed in early February.[45] On the whole, submarine activity during this period did not amount to much; patrols were again relaxed in May, and the agreement suspended in August.[46] The success of the conference was in marked contrast to the failure of the Non-Intervention Committee.[47] However, the Nationalists and Italians switched to using air power against shipping;[46] at least one ship was sunk off the Spanish coast by aircraft in the final months of 1937.[45]

In the United Kingdom, Eden described the submarine attacks as savage. He also noted that attacks on submarines would be restricted to suitably extreme circumstances and that the two parties in the war would still not be able to engage neutral vessels.[34] He was keen to avoid an "Anglo-Franco-Soviet bloc".[48] The British press was in favour of the agreement, although The Times and The Guardian expressed some concerns.[49] British historians, however, have tended to see the Nyon Conference as an important stand against aggression, with some reservations. Christopher Seton-Watson describes it as a "diplomatic victory",[50] but Jill Edwards points out that it failed to achieve a change in Italian policy.[51] The agreement created further divisions between Eden as foreign minister and Neville Chamberlain as prime minister.[51]

Maxim Litvinov, the Soviet representative, was pleased with the outcome.[26] The agreement also allowed for greater military resources to be deployed to the Mediterranean as needed. Litvinov, in particular, stressed the Soviet Union's "indisputable right" to commit naval forces to the Mediterranean (something Germany and Italy had opposed in meetings of the Non-Intervention Committee). He also said he regretted that Spanish merchant shipping had been left out ^ the other nations believed this would have amounted to formal intervention into the civil war.[34] Aretas Akers-Bouglass, Viscount Chilston and British Ambassador to the Soviet Union, reported that the Soviets considered the conference with "tempered satisfaction", and that they claimed credit for their delegation's role.[52]

Elsewhere, French public opinion was strongly in favour of the outcome of the conference,[49] the only criticism coming from the far left that Republican ships would not receive direct protection.[53] The German mood was restrained, where the press were satisfied by the Soviet exclusion from patrols.[54] In Spain, the Republicans ^ on the verge of disaster ^ were largely in favour, and the Nationalists strongly against.[40] The Republicans praised the improved safety of the shipping routes, but were somewhat unhappy that belligerent rights had not been granted to both sides.[55] The Nationalists made several complaints, including one over the route recommended to shipping, but none of

these resulted in changes to the agreement.[40] The agreement was welcomed by other members of the League of Nations.[35] Italian historians tend to downplay the importance of the Nyon Conference, often seeing it as a mere extension of the Non-Intervention Committee.[50]

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The 1952 Winter Olympics, officially known as the VI Olympic Winter Games, took place in Oslo, Norway, from 14 to 25 FebruaryÂ 1952. Discussions about Oslo hosting the Winter Olympic Games began as early as 1935; the city wanted to host the 1948 Games, but World War II made that impossible. Instead, Oslo won

the right to host the 1952 Games in a contest that included Cortina d'Ampezzo in Italy and Lake Placid in the United States. All of the venues were in Oslo's metropolitan area except for the alpine skiing events, which were held at Norefjell, 113 km (70 mi) from the capital. A new hotel was built to house the press and dignitaries, along with three dormitories to house athletes and coaches, creating the first modern athlete's village. The city of Oslo bore the financial burden of hosting the Games in return for the revenue they generated.

The Games attracted 694 athletes representing 30 countries, who participated in six sports and 22 events.[1] Japan and Germany made their returns to Olympic competition, after being forced to miss the 1948 Games in the aftermath of World War II. Germany was represented solely by West German athletes because East Germany declined to compete as a unified team. Portugal and New Zealand made their Winter Olympic debuts, and for the first time women were allowed to compete in cross-country skiing.

Norwegian truck driver Hjalmar Andersen won three out of four speed skating events to become the most decorated athlete at the Games. Germany resumed its former prominence in bobsleigh, with wins in the four- and two-man events. Dick Button of the United States performed the first triple jump in international competition to claim his second consecutive men's figure skating Olympic title. The 1952 Games featured one demonstration sport, bandy, but only three countries, all Scandinavian, competed in the tournament. Norway dominated the overall medal count with 16 medals, seven of them gold. The Games closed with the presentation of a flag that would be passed from one Winter Olympics host city to the next. The flag, which became known as the "Oslo flag", has been displayed in the host city during each subsequent Winter Games.

[edit] Host city selection

#### Location of Oslo in Norway

Oslo had unsuccessfully bid to host the 1936 Winter Olympics, losing to Germany, which had hosted the 1936 Summer Olympics. At that time, the nation that hosted the Summer Olympics also hosted the Winter Olympics.[2] After the 1936 Games, the International Olympic Committee (IOC) decided to award the Winter and Summer Games to different countries, but the Games were suspended during World War II. London hosted the first post-war Games, the 1948 Summer Olympics, and recommended Oslo as the host city for the 1948 Winter Games, but the city council declined.[2] Instead, the 1948 Winter Olympics were held in St. Moritz, Switzerland.[3]

Norwegians were undecided about hosting a Winter Olympics.[4] Culturally they were opposed to competitive winter sports, particularly skiing events, despite the success of Norwegian athletes at previous Winter Games.[5] But the organizers believed the 1952 Games could be an opportunity to promote national unity and to show the world that Norway had recovered from the war.[6] Vying with Oslo for the right to host the Games were Cortina d'Ampezzo, Italy, and Lake Placid, United States.[2] The IOC voted to award the 1952 Winter Games to Oslo on 1 June 1947 at the 40th IOC Session in Stockholm, Sweden.[7] Later, Cortina d'Ampezzo was awarded the 1956 Games, and Lake Placid ~which had hosted the 1932 Winter Olympics~ was chosen to host the 1980 Winter Games. Norway became the first Scandinavian country to host a Winter Olympics,[2] and the 1952 Winter Games the first to be held in a nation's capital.[1]

[edit] Results

[edit] Organization

A special committee was assigned to organize the 1952 Games, which consisted of four Norwegian sports officials and four representatives from the municipality of Oslo, including mayor Brynjulf Bull.[7] The committee was in place by December 1947.[9] The city of Oslo funded the Games entirely, in exchange for keeping all the revenue generated.[10] To accommodate the influx of athletes and coaches, quarters for competitors and support staff were

designed and constructed, with three new facilities (forerunners of the athlete's villages of later Games) built.[11] The city of Oslo paid to have a new hotel constructed, the Viking, used for IOC delegates, out-of-town dignitaries, and as the communication hub of the Games.[12][13] For the first time in a Winter Games, an indoor ice hockey arena was constructed, which hosted the eight-team tournament.[14][15] Oslo's existing central arena, Bislett Stadion, was used for the opening and closing ceremonies, and for speed skating events. Improvements to the arena included better sound and lighting systems, remodeled club house and press rooms, and the addition of a medical center.[16]

[edit] Politics

In the aftermath of the German occupation of Norway during World War II, anti-German sentiment began to affect preparations for the 1952 Olympics.[17] Discussions were held to consider whether Germany should be allowed to participate in the Games.[18] When in 1950, the West German Olympic Committee requested recognition by the IOC, it raised the question of whether their participation would cause political boycotts in the upcoming Games.[19] Once the IOC recognized the West German Olympic Committee, West Germany was then formally invited to compete at the 1952 Winter Games.[20] East Germany was invited to participate with West Germany, as a unified team, but they declined.[21]

At first Norway was reluctant to welcome German athletes, and other Nazi sympathizers. For example, Norwegian speed skater Finn Hodt was not allowed to compete in the Norwegian speed skating team because he collaborated with the Nazis during the war. Eventually, despite the concern, Norway agreed to allow German and Japanese athletes to compete.[18] The Soviet Union sent no athletes to Oslo, despite being recognized by the IOC. They had intended to enter a team in the ice hockey tournament, but applied too late to join the International Ice Hockey Federation.[22][23]

[edit] Events

[edit] Opening ceremonies

The opening ceremonies were held in Bislett Stadion on 15 February.[14] King George VI of Great Britain had died on 6 February 1952, eight days before the start of the Games.[24] As a result, all national flags were flown at half-mast, and Princess Ragnhild opened the Games in place of her grandfather, King Haakon VII, who was in London attending the funeral.[25] This was the first time an Olympic Games had been declared open by a woman.[1] The parade of nations was held according to tradition, with Greece first, the rest of the nations proceeding by Norwegian alphabetical order, with the host nation last.[26] The British, Australian, Canadian and New Zealand teams all wore black arm bands at the opening ceremonies in memory of their monarch.[27] After the parade of nations the Olympic flame was lit.[14] On 13 February, at the start of the inaugural Winter Olympics torch relay, the torch was lit in the hearth of the Morgedal House, birthplace of skiing pioneer Sondre Norheim.[1] The torch relay lasted two days and took place entirely on skis.[1][26] At the opening ceremonies the final torch bearer, Eigil Nansen, received the Olympic torch and skied to a flight of stairs where he removed his skis, ascended, and ignited the flame.[28]

The bobsleigh and alpine skiing events were held the day before the opening ceremonies.[29] Competitors in these events were unable to attend the festivities in Oslo; consequently simple opening ceremonies were held at Frognersteteren, site of the bobsleigh events, and Norefjell, site of the alpine skiing events.[30]

[edit] Bobsleigh

After a 16-year hiatus from the Olympics Germany made a triumphant return to the bobsleigh competition, winning the two- and four-man events.[31] The results for both bobsleigh events were the same, with the United States and Switzerland taking silver and bronze respectively.[31] Fritz Feierabend from Switzerland competed in both the two- and four-man competitions. His two bronze medals were the fourth and fifth in an Olympic career that spanned 16 years and

three Olympics.[32] There were no weight restrictions on the bobsleigh athletes, and the average weight for each member of the winning German four-man team was 117½ kg (260½ lb), which was more than the Olympic heavyweight boxing champion in 1952.[31] Seeing the undue advantage overweight athletes brought to their teams, the International Federation for Bobsleigh and Tobogganing instituted a weight limit for future Olympics.[33]

[edit] Speed skating

All of the speed skating events were held at Bislett Stadion. Americans Ken Henry and Don McDermott placed first and second in the 500-meter race, but Norwegian truck driver Hjalmar Andersen electrified the partisan crowd by winning the 1,500, 5,000 and 10,000-meter events;[35] his margins of victory were the largest in Olympic history.[1]Dutchman Wim van der Voort placed second in the 1,500½ meters and his countryman Kees Broekman placed second to Andersen in the 5,000 and 10,000-meter races, becoming the first Olympic speed skating medalists from the Netherlands. Absent from the competition was former world champion Kornél Pajor. The Hungarian-born speed skater had won both long distance races at the World Championships held in Oslo in 1949 and then defected to Sweden, but was unable to obtain Swedish citizenship in time to compete in 1952.

[edit] Alpine skiing

There were three alpine skiing events on the Olympic program: the slalom, giant slalom and downhill. Both men and women competed in all three events, held at Norefjell and Rjukanleiva.[36] The giant slalom made its Olympic debut at the 1952 Games.[37] Austrian skiers dominated the competition, winning seven out of a possible 18 medals, including Othmar Schneider who won gold and silver in the men's slalom and downhill. Norwegian Stein Eriksen won gold in the men's giant slalom and silver in the slalom.[36]Greek slalom skier Antoin Miliordos fell 18 times on his run and crossed the finish line backwards.[38] American skier Andrea Mead-Lawrence was the only double gold medalist, winning the giant slalom and the slalom. She was the first skier from the United States to win two alpine skiing gold medals.[39]

[edit] Cross-country skiing

All the cross-country events were held next to the ski jump hill at Holmenkollbakken. As had been the case in 1948 there were three men's events: 18 kilometers, 50 kilometers, and a relay.[40] Added to the Olympic program for the first time was a ten-kilometer race for women.[41] All the cross-country medals were won by Nordic countries, and Finnish skiers won eight of the twelve possible.[40]Lydia Wideman of Finland became the first female Olympic champion in cross-country skiing; her teammates Mirja Hietamies and Siiri Rantanen won silver and bronze respectively. Veikko Hakulinen won the 50-kilometer men's race to begin an Olympic career that would culminate in seven medals, three of them gold.[41]Hallgeir Brenden won the 18-kilometer race and helped Norway take the silver in the 4½-½ 10-kilometer relay. Brenden went on to win another gold in the men's 15-kilometer race in 1956, and a silver in the relay in 1960.[42]

[edit] Nordic combined

The nordic combined event was held at the cross-country and ski jump venues. The event started with an 18-kilometer cross-country race. The next day the competitors took three jumps from the Holmenkollbakken. The best two marks were scored, along with the results of the cross-country race, to determine a winner.[43] Norwegians Simon Slåttnvik and Sverre Stenersen won the gold and bronze respectively.[44] Stenersen went on to win the gold at the 1956 Games in the same event.[45]Heikki Hasu from Finland won the silver, preventing a Norwegian sweep of the medals.[44]

[edit] Ski jumping

Crowds in excess of 100,000 greeted the ski jumpers as they competed at Holmenkollbakken.[46] In 1952 there was only one event, the men's normal hill, which was held on 24½ February.[47] The King, Crown Prince Harald, and Princess Ragnhild were in attendance.[46] The Norwegian athletes did not disappoint the crowd, as Arnfinn Bergmann and Torbjørn Falkanger placed first and second; Swedish jumper Karl Holmström took the bronze.[48] Norwegian athletes won the

ski jumping gold medal in every Winter Olympics from 1924 to 1952.[49]

[edit] Figure skating

There were three events in the Olympic figure skating competition: men's singles, women's singles and mixed pairs. The events were held at the Bislett Stadion on a rink constructed inside the speed skating track.[50] The collusion of judges to influence results was an emerging trend in the years leading up to the Oslo Games. Between 1949 and 1952 the International Skating Union had banned five judges for attempting to fix scores, although no evidence of wrongdoing was found in the judging of the Olympic competitions.[50]

Dick Button of the United States won the men's singles event. Helmut Seibt of Austria took silver and James Grogan of the United States won bronze.[51] Button became the first figure-skater to land a triple jump in competition when he performed the triple loop in the men's free skate.[52][53] British skater Jeannette Altwegg won the gold medal in the women's singles, the silver was awarded to American Tenley Albright, who went on to win gold at the 1956 Winter Games in Cortina d'Ampezzo,[54] and Jacqueline du Bief of France won the bronze.[55] The German husband and wife pair of Ria and Paul Falk won the mixed pairs competition.[56] They defeated Americans Karol and Peter Kennedy, who placed second,[57] and Hungarian siblings Marianna and László Nagy, who won the bronze medal.[58]

[edit] Ice hockey

A majority of the ice hockey matches took place at Jordal Amfi, a new hockey stadium built for the Olympics.[59] Nine teams played in the tournament and Canada again won the gold medal.[60] Canada had won all but one Olympic hockey tournament thus far, but in 1956 the Soviet team began to compete and ended Canadian dominance.[61] Canada was represented by the Edmonton Mercurys, an amateur hockey team sponsored by the owner of a Mercury automobile dealership.[61] Canada played the United States to a three all tie on the final day to clinch the Gold, and assure the Americans of Silver. Norwegian newspaper Dagbladet criticized the result, calling the game, "fixed in advance." [62] Sweden and Czechoslovakia ended up tied for third and played an extra game for the bronze medal, which went to Sweden.[60] The Czechs believed they had already won the Bronze when they defeated the Swedes on the final day, calling the decision to play a tie-breaking game a, "plot of the capitalist countries." [62] Teams from North America were criticized for their rough play; although body checking was legal, it was not often used by European teams, and opponents and spectators alike took a dim view of that style of play.[15][60]

The IOC lobbied the organizing committee to host either military patrol or curling as a demonstration sport.[23] The committee instead selected bandy, which had never been included in the Winter Games.[63] Bandy was played by teams of eleven on a soccer field-sized rink, using a ball instead of a puck. With sticks about 1.2 m (3.9 ft) long, players attempted to make a goal with the ball in the opposing team's net.[64] As a demonstration sport the players were ineligible for medals. Three nations participated: Finland, Norway and Sweden.[65] Each of the three teams won one game and lost one game; with Sweden winning the competition based on number of goals scored, followed by Norway in second place, and Finland in third place. Two of the games were played at Dnipro Stadium and one at Bislett.[66]

[edit] Closing ceremonies

At the 1952 Winter Games the closing ceremonies were a distinct program listing, unlike previous Winter Games when the closing ceremonies were held directly after the final event. The closing ceremonies were held in Bislett Stadion, on Monday evening, 25 February.[67] The flag bearers entered the stadium in the same order they followed for the opening ceremonies. That evening four medal ceremonies were also held for the women's cross-country race, the men's cross-country relay, the ski jumping competition, and the ice hockey tournament.[67]

Since 1920, the "Antwerp flag" has been passed from host city to host city during closing ceremonies for the Summer Games.[68] The city of Oslo gave an Olympic flag to establish the same tradition for the Winter Games. Brynjulf

Bull, Oslo's mayor, passed the flag to the president of the IOC, Sigfrid Edström, who declared the flag was to pass from host city to host city for future Winter Games. The flag, which came to be known as the "Oslo Flag", has since been preserved in a display case, with the name of every Winter Olympics host city engraved on brass plaques, and is brought to each Winter Games to be displayed. A replica is used during the closing ceremonies.[69]

After the flag ceremony the Olympic flame was extinguished, a special speed skating race was held, and the figure skating competitors gave an exhibition, followed by 40 children dressed in national costumes performing an ice dance.[70] For a finale, to the close the Games, the lights were extinguished and a 20-minute fireworks display lit up the night sky.[70]

[edit] Calendar

The official opening ceremonies were held on 15 February, although two smaller ceremonies were held on 14 February to conform with competition schedules.[71] From 15 February until 25 February, the day of the closing ceremonies, at least one event final was held each day.[72]

Å OCÅ

Opening ceremonies

Å å å' Å

Event competitions

Å 1Å

Event finalså ;

Å CCÅ

Closing ceremonies

å Bandy was a demonstration sport at the 1952 Winter Games, and no medals were awarded.

å ; The numeral indicates the number of event finals for each sport held that day.

[edit] Venues

With a seating capacity of 29,000, the Bislett Stadion became the centrepiece of the Games. It was the venue for the speed skating events and the figure skating competition. Bislett was large enough for a 400 m (1,300 ft) speed skating track, and a figure skating ice-rink of 30 by 60 m (98 by 200 ft); a snow bank separated the track and the rink.[73] Because Bislett was an outdoor arena, the organizing committee chose Tryvann Stadion and Hamar Stadion as secondary alternative skating venues to be used the case of bad weather.[74] In 1994 Hamar became the venue for the speed skating events at the 1994 Winter Olympics in Lillehammer.[1]

The Oslo Winter Games were the first to feature an Olympic ice hockey tournament held on artificial ice.[14] A new stadium was built for the hockey tournament in a residential area of eastern Oslo, called Jordal Amfi, which accommodated 10,000 spectators in stands rising steeply from the rink.[75] Twenty-three of the 36 hockey matches were played at Jordal Amfi, with the remaining matches played at Kadettangen, DÅ|lenenga idrettspark, LillestrÅ,m Stadion and Marienlyst Stadion.[74]

The cross-country races and ski-jump competition were held at Holmenkollbakken, located roughly 8 km (5 mi) from the center of Oslo.[76] The expected number of spectators caused concerns about traffic, so a new road was constructed and the existing thoroughfare widened.[77] Holmenkollbakken was built in 1892 and improvements were needed to meet international standards. The original wood ski-jump was replaced with a concrete tower and jump that was 87 m (285 ft) long.[76] New stands were built to seat 13,000 people, and an area was added at the base of the hill to accommodate 130,000 spectators.[78]

The hills and terrain in the surrounding area met the competitive demands for an elite cross-country ski event. A notice board was posted at the start and finish lines to help spectators monitor the progress of the competitors.[79] The cross-country and nordic combined races began and ended at the base of the ski jump hill. The stands for the ski jump competition had to be removed during the cross-country races; spectators had only a small area from which to watch the races but were allowed on the course to cheer on the competitors.[77]



The alpine skiing events were split between Norefjell and R  dkleiva. The slalom courses were at R  dkleiva, located on the same mountain as Holmenkollen and Frognersteteren. The course had an elevation difference, from start to finish, of 200   m (660   ft) and was 480   m (1,570   ft) in length.[80] A rope tow had to be built to bring the skiers from the bottom to the top of the hill. The downhill race and the giant slalom   which made its Olympic debut in 1952   were held at Norefjell, which was 113   km (70   mi) from Oslo and the only venue located away from the capital city.[81] Work had to be done to make the area suitable for Olympic competition. A bridge across Lake Kr  deren was built to help alleviate transportation congestion. A new hotel, two ski lifts, and a new road were also constructed.[80]

There was no permanent bobsleigh run in Norway.[82] Instead the organizers built a temporary course out of snow and ice.[18] Korketrekkeren was selected as the site for the bobsleigh events, where a 1,508   m (4,948   ft) long, thirteen-turn course was designed and built.[83] The bobsleigh run was first constructed and tested in 1951, then rebuilt for the Games in 1952.[18]

[edit] Participating nations

Thirty nations sent competitors, which was the highest number of participants at a Winter Games.[14] New Zealand and Portugal took part in the Winter Olympic Games for the first time. Australia, Germany, and Japan returned after a 16-year absence. South Korea, Liechtenstein, and Turkey competed in 1948 but did not participate in the 1952 Games.

[edit] Medal count

These are the nations that topped the medal count at the 1952 Winter Games.[14]

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[edit] External links

*Tenebrae* (also known as *Tenebre*) is a 1982 Italian horror thriller film written and directed by Dario Argento. The film stars Anthony Franciosa, John Saxon and Daria Nicolodi. After having experimented with two exercises in pure supernatural horror, 1977's *Suspiria* and 1980's *Inferno*, *Tenebrae* represented Argento's return to the giallo subgenre, which he had helped popularize in the 1970s. The story concerns an American writer promoting his latest murder-mystery novel in Rome, only to get embroiled in the search for a serial killer who has apparently been inspired to kill by the novel.

The film was released in Italy and throughout most of Europe without experiencing any reported censorship problems, but was classified, prosecuted and banned as a "video nasty" in the United Kingdom. Its theatrical distribution in the United States was delayed until 1984, when it was released in a heavily censored version under the title *Unsane*. In its cut form, *Tenebrae* received a mostly negative critical reception, but the original, fully restored version later became widely available for reappraisal. It has been described by Maitland McDonagh as "the finest film that Argento has ever made."<sup>[1]</sup>

Peter Neal (Franciosa) is an American writer of violent horror novels whose books are tremendously popular in Europe. In Italy to promote his latest work, entitled *Tenebrae*, he is accompanied by his literary agent Bullmer (Saxon) and his adoring assistant Anne (Nicolodi). He is unaware that he is also being followed by his embittered ex-wife Jane (Veronica Lario). Immediately prior to Neal's arrival in Rome, a beautiful young shoplifter (Ania Pieroni) is brutally razor-slashed to death by an unseen killer. The murderer sends Neal a letter informing him that his books have inspired him to go on a killing spree. Neal is soon contacted by the police, who put Detective Giermani (Giuliano Gemma) in charge of the investigation, along with the detective's female partner Inspector Altieri (Carola Stagnaro).

More killings occur. Tilde (Mirella D'Angelo), a beautiful lesbian journalist, is murdered at her home along with her lover. Later, Maria (Lara Wendel), the young daughter of Neal's landlord, is bloodily hacked to death with an axe after stumbling into the killer's lair. Neal notices that TV interviewer Christiano Berti (John Steiner) appears to have an unusually intense interest in the novelist's work. At night, Neal and his second assistant Gianni (Christiano Borromeo) watch Berti's house for suspicious activity. Gianni decides to separate from Neal in order to get a better view. Alone, Gianni watches in horror as an axe-carrying assailant brutally hacks Berti to death. But he is unable to see the murderer's face. Gianni finds Neal unconscious on the lawn, having been knocked out from behind.

Giermani's investigation reveals that Berti was unhealthily obsessed with Neal's novels, and now that he is dead it is believed that the killings will cease. However, Bullmer, who is having an affair with Jane, is stabbed to death while waiting for his lover in a public square. Gianni is haunted by the thought that he had seen, but did not recognize, something important at Berti's house during the night of the interviewer's murder. He returns to the house and suddenly remembers what was so importantâ ~ he had heard Berti confessing to his attacker, "I killed them all, I killed them all!" Before Gianni can share this important detail with anyone, he is attacked from the back seat of his car and strangled to death.

Jane sits at her kitchen table when a figure with an axe leaps through her window, hacking off one of her arms. She spews gallons of blood over the kitchen walls before falling to the floor, the killer continuing to hack at her until she is dead. Neal is her murderer. Upon learning the details of Berti's sadistic murder spree, Neal had suddenly been overwhelmed by a forgotten memory involving Neal's murder of a girl who had sexually humiliated him when he was a youth in Rhode Island. The memory now constantly torments him and has inflamed his previously repressed lust for blood. Neal has become completely insane, and it was he who also killed Berti, Bullmer and Gianni.

When Inspector Altieri arrives at the house a few minutes after Jane's death, Neal kills her too. Later, Giermani and Anne arrive at the house in the pouring rain, and when Neal sees that he cannot escape, he slits his throat in front of them. Finding the telephone out of order, Giermani and Anne go outside to report the incident from his car radio. Giermani returns to the house and is suddenly murdered by Neal, who had faked his own death. Neal waits inside for Anne to return, but when she opens the door, she accidentally knocks over a metal sculpture that impales and kills the demented writer. The horror-stricken Anne stands in the rain and screams over and over again.

[edit] Production

Dario Argento has claimed that *Tenebrae* was influenced by a disturbing incident he had in 1980 with an obsessed fan. According to Argento, the fan telephoned him repeatedly, day after day, until finally confessing that he wanted to kill the director. Although ultimately no violence of any kind came of the threat, Argento has said he found the experience understandably terrifying and was inspired to write *Tenebrae* as a result of his fears.[1]

Although *tenebrae/tenebre* is a Latin/Italian word meaning "darkness" or "shadows",[2] Argento instructed his cinematographer Luciano Tovoli to film the movie with as much bright light as possible. Shot on location in Rome, much of the film takes place during daytime, or in harshly overlit interiors. Except for the finale and some night scenes, the entire movie is shot with clear, cold light permeating the surroundings. Argento's stated rationale for this approach was an attempt to approximate the allegedly "realistic manner of lighting" used in television police shows. The director explained that he was adopting "...a modern style of photography, deliberately breaking with the legacy of German Expressionism. Today's light is the light of neon, headlights, and omnipresent flashes...Caring about shadows seemed ridiculous to me and, more than that, reassuring." [3] He also admitted that the lighting and camerawork used in Andrzej Å»uÅŒ awski's *Possession* (1981) greatly influenced his decision to have Tovoli shoot *Tenebrae* with such stark lighting.

For one of *Tenebrae*'s main setpieces, the murder of the lesbian couple, Argento and Tovoli employed the use of a Luma crane to film a several minutes-long tracking shot that acted as an introduction to the sequence. The tracking shot, due to its extreme length, was fraught with potential problems and proved to be the most difficult and complex part of the entire production to complete.[4] Patrick McAllister, writing as 'Ironwolfe' on Gerry Carpenter's Scifilm website described it as

one of the most memorable moments in cinema: the crane tracking shot outside the downstairs and upstairs apartments of two people. The shot begins outside the lower apartment window, moves up to the second floor window, up and over the roof of the building, down the other side and to a window on the opposite side of the building. The shot lasts two and a half minutes without a pause, jerk or cut. If I was to be stuck on a desert island, I'd want *Tenebre* just so I could watch this single shot. (Amusingly enoughâ ~-or horrifyingly enough, depending on your point of viewâ ~-his distributor begged Argento to cut the shot down because it was "meaningless"). The shot stands out even more with the fact that the Luma [sic] camera used was new to the industry at the time, and was bulky and not as easy to use as it is now. The 2.5 minute sequence took three days to shoot.

Although an Italian production, the film was shot with most of the cast members speaking their dialogue in English in order to increase its chances for successful exportation to the United States. For domestic consumption, the film was dubbed into Italian.[6] In the Italian language version, the killer's voice heard reading aloud from Neal's book in the opening sequence was supplied by Argento himself. In the English language version, Franciosa, Gemma, Saxon and Steiner all provided their own voices, while Nicolodi's voice was reportedly dubbed by actress Theresa Russell.[7]

[edit] Response

*Tenebrae* had a wide theatrical release throughout Italy and Europe, something the director very much needed after having suffered major distribution problems with his previous film, *Inferno*. In the United States, however, the film fared far less well. It remained unseen until 1984, when Bedford Entertainment briefly released a heavily edited version under the title *Unsane*. It was approximately ten minutes shorter than the European release version and was missing nearly all of the film's violence, which effectively rendered the numerous horror sequences incomprehensible. In addition, certain scenes that established the characters and their relationships were excised, making the film's narrative difficult to follow. Predictably, this version of *Tenebrae* received nearly unanimously negative reviews.[8]

In the United Kingdom, the film was shorn of five seconds of "sexualized violence" by the British Board of Film Classification prior to its theatrical release.[9][10] It later became one of the thirty-nine so-called "Video Nasties" that were successfully prosecuted and banned from sale in UK video stores under the Video Recordings Act 1984. This ban lasted until 1999, when *Tenebrae* was legally rereleased on videotape, with an additional one second of footage removed from the film (this version was also missing the previously censored five seconds). In 2003, the BBFC reclassified the film and passed it without any cuts.[11]

The film has since been released basically uncut minus approximately 20 seconds of extraneous material[12] on DVD in the US, allowing the film to be properly evaluated for the first time.

Ed Gonzalez of *Slant Magazine* said that "*Tenebre* is a riveting defense of auteur theory, ripe with self-reflexive discourse and various moral conflicts. It's both a riveting horror film and an architect's worst nightmare." [13] Keith Phipps, of *The Onion's A.V. Club*, noted "...Argento makes some points about the intersection of art, reality, and personality, but the director's stunning trademark setpieces, presented here in a fully restored version, provide the real reason to watch." [14] Almar Haflidason, in a review for *BBC.co.uk*, opined,

"Sadistically beautiful and viciously exciting, welcome to true terror with Dario Argento's shockingly relentless *Tenebrae*." [15] Tim Lucas in *Video Watchdog* said, "Though it is in some ways as artificial and deliberate as a De Palma thriller, *Tenebrae* contains more likeable characters, believable relationships, and more emphasis on the erotic than can be found in any other Argento film." [16] Justin Felix of *DVD Talk* said, "*Tenebre* is an effective murder mystery with a number of visual and audio flourishes that exemplify why Dario Argento is well-admired in cult circles." [17] Gordon Sullivan of *DVD Verdict* wrote, "*Tenebre* is a straight-up giallo in the old-school tradition. It may have been filmed in 1982, but it comes straight out of the '70s tradition. We've got all the usual suspects, including a writer for a main character, lots of killer-cam point of view, some crazily over the top kills, and approximately seventy-two twists before all is revealed... For fans of Argento's earlier giallo, this is a must-see." [18] *AllMovie* called the film "one of Dario Argento's best thrillers". [19]

Not all of the recent critical reaction to *Tenebrae* has been positive. Gary Johnson, editor of *Images*, complained that "Not much of *Tenebre* makes much sense. The plot becomes little more than an excuse for Argento to stage the murder sequences. And these are some of the bloodiest murders of Argento's career." [20] In 2004, Tim Lucas reevaluated the film and found that some of his earlier enthusiasm had dimmed considerably, noting that, "*Tenebre* is beginning to suffer from the cheap 16 mm-like softness of Luciano Tovoli's cinematography, its sometimes over-storyboarded violence (the first two murders in particular look stilted), the many bewildering lapses in logic...and the overdone performances of many of its female actors..." [21]

#### [edit] Themes

Critics have identified various major themes in *Tenebrae*. In interviews conducted during the film's production, the usually somewhat reticent Argento offered his own views as to the thematic content of the film. As Maitland McDonagh noted in *Broken Mirrors/Broken Minds: The Dark Dreams of Dario Argento*, "...Argento has never been more articulate and/or analytical than he was on the subject of *Tenebrae*." [1]

#### [edit] Vision impairment

Paul Flanagan has observed that Argento's protagonists in his giallo films almost always suffer from vision impairment of some kind. [22] It is these characters's chronic inability to find the missing pieces of a puzzle (the puzzle being the solution of a murder or series of murders) that generally provides much of the film's narrative thrust. Most obviously is the blind Franco Arno (Karl Malden) in *The Cat o' Nine Tails* (1971), who must use his heightened aural sense in combination with visual clues supplied to him by his niece to solve a mystery. In *The Bird with the Crystal Plumage* (1970), Sam Dalmas (Tony Musante) witnesses a murder attempt but admits to the police that something seems to be "missing"; as the film's surprise ending makes clear, he didn't "miss" anything at all, he simply misinterpreted what happened in front of his eyes. In *Deep Red* (1975), Marcus (David Hemmings) has a similar problem in both seeing and not seeing the murderer at the scene of the crime, and doesn't realize his mistake until it's almost too late. (In discussing this recurring theme, Douglas E. Winter noted that Argento creates "a world of danger and deception, where seeing is not believing..." [23])

Flanagan observes that in *Tenebrae*, Argento offers two separate characters who suffer from impaired vision. Gianni (Christian Borromeo) is an eyewitness to an axe-murder, but the trauma of seeing the killing causes him to disregard a vital clue. Returning to the scene of the crime, he suddenly remembers everything, and is promptly murdered before being able to tell a soul. Homicide detective Giermani reveals that he is a big fan of the novels of Agatha Christie, Mickey Spillane, Rex Stout, and Ed McBain, but admits that he has never been able to guess the identity of the killer in any of the books. He is similarly unable to solve the real mystery until the last corpses are piled at his feet—he cannot see Peter Neal for what he really is.

Neal, who ultimately responds to an ongoing series of murders by becoming a

killer himself, emphatically introduces the theme of impaired vision when he admits to Giermani: "I've tried to figure it out, but I just have this hunch that something is missing, a tiny piece of the jigsaw. Somebody who should be dead is alive, or somebody who should be alive is already dead." Of course, Neal himself is the "missing piece", and in the end he will fake his suicide and become the "somebody who should be dead."

[edit] "Aberrant" sexuality

In his study of the film, Flanagan argues that in *Tenebrae*, "male and female sexual deviancy are the central issues," noting that Berti targets those he considers to be "filthy, slimy perverts". The first victim is a sexually promiscuous shoplifter, and his next two are the lesbian reporter and her bisexual lover. He kills the comparatively "normal" Maria only because she inadvertently discovers his twisted compulsion.

McDonagh notes that *Tenebrae* expands a theme already introduced in Argento's earlier giallo films. "The Bird with the Crystal Plumage, The Cat o' Nine Tails, Four Flies on Grey Velvet (1972), and Deep Red are full of sex, of course: transvestitism and sexual role playing are in all four films central factors and none lacks for imagery dealing in diverse sexual behavior. But *Tenebrae*'s overall sensuality sets it apart from Argento's other gialli." She says that the film's sexual content and abundant nudity make it "the first of Argento's films to have an overtly erotic aspect," and further notes that "*Tenebrae* is fraught with free-floating anxiety that is specifically sexual in nature." [1]

Flanagan and McDonagh ^ and, indeed, most critics ^ have noted that two sexually-charged flashbacks are key to understanding *Tenebrae*. These distinct but strongly related memory fragments are introduced repeatedly throughout the course of the film, usually immediately following a murder sequence. Although these flashbacks are never fully explained, the first of these memories reveals a beautiful young woman's sexual humiliation (basically, an oral rape) of a teenaged boy (presumably Peter Neal) on a pale-white beach, followed (in the second flashback) by the vicious revenge-murder of the woman some time later. The young woman (played by transgender actress Eva Robin's) is mostly topless during this first sequence, and she humiliates the young man by jamming the heel of one of her Freudian shiny red shoes into his mouth while he is held down by a group of gleeful boys. McDonagh notes that all of the fetishistic imagery of these flashbacks, combined with the sadistic details of the murder sequences in the main narrative, "set the parameters of *Tenebrae*'s fetishistic and fetishicized visual vocabulary, couched in terms both ritualistic and orgiastically out of control...Peter Neal indulges in sins of the flesh and *Tenebrae* revels in them, inviting the spectator to join in; in fact, it dares the viewer not to do so." [1]

[edit] Dark doubles

In his review of *Tenebrae*, Kevin Lyon observes, "The plot revolves around the audacious and quite unexpected transference of guilt from the maniacal killer (about whom we learn very little, itself unusual for Argento) to the eminently likeable hero, surely the film's boldest stroke." [24] While also noticing this device as being "striking", McDonagh notes that this guilt transmission/transfer occurs between two dark doubles, two seriously warped individuals. She suggests that "Neal and Berti...act as mirrors to one another, each twisting the reflection into a warped parody of the other." [1] Berti's obsession with Neal's fiction compels him to commit murder in homage to the writer, while Neal seems to think that his own violent acts are simply part of some kind of "elaborate fiction." When the bloody Neal is confronted by Giermani immediately after having killed numerous people, Neal screams at him, "It was like a book...a book!"

McDonagh notes that Argento also emphasizes a similar doubling between Neal and Giermani. "Giermani...is made to reflect Neal even as Neal appropriates his role as investigator...the detective/writer and the writer/detective each belittles his other half, as though by being demeaned this inverted reflection could be made to go away." McDonagh also observes that, in what is arguably the



film's most potent shock, Neal at one point really does make Giermani "go away", virtually replacing him on screen "in a shot that is as schematically logical as it is logically outrageous." [1]

[edit] An imaginary city

In an interview that appeared in *Cinefantastique*, Argento noted that the film was intended as near-science fiction, taking place "about five or more years in the future... *Tenebrae* occurs in a world inhabited by fewer people with the result that the remainder are wealthier and less crowded. Something has happened to make it that way but no one remembers, or wants to remember... It isn't exactly my *Blade Runner*, of course, but nevertheless a step into the world of tomorrow. If you watch the film with this perspective in mind, it will become very apparent." [25] Despite Argento's claim, Maitland McDonagh observed that this vaguely science-fictional concept "isn't apparent at all" [1] and, in fact, no critics noted the underlying futuristic theme in their reviews of the theatrical release of the film.

While rejecting this thematic concern as unrealized by Argento, McDonagh noticed that the result of the director's experiment is a strange "architectural landscape" that becomes the "key element in differentiating *Tenebrae* from Argento's earlier gialli." Argento's use of unusual architectural space and so-called visual "hyper-realism" results in an enormously fake looking environment. Seizing on the director's additional comment, "...I dreamed an imaginary city in which the most amazing things happen", she notes that the film's "fictive space couldn't be less 'real'... Its imaginary geography is pieced together out of fragments of 'Rome'... that emphasize vast unpopulated boulevards, piazzas that look like nothing more than suburban American malls, hard-edged Bauhaus apartment buildings, anonymous clubs and parking garages." [1]

[edit] Influences

Bill Warren has observed that *Tenebrae* "is in most ways a typical giallo: visually extremely stylish, with imaginative, sometimes stunning cinematography... mysterious, gruesome murders, often in picturesque locations; at the end, the identity of the murderer is disclosed in a scene destined to terrify and surprise." [26] Those narrative and stylistic clichés had been introduced years before Argento had ever made his first thriller (most critics point to Mario Bava's *The Girl Who Knew Too Much* (1963) as the original giallo [27]). By the time he made *Tenebrae*, Argento had become the acknowledged master of the sub-genre, to the point where he felt confident enough to be openly self-referential to his own past. Tim Lucas notes that Argento explicitly "quotes some of his earlier films with affection: the reckless driving humor from *The Cat o' Nine Tails*, the image of horror revealed behind the hero as he bends down from *The Bird with the Crystal Plumage*." [16] Bird's climactic "murderous use of a large and unusual sculpture", [28] in which Tony Musante is trapped beneath a huge work of art with long spikes, is also recycled/referenced in the final moments of *Tenebrae*.

McDonagh argues that Argento's influences for *Tenebrae* were far broader than just his own films or previous Italian thrillers. She notes that the film's "surprisingly strong narrative" is suggestive of "the most paranoid excesses of film noir." McDonagh suggests that Fritz Lang's *Beyond a Reasonable Doubt* (1956) ("in which a man convicted of murder on false evidence... is in fact guilty of the murder") and Roy William Neill's *Black Angel* (1946) ("in which a man who tries to clear a murder suspect does so at the cost of learning that he himself is the killer") both use such a similar plot twist to *Tenebrae* that Argento may very well have used them as partial models for his story.

[edit] Legacy

Coming at the tail end of the giallo cycle, *Tenebrae* does not appear to have been as influential as Argento's earlier films were on subsequent thrillers. However, many of the characters, scenes and plot turns in Lamberto Bava's *A Blade in the Dark* (1983) were arguably directly inspired by Argento's film. [29]

Douglas E. Winter has opined that *Tenebrae*'s Louma crane sequence was stylistically influential and was specifically "replicated in Brian De Palma's

The Untouchables (1987)."[23] In *Raising Cain*, De Palma's "surprise reveal" of John Lithgow standing behind a victim is often discussed as being an unacknowledged "steal" from *Tenebrae*. [30][31][32] Robert Zemeckis's *What Lies Beneath* (2000) also contains a very similar moment, although Zemeckis has denied having any familiarity at all with Italian thrillers. [33]

[edit] Soundtrack

Argento had used the Italian rock band Goblin to provide the musical scores to two of his previous films, *Deep Red* (1975) and *Suspiria* (1977). The group had disbanded in 1980, but three of the band's members—Claudio Simonetti (Roland Jupiter-8, Roland Vocoder Plus, Minimoog, Piano, Electric piano, Oberheim DMX Digital Drum, Roland TR-808, Roland MC4 Computer), Fabio Pignatelli (Fender bass normal and fretless), and Massimo Morante (electric and acoustic guitar)—reunited at Argento's request to work on *Tenebrae*. The resulting synth-driven score was credited to "Simonetti-Pignatelli-Morante".

While not as well regarded as Goblin's earlier scores for *Deep Red*, *Suspiria*, or *Dawn of the Dead* (1978), Tim Lucas felt the soundtrack is "...so fused to the fabric of the picture that *Tenebrae* might be termed...a giallo musicale; that is, a giallo in which the soundtrack transcends mere accompaniment to occupy the same plane as the action and characters." [21]

The *Tenebrae* soundtrack album has been enduringly popular enough to have had multiple reissues in numerous countries since its original release in 1982 on the Italian Cinevox label. That version consisted of only eight tracks. In 1997, Cinevox issued a greatly expanded version on CD, including eleven bonus tracks, with a running time of over an hour. In 2004, the expanded CD was released in the U.S. on the Armadillo Music label. In 2012 it was released again on Vinyl by AMS Records (Italy).

Some European publicity materials for the film, including posters and lobby card sets, advertised the film as *Tenebre*, and the 1999 Anchor Bay DVD release uses that same title. However, on the print itself, during the opening credits, the title is clearly *Tenebrae*. In addition, the title of Neal's latest book in the film is shown in closeup as being *Tenebrae*. In a lengthy interview with Argento conducted by Martin Coxhead that appeared in two issues of *Fangoria* in 1983 and 1984, the title was always referred to as "*Tenebrae*". [34][35]

On the DVD review website *The Digital Fix*, Michael Mackenzie argues that the film's actual title is *Tenebre*, since it is that title that was "used for the Italian prints and the cover of the US DVD." [36] But DVD Talk reviewer Justin Felix noted in his review of the DVD release that, "in its package art, Anchor Bay refers to this movie as *Tenebre* - although the movie itself is titled *Tenebrae*." [17]

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[edit] External links

Prosperity theology (sometimes referred to as the prosperity gospel or the health and wealth gospel)[A] is a Christian religious doctrine that financial blessing is the will of God for Christians, and that faith, positive speech, and donations to Christian ministries will always increase one's material wealth. Based on non-traditional interpretations of the Bible, often with emphasis on the Book of Malachi, the doctrine views the Bible as a contract between God and humans: if humans have faith in God, he will deliver his promises of security and prosperity. Confessing these promises to be true is perceived as an act of faith, which God will honor.

Proponents teach that the doctrine is an aspect of the path to Christian dominion over society, arguing that God's promise of dominion to Israel applies to Christians today. The doctrine emphasizes the importance of personal empowerment, proposing that it is God's will for his people to be happy. The atonement (reconciliation with God) is interpreted to include the alleviation of sickness and poverty, which are viewed as curses to be broken by faith. This is believed to be achieved through visualization and positive confession, and is often taught in mechanical and contractual terms.

It was during the Healing Revivals of the 1950s that prosperity theology first came to prominence in the United States, although commentators have linked the origins of its theology to the New Thought movement. The prosperity teaching later figured prominently in the Word of Faith movement and 1980s televangelism. In the 1990s and 2000s, it was adopted by influential leaders in the Charismatic Movement and promoted by Christian missionaries throughout the world, sometimes leading to the establishment of mega-churches. Prominent leaders in the development of prosperity theology include E. W. Kenyon, Oral Roberts, A. A. Allen, Robert Tilton, T. L. Osborn, and Kenneth Hagin.

Churches in which the prosperity gospel is taught are often non-denominational and usually directed by a sole pastor or leader, although some have developed multi-church networks that bear similarities to denominations. Such churches typically set aside extended time to teach about giving and request donations from the congregation, encouraging positive speech and faith. Prosperity churches often teach about financial responsibility, though some journalists and academics have criticized their advice in this area as misleading. Prosperity theology has been criticized by leaders in the Pentecostal and Charismatic movements, as well as other Christian denominations. These leaders maintain that it is irresponsible, promotes idolatry, and is contrary to scripture. Some critics have proposed that prosperity theology cultivates authoritarian organizations, with the leaders controlling the lives of the adherents. The doctrine has also become popular in South Korea; academics have attributed some of its success to its parallels with the traditional shamanistic culture. Prosperity theology has drawn followers from the American middle class and poor, and has been likened to the cargo cult phenomenon, traditional African religion, and black liberation theology.

[edit] Theology

Prosperity theology teaches that Christians are entitled to well-being and, because physical and spiritual realities are seen as one inseparable reality,

this is interpreted as physical health and economic prosperity. Teachers of the doctrine focus on personal empowerment, promoting a positive view of the spirit and body. They maintain that Christians have been given power over creation because they are made in the image of God and teach that positive confession allows Christians to exercise dominion over their souls and material objects around them. Leaders of the movement view the atonement as providing for the alleviation of sickness, poverty, and spiritual corruption; poverty and illness are cast as curses which can be broken by faith and righteous actions. There are, however, some prosperity churches which seek a more moderate or reformed paradigm of prosperity. Kirbyjon Caldwell, pastor of a Methodist mega-church, supports a theology of abundant life, teaching prosperity for the whole human being, which he sees as a path to combating poverty.[6][B]

Wealth is interpreted in prosperity theology as a blessing from God, obtained through a spiritual law of positive confession, visualization, and donations. This process is often taught in almost mechanical terms; Kenneth Copeland, an American author and televangelist, argues that prosperity is governed by laws, while other teachers portray the process formulaically. Journalists David van Biema and Jeff Chu of Time have described Word of Faith pastor Creflo Dollar's teachings about prosperity as an inviolable contract between God and humanity.[6]

The prosperity theology teaching of positive confession stems from its proponents' view of scripture. The Bible is seen as a faith contract between God and believers; God is understood to be faithful and just, so believers must fulfill their end of the contract to receive God's promises. This leads to a belief in positive confession, the doctrine that believers may claim whatever they desire from God, simply by speaking it. Prosperity theology teaches that the Bible has promised prosperity for believers, so positive confession means that believers are speaking in faith what God has already spoken about them. Positive confession is practiced to bring about what is already believed in; faith itself is a confession, and speaking it brings it into reality.

The teaching is often based on non-traditional interpretations of Bible verses, the Book of Malachi often being given special attention. While Malachi has generally been celebrated by Christians for its passages about the messiah, teachers of prosperity theology usually draw attention to its descriptions of physical wealth. Frequently quoted verses include:

Malachi 3:10: "Bring ye all the tithes into the storehouse, that there may be meat in mine house, and prove me now herewith, saith the LORD of hosts, if I will not open you the windows of heaven, and pour you out a blessing, that there shall not be room enough to receive it" (KJV).[6]

Matthew 25:14-30: the Parable of the talents[11]

John 10:10: "I am come that they might have life, and that they might have it more abundantly" (KJV).[6]

Philippians 4:19: "My God shall supply all your need according to his riches in glory by Christ Jesus" (KJV).

3Â John 2: "Beloved, I wish above all things that thou mayest prosper and be in health, even as thy soul prospereth" (KJV).

[edit] Practices

Prosperity churches place a strong emphasis on the importance of giving. Services commonly include two sermons, one of which focuses on giving and prosperity, including Biblical references to tithing; a second sermon on another topic follows the offering. Prosperity church leaders often bestow a specific blessing on the money being donated, some have even been reported to instruct worshipers to hold their donations above their heads during the prayer.

Congregants in prosperity churches are encouraged to speak positive statements about aspects of their lives that they wish to see improved. These statements, known as positive confessions, are said to miraculously change aspects of people's lives if spoken with faith. Prosperity churches also encourage people to "live without limits" and cultivate optimism about their lives. T. D. Jakes, pastor of The Potter's House non-denominational mega-church, has argued in

favor of prosperity, rejecting what he sees as the demonization of success. He views poverty as a barrier to living a Christian life, suggesting that it is easier to make a positive impact on society when one is affluent.

While prosperity churches have a reputation for manipulating and alienating the poor, many are involved in social programs. Underlying these programs is a theology of empowerment and human flourishing with the goal of releasing people from a "welfare" or "victim" mentality. Many prosperity churches hold seminars on financial responsibility. Kate Bowler, an academic who studies prosperity theology, has criticized such seminars, arguing that though they contain some sound advice the seminars often emphasize the purchase of expensive possessions.[11] Hanna Rosin of The Atlantic argues that prosperity theology contributed to the housing bubble that caused the late-2000s financial crisis. She maintains that home ownership was heavily emphasized in prosperity churches, causing a reliance on divine financial intervention that led to unwise choices.[11]

[edit] History

[edit] Postwar Healing Revivals

Leaders of the Pentecostal Movement in the early 20th century did not embrace prosperity theology. A recognizable form of the doctrine began to take shape within the movement during the 1940s and 1950s, through the teachings of Pentecostal deliverance and healing evangelists. Combining prosperity teaching with revivalism and faith healing, these evangelists taught "the laws of faith ('ask and ye shall receive') and the laws of divine reciprocity ('give and it will be given back unto you')".

One prominent early figure in prosperity theology was E. W. Kenyon, educated in the 1890s at Emerson College of Oratory, where he was exposed to the New Thought movement. Kenyon later became connected with well-known Pentecostal leaders and wrote about supernatural revelation and positive declarations. His writing influenced leaders of the nascent prosperity movement during the post-war American healing revival.

Oral Roberts began teaching prosperity theology in 1947. He explained the laws of faith as a "blessing pact" in which God would return donations "seven fold", promising that donors would receive back from unexpected sources the money they donated to him. Roberts offered to return any donation that did not lead to an equivalent unexpected payment. In the 1970s, Roberts characterized his blessing pact teaching as the "seed faith" doctrine: donations were a form of "seed" which would grow in value and be returned to the donor. Roberts began recruiting "partners", wealthy donors who received exclusive conference invitations and ministry access in exchange for support.

In 1953, faith healer A. A. Allen published *The Secret to Scriptural Financial Success* and promoted merchandise such as "miracle tent shavings" and prayer cloths anointed with "miracle oil". In the late 1950s, Allen increasingly focused on prosperity. He taught that faith could miraculously solve financial problems and claimed to have had a miraculous experience in which God supernaturally changed one-dollar bills into twenty-dollar bills to allow him to pay his debts. Allen taught the "word of faith" or the power to speak something into being.

In the 1960s, prosperity became a primary focus in healing revivals. T. L. Osborn began emphasizing prosperity in the 1960s and became known for his often ostentatious displays of personal wealth. During that decade, Roberts and William Branham criticized other prosperity ministries, arguing that their fund-raising tactics unfairly pressured attendees. These tactics were prompted in part by the expense of developing nationwide radio networks and campaign schedules. At the same time, leaders of the Pentecostal Assemblies of God denomination often criticized the focus on prosperity taken by independent healing evangelists.

[edit] Televangelism

During the 1960s, prosperity gospel teachers embraced televangelism and came to dominate religious programming in the United States. Oral Roberts led the way, developing a syndicated weekly program that became the most watched

religious show in the United States. By 1968, television had supplanted the tent meeting in his ministry.

In the 1980s, public attention in the United States was drawn to prosperity theology through the influence of prominent televangelists such as Jim Bakker. Bakker's influence waned, however, after he was implicated in a high-profile scandal.[6][C] In the aftermath, Trinity Broadcasting Network (TBN) emerged as the dominant force in prosperity televangelism, having brought Robert Tilton and Benny Hinn to prominence.

[edit] Word of Faith

Main article: Word of Faith

Although nearly all of the healing evangelists of the 1940s and '50s taught that faith could bring financial rewards, a new prosperity-oriented teaching developed in the 1970s that differed from the one taught by Pentecostal evangelists of the 1950s. This "Positive Confession" or "Word of Faith" movement taught that a Christian with faith can speak into existence anything consistent with the will of God.

Kenneth Hagin was credited with a key role in the expansion of prosperity theology. He founded the RHEMA Bible Training Center in 1974, and over the next 20 years, the school trained more than 10,000 students in his theology. As is true of other prosperity movements, there is no theological governing body for the Word of Faith movement, and well-known ministries differ on some theological issues. The teachings of Kenneth Hagin have been described by Candy Gunther Brown of Indiana University as the most "orthodox" form of Word of Faith prosperity teaching.

[edit] Recent U.S. history

The Neo-Pentecostal movement has been characterized in part by an emphasis on prosperity theology, which gained greater acceptance within charismatic Christianity during the late 1990s. By 2006, three of the four largest congregations in the United States were teaching prosperity theology, and Joel Osteen has been credited with spreading it outside of the Pentecostal and Charismatic movement through his books, which have sold over 4 million copies.[6][D] Bruce Wilkinson's *The Prayer of Jabez* also sold millions of copies and invited readers to seek prosperity.

By the 2000s, adherents of prosperity theology in the United States were most common in the Sun Belt.[11] In the late 2000s, proponents claimed that tens of millions of Christians had accepted prosperity theology.[11] A 2006 poll by Time reported that 17 percent of Christians in America said they identified with the movement.[6] There is no official governing body for the movement, though many ministries are unofficially linked.

In 2007, U.S. Senator Chuck Grassley opened a probe into the finances of six televangelism ministries that promoted prosperity theology: Kenneth Copeland Ministries, Creflo Dollar Ministries, Benny Hinn Ministries, Bishop Eddie Long Ministries, Joyce Meyer Ministries, and Paula White Ministries. In January 2011, Grassley concluded his investigation stating that he believed self-regulation by religious organizations was preferable to government action.[37][E] Only the ministries led by Meyer and Hinn cooperated fully with Grassley's investigation.[37]

[edit] International growth

In the 2000s, churches teaching prosperity theology saw significant growth in the Third World. According to Philip Jenkins of Pennsylvania State University, poor citizens of impoverished countries often find the doctrine appealing because of their economic powerlessness and the doctrine's emphasis on miracles. One region seeing explosive growth is Western Africa, particularly Nigeria. In the Philippines, the El Shaddai movement, part of the Catholic Charismatic Renewal, has spread prosperity theology outside Protestant Christianity. One South Korean prosperity church, Yoido Full Gospel Church, gained attention in the 1990s by claiming to be the world's largest congregation.

[edit] Reception

[edit] Socioeconomic analysis

Most churches in the prosperity movement are non-denominational and independent, though some groups have formed networks. Prosperity churches typically reject Presbyterian polity (or governance) and the idea that a pastor should be accountable to elders; it is common for pastors of prosperity churches to be the highest organizational authority figure. Critics, including Sarah Posner and Joe Conason, maintain that prosperity teachers cultivate authoritarian organizations. They argue that leaders attempt to control the lives of adherents by claiming divinely bestowed authority. Jenkins contends that prosperity theology is used as a tool to justify the high salaries of pastors.

In the United States, the movement has drawn many followers from the middle class and is most popular in commuter towns and urban areas.[11] In *Exporting the American Gospel: Global Christian Fundamentalism* Steve Brouwer, Paul Gifford, and Susan Rose speculate that the movement was fueled by a prevailing disdain for social liberalism in the United States that began in the 1970s.[G] Rosin argues that prosperity theology emerged because of broader trends, particularly American economic optimism in the 1950s and 1990s. Tony Lin of the University of Virginia has also compared the teaching to manifest destiny,[11] the 19th-century belief that the United States was entitled to the West. Marvin Harris argues that the doctrine's focus on the material world is a symptom of the secularization of American religion. He sees it as an attempt to fulfill the American Dream by using supernatural power.

Prosperity theology has become popular among poor Americans, particularly those who seek personal and social advancement. It has seen significant growth in black and Hispanic churches and is particularly popular among immigrants.[11] Apologists for the movement note its ethnic diversity and argue that it encompasses a variety of views.[6] Joel Robbins of the University of Tokyo notes that most anthropologists attribute the theology's appeal to the poorâ ~especially in the Global Southâ ~to the fact that it promises security and helps explain capitalism. Anthropologist Simon Coleman developed a theory based on the doctrine's rhetoric and the feeling of belonging it gave parishioners. In a study of the Swedish Word of Life Church, he noted that members felt part of a complex gift-exchange system, giving to God and then awaiting a gift in return (either from God directly or through another church member). Hillsong Church, the largest congregation in Australia, teaches a form of prosperity theology that emphasizes personal success. Marion Maddox has argued that this message has drawn a significant number of upwardly mobile Australians.

In a 1998 interview in *Christianity Today*, Bong Rin Ro of the Asia Graduate School of Theology suggested that the growth in popularity of prosperity theology in South Korea reflects a strong "shamanistic influence". Bong pointed to parallels between the tradition of paying shamans for healing and the prosperity theology's contractual doctrine about giving and blessings. Asia's economic problems, he argued, encouraged the growth of the doctrine in South Korea, though he claims it ignores the poor and needy. During the interview, he stated that he saw the problem beginning to be reversed, citing calls for renewed faith and other practices.[47] Cho Yong-gi, pastor of Yoido Full Gospel Church in Seoul, has been criticized for shamanising Christianity. This criticism has focused on his healing and exorcism ministries and his promise of material blessings. Malaysian Christian writer Hwa Yung has defended Cho's healing and exorcism ministries, arguing that he successfully contextualized the gospel in a culture where shamanism was still prevalent. However, Hwa criticizes Cho's teaching of earthly blessings for not reflecting a trust in God's daily provision and for their heavy focus on earthly wealth.

[edit] Comparisons with other movements

Historian Carter Lindberg of Boston University has drawn parallels between contemporary prosperity theology and the medieval indulgence trade. Coleman notes that several pre-20th century Christian movements in the United States taught that a holy lifestyle was a path to prosperity and that God-ordained hard work would bring blessing.

Coleman has speculated that modern-day prosperity theology borrows heavily



from the New Thought movement, though he admits that the connection is sometimes unclear. Jenkins notes that critics draw a parallel between prosperity theology and the cargo cult phenomenon. While citing the popularity of prosperity theology in agrarian African communities, he argues that it can also bear similarities to traditional African religious rituals. J. Matthew Wilson of Southern Methodist University compares the movement to Black liberation theology owing to its focus on uplifting oppressed groups, though he notes that it differs in its concentration on individual success rather than corporate political change.

[edit] Theological criticism

Mainstream evangelicalism has consistently opposed prosperity theology[11] and prosperity ministries have frequently come into conflict with other Christian groups, including those within the Pentecostal and Charismatic movements. Critics, such as Evangelical pastor Michael Catt, have argued that prosperity theology has little in common with traditional Christian theology.[53] Prominent evangelical leaders, such as Rick Warren,[6] Ben Witherington III,[6] and Jerry Falwell,[54] have harshly criticized the movement, sometimes denouncing it as heretical.[6] Warren proposes that prosperity theology promotes the idolatry of money, and others argue that Jesus' teachings indicate a disdain for material wealth.[6] In *Mark: Jesus, Servant and Savior*, R. Kent Hughes notes that some 1st-century rabbis portrayed material blessings as a sign of God's favor. He cites Jesus' statement in Mark 10:25 that "It is easier for a camel to go through the eye of a needle, than for a rich man to enter into the kingdom of God" (KJV) as evidence to oppose such thinking.

Other critics of the movement assail promises made by its leaders, arguing that the broad freedom from problems they promise is irresponsible. Church leaders are often criticized for abusing the faith of their parishioners by enriching themselves through large donations.[56] Prosperity theology has been opposed for not adequately explaining the poverty of the Apostles. For instance, some theologians believe that the life and writings of Paul the Apostle, who is believed to have experienced significant suffering during his ministry, are particularly in conflict with prosperity theology.

In their book *Health, Wealth and Happiness*, theologians David Jones and Russell Woodbridge characterize the doctrine as poor theology. They suggest that righteousness cannot be earned and that the Bible does not promise an easy life. They argue that it is inconsistent with the gospel of Jesus and propose that the central message of the gospel should be Jesus' life, death, and resurrection. Jones and Woodbridge see Jesus' importance as vital, criticizing the prosperity gospel for marginalizing him in favor of a focus on human need. In another article, Jones criticizes the prosperity theology interpretation of the Abrahamic covenant, God's promise to bless Abraham's descendants, arguing that this blessing is spiritual and should already apply to all Christians. He also argues that the proponents of the doctrine misconstrue the atonement, criticizing their teaching that Jesus' death took away poverty as well as sin. He believes that this teaching is drawn from a misunderstanding of Jesus' life and criticizes John Avanzini's teaching that Jesus was wealthy as a misrepresentation,[61] noting that Paul often taught Christians to give up their material possessions. Although he accepts giving as "praiseworthy",[61] he questions the motives of prosperity theology and criticizes the "Law of Compensation",[61] which teaches that when Christians give generously, God will give back more in return. Rather, Jones cites Jesus' teaching to "give, hoping for nothing in return." [61] Jones and Woodbridge also note that Jesus instructed followers to focus on spiritual rewards, citing his command in Matthew 6:19-20 "Lay not up for yourselves treasures upon earth... But lay up for yourselves treasures in heaven" (KJV). Jones criticizes the doctrine's view of faith: he does not believe that it should be used as a spiritual force for material gain but seen as selfless acceptance of God.[61]

In 1980, the General Council of the Assemblies of God criticized the doctrine of positive confession, noting examples of negative confessions in the Bible (where Biblical figures express fears and doubts) that had positive results and

contrasting these examples with the focus on positive confessions taught by prosperity theology. The Council argues that the biblical Greek word often translated as "confess" literally translates as "to speak the same thing", and refers to both positive and negative confessions. The statement also criticizes the doctrine for failing to recognize the will of God: God's will should have precedence over the will of man, and Christians should "recognize the sovereignty of God". The statement further criticizes prosperity theology for overlooking the importance of prayer, arguing that prayer should be used for all requests, not simply positive confession. The Council noted that Christians should expect suffering in this life. They urge readers to apply practical tests to positive confession, arguing that the doctrine appeals to those who are already in affluent societies but that many Christians in other societies are impoverished or imprisoned. Finally, the paper criticizes the distinction made by advocates of prosperity theology in the two Greek words that mean "speaking", arguing that the distinction is false and that they are used interchangeably in the Greek text.[F] The Council accused prosperity theology of taking passages out of context to fulfill its own needs, with the result that doctrine of positive confession is contradictory to the holistic message of the Bible.

Prosperity theology, however, casts itself as the reclamation of true doctrine and thus part of a path to Christian dominion over secular society. It contends that God's promises of prosperity and victory to Israel in the Old Testament apply to New-Covenant Christians today, and that faith and holy actions release this prosperity. C. Peter Wagner, a leader of the New Apostolic Reformation, has argued that if Christians take dominion over aspects of society, the Earth will experience "peace and prosperity".[69] Some Latin Americans who have embraced prosperity theology argue that Christianity has historically placed an unnecessary focus on suffering. They often view this as a Roman Catholic doctrine that should be discarded and replaced with an emphasis on prosperity. Prosperity theology advocates also argue that biblical promises of blessings awaiting the poor have been unnecessarily spiritualized, and should be understood literally.

[edit] Notable works

Notable works that advocate prosperity theology include:[6]

^ Pejorative nicknames have been attached to the theology, including "name it and claim it" and "blab it and grab it".[73]

^ The theme of Abundant life sometimes is used by leaders associated with the Word of Faith movement to refer to the experience of congregants who corporately experience the results of faith.

^ Bakker renounced prosperity theology after being imprisoned for fraud.

^ Osteen's teachings are often described as a moderate form of prosperity theology.[6]

^ After the probe was opened, Joyce Meyer Ministries voluntarily joined the Evangelical Council for Financial Accountability.[76]

^ The Council notes that the words Rhema and Logos are used interchangeably in the New Testament, and a Hebrew word is rendered into both words in different passages of the Septuagint.

^ Prosperity theology is often seen as supporting laissez-faire economics.

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The *Lives of the Most Eminent Literary and Scientific Men* were five volumes of Dionysius Lardner's 133-volume *Cabinet Cyclopaedia* (1829-46). Aimed at the self-educating middle class, this encyclopedia was written during the 19th-century literary revolution in Britain that encouraged more people to read.

The *Lives* formed part of the *Cabinet of Biography* in the *Cabinet Cyclopaedia*. The three-volume *Lives of the Most Eminent Literary and Scientific Men* of

Italy, Spain and Portugal (1835â ^37) and the two-volume *Lives of the Most Eminent Literary and Scientific Men of France* (1838â ^39) consist of biographies of important writers and thinkers of the 14th to 18th centuries. Most of them were written by the Romantic writer Mary Shelley. Shelley's biographies reveal her as a professional woman of letters, contracted to produce several volumes of works and paid well to do so. Her extensive knowledge of history and languages, her ability to tell a gripping biographical narrative, and her interest in the burgeoning field of feminist historiography are reflected in these works.

At times Shelley had trouble finding sufficient research materials and had to make do with fewer resources than she would have liked, particularly for the Spanish and Portuguese *Lives*. She wrote in a style that combined secondary sources, memoir, anecdote, and her own opinions. Her political views are most obvious in the Italian *Lives*, where she supports the Italian independence movement and promotes republicanism; in the French *Lives* she portrays women sympathetically, explaining their political and social restrictions and arguing that women can be productive members of society if given the proper educational and social opportunities.

The *Lives* did not attract enough critical attention to become a bestseller. A fair number were printed and sold, however, and far more copies of the *Lives* circulated than of Shelley's novels. Some of the volumes were pirated in the United States, where they were praised by the poet and critic Edgar Allan Poe. Not reprinted until 2002, Mary Shelley's biographies have until recently received little academic appreciation.

[edit] Lardner's Cabinet Cyclopaedia

During the first quarter of the 19th century, self-improvement literature became an important portion of the book market: "it was the age of the 'Family Library' edition".[1] In his article on the Cabinet Cyclopaedia, Morse Peckham writes that this "revolution in literacy, [was] partly the result of the spread of liberal ideas by the French Revolution, [and] partly of the desire to combat those ideas by teaching the poor to read the Bible and religious tracts" [...]. It was to have an effect on modern society almost as profound as the industrial and agricultural revolutions".[2] Dionysius Lardner's Cabinet Cyclopaedia, published between 1829 and 1846, was one of the most successful of these enterprises, which also included John Murray's Family Library and the publications of the Society for the Propagation of Useful Knowledge.[3] Although intended for the "general reader", the series was aimed specifically at the middle class rather than the masses: each volume cost six shillings, prohibiting purchase by the poor.[4] The advertisements for the Cyclopaedia describe the expected audience as "merchants, captains, families, [and] new-married couples".[5] The prospectus assured its readers that "nothing will be admitted into the pages of the 'CABINET CYCLOPAEDIA' which can have the most remote tendency to offend public or private morals. To enforce the cultivation of religion and the practice of virtue should be a principal object with all who undertake to inform the public mind." [6]

The series was divided into five "Cabinets": Arts and Manufactures, Biography, History, Natural History, and Natural Philosophy. The advertisement claimed these covered "all the usual divisions of knowledge that are not of a technical and professional kind".[7] Unlike other encyclopedias of the time, Lardner's Cabinet Cyclopaedia arranged its articles topically rather than alphabetically.[8] The series eventually contained 61 titles in 133 volumes and customers could purchase a single volume, a single cabinet, or the entire set.[9] The first volume was published in December 1829 by Longman, Reese, Orme, Browne, Greene, and John Taylor.[10] Thirty-eight identified authors contributed (others are unidentified);[11] Mary Shelley was the only female contributor and the eighth most productive.[10]

Reverend Dr. Dionysius Lardner, a science lecturer at University College London, started the Cabinet Cyclopaedia in 1827 or 1828.[8] The authors who contributed to the volumes spanned the political spectrum and included many luminaries of the day. James Mackintosh, Walter Scott, Thomas Moore, and Connop

Thirlwall wrote histories; Robert Southey wrote naval biographies; Henry Roscoe wrote legal biographies; John Herschel wrote on astronomy and the philosophy of science; August de Morgan wrote on mathematics; David Brewster wrote on optics; and Lardner himself wrote on mathematics and physics.[12] Authors were usually paid about £200 for each volume, though some contracts were much higher or lower. For example, Irish poet Thomas Moore was contracted to write a two-volume History of Ireland for £1,500.[13] One of the reasons the overall project ran into difficulty may have been that it overpaid well-known writers.[14] Peckham speculates that the reason many of the famous writers listed on the prospectus never participated was because of the project's financial problems. The 19 substitute contributors were, he writes, "at the time and subsequently a far less distinguished group than Lardner had originally announced".[15]

The books were relatively expensive to print, because of the Corbould and Finden illustrations, the images for the scientific volumes, and the use of Spottiswoode's printing house.[16] In order to cut costs, the publishers decided to use small print and narrow margins.[16] An estimated 4,000 copies of the first edition of the early volumes were printed, but the print run would probably have fallen to 2,500 since the sales did not pick up after 1835.[16] As it became clear that the series was not going to take off, fewer review copies were sent out and advertisements became smaller.[16] Lardner's interest in the project may also have waned, as he paid less attention to its business dealings.[16] However, some volumes of the Cabinet Cyclopaedia remained in print until 1890.[17]

Because of the popularity of encyclopedias at the beginning of the 19th century, the Cabinet Cyclopaedia did not receive enough critical notice to make it a bestseller. Often the reviews were "perfunctory".[16] However, some individual writers received attention. Moore, for example, was given a front-page spread in the Literary Gazette for his history of Ireland.[18] Shelley's volumes received 12 reviews in total—a good number—but "her name was never fully exploited" in the project; whether by her choice or Lardner's, it is unclear.[16] Nevertheless, Peckham writes that "the Cyclopaedia on the whole was a distinguished and valuable work", and some of the individual volumes became famous.[19]

[edit] Mary Shelley's contributions

Written during the last productive decade of Mary Shelley's career,[21] her contributions fill about three-quarters of these five volumes[22] and reveal her to be a professional woman of letters.[23] They demonstrate her knowledge of several languages and historical research covering several centuries, her ability to tell a gripping biographical narrative, and her interest in the burgeoning field of feminist historiography.[24] She "wrote with many books to hand—reading (or rereading) some, consulting others, cross-referring, interweaving abridged and paraphrased source material with her own comment".[25] Shelley combined secondary sources with memoir and anecdote and included her own judgments, a biographical style made popular by the 18th-century critic Samuel Johnson in his Lives of the Poets (1779–81).[26] She describes this technique in her "Life of Metastasio":

It is from passages such as these, interspersed in his letters, that we can collect the peculiar character of the man—his difference from others—and the mechanism of being that rendered him the individual that he was. Such, Dr Johnson [sic] remarks, is the true end of biography, and he recommends the bringing forward of minute, yet characteristic details, as essential to this style of history; to follow which precept has been the aim and desire of the writer of these pages.[27]

William Godwin's theories of biographical writing significantly influenced Shelley's style. Her father believed that biography could tell the history of a culture as well as serve a pedagogical function.[28] Shelley felt that her nonfiction works were better than her fiction, writing in 1843 to publisher

Edward Moxon: "I should prefer quieter work, to be gathered from other worksâ ~such as my lives for the Cyclopediâ ~& which I think I do much better than romancing." [29]

The 18th century had seen a new kind of history emerge, with works such as David Hume's *History of England* (1754â ^63). Frustrated with traditional histories that highlighted only military and monarchical history, Hume and others emphasised commerce, the arts, and society. [30] Combined with the rise of sensibility at the end of the 18th century, this "produced an unprecedented historical interest in the social, the inward, and particularly the realm of affect". [30] These topics and this style explicitly invited women into the discussion of history as both readers and writers. [30] However, since this new history often subordinated the private sphere to the public, women writers took it upon themselves to bring "sentimental and private elements" to the centre of historical study. [31] In this way, they argued for the political relevance of women, claiming, for example, that women's sympathy for those who suffered enabled them to speak for marginalised groups, such as slaves or the poor. [32]

Shelley practised this early form of feminist historiography. Biographical writing was, in her words, supposed to "form as it were a school in which to study the philosophy of history" and to teach "lessons". [33] These "lessons" consisted, most frequently and importantly, of criticisms of male-dominated institutions, such as primogeniture. [34] She also praises societies that are progressive with regard to gender relationsâ ~she wrote, for example, "No slur was cast by the [Renaissance era] Italians on feminine accomplishmentsÂ ...Â Where abstruse learning was a fashion among men, they were glad to find in their friends of the other sex, minds educated to share their pursuits". [35]

Shelley was particularly interested in tying private, domestic history to public, political history. [36] She emphasises romance, the family, sympathy, and compassion in the lives of the people she writes about. This is particularly true in her essays on Petrarch and Vincenzo Monti. [37] Her belief that these domestic influences would improve society, and that women could be at the forefront of them, ties her approach to that of other early feminist historians such as Mary Hays and Anna Jameson. [38] Shelley argues that women possess a "distinctive virtue" in their ability to sympathise with others and should use this ability to improve society. [39] She castigates Jean-Jacques Rousseau, for example, for abandoning his children at a foundling hospital, decrying the "masculine egotism" associated with his philosophyâ ~a criticism similar to the one she makes of Victor Frankenstein in *Frankenstein* (1818). [40]

Unlike most of her novels, which had a print run of only several hundred copies, the *Lives*'s print run of about 4,000 for each volume became, in the words of one scholar, "one of her most influential political interventions". [41] However, Shelley's biographies have not been fully appreciated until recently. The *Lives* were not reprinted until 2002, and little study has been made of them because of a critical tradition that "dismiss[es] the *Lives* as hack work churned out rapidly in order to pay off debts". [22]

[edit] *Lives of the Most Eminent Literary and Scientific Men of Italy, Spain and Portugal*

The three-volume *Lives of the Most Eminent Literary and Scientific Men of Italy, Spain and Portugal* contains numerous biographies of writers and thinkers of the 14th to 18th centuries. The first volume was published on 1 February 1835, the second on 1 October 1835, [42] and the third on 1 November 1837. [43] A pirated edition of the first two volumes was published in the United States by Lea and Blanchard in 1841. [44]

[edit] *Italian Lives*

The *Italian Lives* constitute the first two volumes of *Lives of the Most Eminent Literary and Scientific Men of Italy, Spain and Portugal*. The poet, journalist, and literary historian James Montgomery contributed the biographies of Dante, Ariosto, and Tasso. Historian of science Sir David Brewster contributed that of Galileo. Mary Shelley contributed the rest: Petrarch, Boccaccio, Lorenzo de' Medici, Marsiglio Ficino, Giovanni Pico della Mirandola, Angelo Poliziano, Bernardo Pulci, Luca Pulci, Luigi Pulci, Cieco Da Ferrara,

Burchiello, Bojardo, Berni, Machiavelli, Guicciardini, Vittoria Colonna, Guarini, Chiabrera, Tassoni, Marini, Filicaja, Metastasio, Goldoni, Alfieri, Monti, and Ugo Foscolo.[45] Although there has been some confusion regarding the attribution of these biographies, the Lives's recent editor, Tilar Mazzeo, notes that Shelley claimed authorship of all of these and granted Montgomery and Brewster's authorship of the others in her letters.[46]

Shelley began the Italian Lives on 23 November 1833 and by December was working methodically: she wrote the Lives in the morning and read novels and memoirs in the evening.[42] She added the revision of her novel *Lodore* (1835) and the checking of its proofs to this already busy schedule.[42] She worked on the Italian Lives for two years and was probably paid £140 for each volume.[42] By the time she began working on the Lives, Shelley had spent 20 years studying Italian authors and had lived in Italy for five years.[47] Her major sources for the biographies were first-person memoirs and literature by the authors, aided by scholarly works.[47] Shelley had gained much of her knowledge of these authors in Italy when she was researching her historical novel *Valperga* (1823); the rest she obtained from her own books or those of her father, the philosopher William Godwin. She had limited access to books at this time and was thus restricted to those she owned or could borrow from friends.[48] Shelley copied sections from some of these works in a manner that would today be termed plagiarism, but, as Mazzeo explains, because the standards of intellectual property and copyright were so different in the early 19th century, Shelley's practice was common and not considered unethical. She writes, "Mary Shelley's objectives in the Italian Lives were to gather what had been said by these authors and about them and to infuse the work with her own judgements on their interest and credibility." [48]

To supplement her printed sources, Shelley interviewed Gabriele Rossetti and other Italian expatriates in London for the modern biographies. Mazzeo writes that "her lives of the contemporary Italian poets â ^ Alfieri, Monti and Foscolo â ^ are unquestionably the most personal and most inspired of the two volumes".[49] Of all of the volumes Shelley contributed to the *Cabinet Cyclopaedia*, *Italian Lives* is, according to editor Nora Crook, the "most overtly political".[50] Shelley was a friend to the Italian exiles and a proponent of the *Risorgimento*.[51] she reveals her republicanism by depicting Machiavelli as a patriot.[50] She continually praises writers who resist tyranny by "cultivat[ing] private virtue and inner peace".[52] In the first volume of the *Italian Lives* her primary goal was to introduce lesser-known Italian writers to English readers and build up the reputation of those who were already known,[53] reflecting the view she expressed in her travel narrative *Rambles in Germany and Italy* (1844): "Italian literature claims, at present, a very high rank in Europe. If the writers are less numerous, yet in genius they equal, and in moral taste they surpass France and England".[54]

Shelley specifically addressed gender politics in her biography of the 16th-century poet Vittoria Colonna, highlighting her literary achievements, her "virtues, talents, and beauty", and her interest in politics.[55] However, Shelley was careful to describe feminine virtues in their historical context throughout the *Italian Lives*. For example, her analysis of the cavalier servente system in Italy, which allowed married women to take lovers, was rooted in an understanding that many marriages at the time were made not for love, but for profit. She refused to indict any particular woman for what she saw as the faults of a larger system.[55]

Little has been written on the contributions by Montgomery or Brewster. According to Mazzeo, Montgomery's biographies, which draw a picture of the subject's character and incorporate autobiographical material, are written in a "digressive though not unengaging manner".[46] He is less concerned with factual accuracy, although he identifies his sources, and more interested in developing "extended parallels between Italian and English literature".[46] Brewster includes descriptions of 16th-century scientific experiments in his formally written biography of Galileo, as well as information on other Renaissance natural philosophers. According to Mazzeo, "Brewster's pious



religiosity infuses the work and his opinions".[46]

Ninety-eight review copies of the first two volumes were distributed, eliciting five reviews.[42] Some of these were simply short advertisements for the Cabinet Cyclopaedia. Mazzeo writes that the "commentary on both volumes was mixed and often contradictory, but on balance positive; prose style, organisation and use of source materials were the three most often identified points of discussion".[56] The first volume was declared to be unorganised, the second volume less so. Reviewers did not agree on the value of frequently using primary sources, nor on the elegance of the writing style.[56] The Monthly Review dedicated the most substantial review and extracts to the volumes, writing that "we by no means think highly of the volume as a whole", complaining that it presented facts and dates without context. However, the reviewer praised two of Mary Shelley's biographies: Petrarch and Machiavelli. According to Mazzeo, the reviewer "notes, in particular, her efforts to question conventional assumptions about Machiavelli by returning to autobiographical materials and credits her with originality on this point".[56]Graham's Magazine, in a piece probably by its co-editor, Edgar Allan Poe, positively reviewed the pirated American edition.[57]

[edit] Spanish and Portuguese Lives

The Spanish and Portuguese Lives constitute the third volume of the Lives of the Most Eminent Literary and Scientific Men of Italy, Spain and Portugal. Except for the biography of Ercilla, whose author is unknown, Mary Shelley wrote all of the entries in this volume: Boscañ, Garcilaso de la Vega, Diego Hurtado de Mendoza, Luis de Leñ, Herrera, Sã de Miranda, Jorge de Montemayor, Castillejo, Cervantes, Lope de Vega, Vicente Espinel, Esteban de Villegas, Gãngora, Quevedo, Calderã, Ribeiro, Gil Vicente, Ferreira, and Camoens.

During the two or three years that Mary Shelley spent writing the Spanish and Portuguese Lives from 1834 or 1835 to 1837, she also wrote a novel, Falkner (1837), experienced the death of her father, William Godwin, started a biography of him, and moved to London after her son, Percy Florence Shelley, entered Trinity College, Cambridge.[43] She had more difficulty with these Lives than with the other volumes' biographies, writing to her friend Maria Gisborne: "I am now about to write a Volume of Spanish & Portugeeze [sic] Lives â ^ This is an arduous task, from my own ignorance, & the difficulty of getting books & information".[58] According to Lisa Vargo, a recent editor of the Spanish and Portuguese Lives, Spanish books were hard to come by in England and not much was known regarding Shelley's subjects.[59] However, Shelly ended one plaintive letter to another friend: "The best is that the very thing which occasions the difficulty makes it interesting â ^ namely â ^ the treading in unknown paths & dragging out unknown things â ^ I wish I could go to Spain."[58] While living in Harrow, she refused to go to the British Library in London, writing: "I would not if I could â ^ I do not like finding myself a stray bird among strange men in a character assimilating [sic] to their own".[60] At this time, the British Library had special tables for women in the reading room. While some scholars see her refusal to work there as a mark of "feminist protest" others see it as "matter of comfort and practicality", since the reading rooms were "noisy, badly lit, and poorly ventilated".[61] Shelley's continual problems with finding sources mean that her biographies are based on relatively few works. However, Vargo writes that "there is always a sense of an engaged and intelligent mind at work weighing what should be included, what seems accurate".[62] Shelley tended to focus on obtaining accounts written by people who knew the authors, and when translations of the authors' works were unavailable or poor, she provided her own.[63]

Shelley's biographies begin by describing the author, offering examples of their writings in the original language and in translation, and end by summarising their "beauties and defects".[62] She also discusses the problems of writing biography itself, engaging in a written dialogue with the theories of her now-dead father. In "Of History and Romance" Godwin had written that for the genius, "I am not contented to observe such a man upon the public stage, I would follow him into his closet. I would see the friend and the father of a

family, as well as the patriot".[64] Shelley and Godwin had seen the negative effects of this approach when Godwin published *Memoirs of the Author of A Vindication of the Rights of Woman* (1798), his biography of Shelley's mother, Mary Wollstonecraft. Its frank description of Wollstonecraft's affairs and suicide attempts shocked the public and sullied her reputation. Shelley criticises this technique in her biographies, concerned that such works perpetuate "follies".[65] She is even more concerned that often an absence of information regarding a particular writer is interpreted as evidence that the writer was insignificant.[65]

Overall, the *Spanish Lives*, according to Vargo, "tells a story of the survival of genius and moral independence in spite of oppression by public institutions, both individually and nationally".[66] Shelley argues that Spain's literature is directly related to its politics and seeks to inspire her readers by outlining a national literature stretching back to Lucan which represents the best characteristics of Spanish identity:[67] "originality", "independence", "enthusiasm", and "earnestness".[68]

[edit] *Lives of the Most Eminent Literary and Scientific Men of France*  
"[Madame Roland's] fame rests even on higher and nobler grounds than that of those who toil with the brain for the instruction of their fellow creatures. She acted. . . . The composition of her memoirs was the last deed of her life, save the leaving of it . . . and it was a noble one . . . disclosing the nature of the soil that gave birth to so much virtue; teaching women how to be great, without foregoing either the duties or charms of their sex; and exhibiting to men an example of feminine excellence, from which they may gather confidence, that if they dedicate themselves to useful and heroic tasks, they will find helpmates in the other sex to sustain them in their labours and share their fate."  
â Mary Shelley, "Madame Roland", *French Lives*[69]

The two-volume *Lives of the Most Eminent Literary and Scientific Men of France* includes the following works by Mary Shelley: Montaigne, Corneille, Rochefoucauld,[70] Molière, Pascal, Madame de Staël, Boileau, Racine, Fénelon, Voltaire, Rousseau, Condorcet, Mirabeau, Madame Roland, and Madame de Staël.[71] Rabelais and La Fontaine are by an as yet unidentified author.[72] Shelley was the only contributor to Lardner's *Cabinet Cyclopaedia* to give such pride of place to female biographical subjects.[73] In these volumes, "she stretched the definition of 'Eminent Literary Men' not just by including two more women but by her choice of a quartet of French revolutionary personalities who were political actors more than, or as much as writers: Condorcet and Mirabeau, Mme Roland and Mme de Staël".[74] As Clarissa Campbell Orr, a recent editor of the *French Lives*, explains, this choice "represents a concerted attempt to disassociate the early ideals of the French Revolution from its subsequent extremism and state-authored bloodshed".[75]

Mary Shelley worked on the *French Lives* from the end of 1837 until the middle of 1839 and she was paid £200 upon their completion.[76] No other substantial projects occupied her during this time and research materials were easily accessible; she even subscribed to a specialist circulating library to acquire books.[72] She wrote to her friend Leigh Hunt of the project, "I am now writing *French Lives*. The *Spanish* ones interested me . . . these do not so much . . . yet, it is pleasant writing enough . . . sparing one imagination yet occupying one & supplying in some small degree the needful which is so very needful."[77]

Mary Shelley spoke French fluently and was knowledgeable about 17th- and 18th-century French literature.[23] Although she was distilling other works, the biographies are still deeply personal works and have autobiographical elements.[23] Orr writes that they "are the culmination of her work for Lardner, and represent the final stage of a sustained overview of four literatures. Few British women of letters in the 1830s could command this extensive range and write so confidently about four national cultures." [23] Orr compares Shelley to the 19th-century historical writers Lady Morgan, Frances Trollope, Anna Jameson, and Agnes and Eliza Strickland.[78] Shelley's assessment of French literature was not as generous as her evaluation of Italian literature. She criticized its artificiality, for example.[79] However,

the biographies are "written with a sprightly narrative thrust and an agreeable tone".[80] She also often provided her own translations and focused on themes that resonated with her own life.[81]

The French Lives provided Shelley with a way to celebrate literary women, particularly salonnières. In her life of Madame de SÃ©vignÃ©, Shelley celebrates "her chaste widowhood; her loyalty as a friend; [and] her maternal devotion".[82] However, Orr writes that it is difficult to see a pattern in the way Shelley addresses gender issues in these volumes.[83] She argues that "the most consistent 'feminism' displayed throughout [the second volume of French Lives] lies in her examination of French attitudes toward love, marriage, and sexuality".[83] Shelley sympathetically portrays customs such as taking lovers, explaining the custom in the context of France's arranged marriages.[83] Overall, Orr explains, Shelley's "historical sympathy for the varied circumstances of women's relationships mirrors her personal practice of understanding and assisting those of her women friends who transgressed moral norms".[83] The biographies of Roland and StaÃ«l focus on their abilities and the social forces that both helped and hindered them from succeeding.[39] Shelley argues that women are as intellectually capable as men, but lack a sufficient education and are trapped by social systems such as marriage that restrict their rights.[39] The emphasis that Shelley places on education and reading reflect the influence of her mother's *A Vindication of the Rights of Woman* (1792). In these two biographies, Shelley reinforces contemporary gender roles while at the same time celebrating the achievements of these women.[84] She describes Roland through traditionally feminine roles:

She was her husband's friend, companion, amanuensis; fearful of the temptations of the world, she gave herself up to labour; she soon became absolutely necessary to him at every moment, and in all the incidents of his life; her servitude was thus sealed; now and then it caused a sigh; but the holy sense of duty reconciled her to every inconvenience.[85]

Shelley also defends Roland's "unwomanly" actions, however, by arguing that they were "beneficial" to French society.[86] Shelley's most overt feminist statement in the French Lives comes when she criticises Jean-Jacques Rousseau's novel *Julie, or the New Heloise* (1761), writing "his ideasÂ ...Â of a perfect life are singularly faulty. It includes no instruction, no endeavours to acquire knowledge and refine the soul by study; but is contracted to mere domestic avocations".[87]

Sixty review copies of each volume were sent out, but only one short notice of the first volume of French Lives has been located, in the *Sunday Times*. [80] The volumes were pirated in the United States by Lea and Blanchard of Philadelphia and reviewed by Edgar Allan Poe in *Graham's Lady's and Gentleman's Magazine* in 1841. He wrote, "a more valuable work, when considered solely as an introduction to French literature, has not, for some time, been issued from the American press".[88]

[edit] See also

^ Crook, xix.

^ Peckham, 38; for a longer explanation of this phenomenon, see Smith, 128â ^31.

^ Crook, xix; Kucich, "Biographer", 227; Peckham, 37.

^ Crook, xx; Kucich, "Biographer", 235; Peckham, 42.

^ Qtd. in Kucich, "Biographer", 235.

^ Qtd. in Peckham, 41.

^ Qtd. in Crook, xx; see also Kucich, "Biographer", 227.

^ a b Peckham, 40.

^ Crook, xx; Peckham, 37.

^ a b Crook, xx.

^ Peckham, 37.

^ Peckham, 43â ^44.

^ Crook, xxiv, note a.

^ Crook, xxiv.  
 ^ Peckham, 47.  
 ^ a b c d e f g Crook, xxv.  
 ^ Crook, xxvi.  
 ^ Crook, xxivâ ^v.  
 ^ Peckham, 48.  
 ^ Qtd. in Crook, xxviii.  
 ^ Morrison, 129.  
 ^ a b Kucich, "Biographer", 227.  
 ^ a b c d Orr, "Introduction", xxxix.  
 ^ Kucich, "Biographer", 228.  
 ^ Crook, xxix.  
 ^ Crook, xxvii; Mazzeo, xli.  
 ^ Qtd. in Guerra, 225.  
 ^ Guerra, 224.  
 ^ Qtd. in Walling, 126.  
 ^ a b c Kucich, "Biographer", 229.  
 ^ Kucich, "Biographer", 230.  
 ^ Kucich, "Biographer", 231.  
 ^ Qtd. in Kucich, "Biographer", 228.  
 ^ Kucich, "Biographer", 236.  
 ^ Qtd. in Kucich, "Biographer", 236.  
 ^ Guerra, 227.  
 ^ Kucich, "Biographer", 233; Guerra, 227.  
 ^ Kucich, "Biographer", 230â ^31, 233, 237; Crook, xxviii; Orr, "Introduction",  
 lii.  
 ^ a b c Kucich, "Biographer", 238.  
 ^ Kucich, "Biographer", 236; Orr, "Introduction", 1.  
 ^ Kucich, "Biographer", 235; see Crook, xxv for the exact number; Mazzeo, xli.  
 ^ a b c d e Mazzeo, xxxviii.  
 ^ a b Vargo, xv.  
 ^ Mazzeo, xxxix; Vargo, xxvii.  
 ^ Mazzeo, xl, xlviiiâ ^li.  
 ^ a b c d Mazzeo, xl.  
 ^ a b Mazzeo, xli.  
 ^ a b Mazzeo, xlii.  
 ^ Mazzeo, xliii.  
 ^ a b Crook, xxx.  
 ^ Mazzeo, xlvii.  
 ^ Crook, xxxi; see also Guerra, 225.  
 ^ Smith, 131.  
 ^ Qtd. in Mazzeo, xlvii.  
 ^ a b Smith, 135.  
 ^ a b c Mazzeo, xxxix.  
 ^ Mazzeo, xxxixâ ^xl.  
 ^ a b Qtd. in Vargo, xix.  
 ^ Vargo, xix.  
 ^ Qtd. in Vargo, xx.  
 ^ Vargo, xx.  
 ^ a b Vargo, xxii.  
 ^ Vargo, xxviâ ^xxvii.  
 ^ Qtd. in Vargo, xxiii.  
 ^ a b Vargo, xxiii.  
 ^ Vargo, xxiv.  
 ^ Vargo, xxv.  
 ^ Smith, 137.  
 ^ Shelley, Mary and others. *Lives of the Most Eminent French Writers*.  
 Philadelphia: Lea and Blanchard (1840), 266. Retrieved on 19 May 2008.  
 ^ Orr, "Introduction", livâ ^lvii.  
 ^ Orr, "Notes", xviiiâ ^xxii.

^ a b Orr, "Introduction", xli.  
 ^ Morrison, 131.  
 ^ Orr, "Introduction", xlvi.  
 ^ Orr, "Introduction", xlvii.  
 ^ Orr, "Introduction", xlâ ^xli.  
 ^ Qtd. in Orr, "Introduction", xxxix.  
 ^ Orr, "Introduction", xxxixâ ^xl.  
 ^ Orr, "Introduction", xl.  
 ^ a b Orr, "Introduction", xliii.  
 ^ Orr, "Introduction", xliii, lâ ^li.  
 ^ Orr, "Introduction", lii.  
 ^ a b c d Orr, "Introduction", liii.  
 ^ Morrison, 127.  
 ^ Qtd. in Morrison, 137.  
 ^ Morrison, 140.  
 ^ Qtd. in Orr, "Introduction", liv.  
 ^ Qtd. in Orr, "Introduction", xliii.

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[edit] External links

Lives of the Most Eminent Literary and Scientific Men of Italy, Spain, and Portugal, Volume I at the Internet Archive

Lives of the Most Eminent Literary and Scientific Men of Italy, Spain, and Portugal, Volume II at the Internet Archive

Lives of the Most Eminent Literary and Scientific Men of Italy, Spain, and Portugal, Volume III at the Internet Archive

Lives of the Most Eminent Literary and Scientific Men of France, Volume I at the Internet Archive

Lives of the Most Eminent Literary and Scientific Men of France, Volume II at the Internet Archive

Dionysius Lardner's World

The Noisy Miner (*Manorina melanocephala*) is a bird in the honeyeater family Meliphagidae and is endemic to eastern and south-eastern Australia. This miner is a grey bird, with a black head, orange-yellow beak and feet, a distinctive yellow patch behind the eye and white tips on the tail feathers. The Tasmanian race has a more intense yellow panel in the wing, and a broader white tip to the tail. Males, females and juveniles are similar in appearance, though young birds are a brownish-grey. As the common name suggests, the Noisy Miner is a vocal species with a large range of songs, calls, scoldings and alarms, and almost constant vocalizations particularly from young birds. One of four species in the genus *Manorina*, the Noisy Miner itself is divided into four subspecies. The separation of the Tasmanian *M. m. leachi* is of long standing, and the mainland birds were further split in 1999.

Found in a broad arc from Far North Queensland through New South Wales and Victoria to Tasmania and eastern South Australia, the Noisy Miner primarily inhabits dry, open eucalypt forests that lack understory shrubs. These include forests dominated by spotted gum, box and ironbark, as well as in degraded woodland where the understory has been cleared, such as recently burned areas, farming and grazing areas, roadside reserves, and suburban parks and gardens with trees and grass but without dense shrubbery. The density of Noisy Miner populations has significantly increased in many locations across its range, particularly human-dominated habitats. While the popularity of nectar-producing garden plants such as the large-flowered grevilleas was thought to play a role in its proliferation, studies now show that the Noisy Miner has benefitted primarily from landscaping practices that create open areas dominated by eucalypts.

Noisy Miners are gregarious and territorial; they forage, bathe, roost, breed and defend territory communally, forming colonies that can contain several hundred birds. Each bird has an 'activity space' and birds with overlapping activity spaces form associations called 'coteries', the most stable units within the colony. The birds also form temporary flocks called 'coalitions' for specific activities such as mobbing a predator. Group cohesion is facilitated not only by vocalizations, but also through ritualised displays which have been categorised as flight displays, postural displays, and facial displays. The Noisy Miner is a notably aggressive bird, and chasing, pecking, fighting, scolding, and mobbing occur throughout the day, targeted at both intruders and colony members.

Foraging in the canopy of trees and on trunks and branches and on the ground, the Noisy Miner mainly eats nectar, fruit and insects. Most time is spent gleaning the foliage of eucalypts, and it can meet most of its nutritional needs from manna, honeydew and lerp gathered from the foliage. The Noisy Miner does not use a stereotyped courtship display, but copulation is a frenzied communal event. It breeds all year long, building a deep cup-shaped nest and laying two to four eggs. Incubation is by the female only, although up to twenty male helpers take care of the nestlings and fledglings. Noisy Miners have a range of strategies to increase their breeding success including multiple broods and group mobbing of predators. The Noisy Miner's population

increase has been correlated with the reduction of avian diversity in human-affected landscapes. Its territoriality means that translocation is unlikely to be a solution to its overabundance, and culling has been proposed, although the Noisy Miner is currently a protected species across Australia.

[edit] Taxonomy

English ornithologist John Latham described the Noisy Miner four times in his 1801 work *Supplementum Indicis Ornithologici, sive Systematis Ornithologiae*, seemingly not knowing it was the same bird in each case: the Chattering Bee-eater (*Merops garrulus*), Black-headed Grackle (*Gracula melanocephala*), Hooded Bee-eater (*Merops cucullatus*), and White-fronted Bee-eater (*Merops albifrons*).[2][3] Early notes recorded its tendency to scare off prey as hunters were about to shoot.[3] It was as the Chattering Bee-eater that it was painted between 1792 and 1797 by Thomas Watling, one of a group known collectively as the Port Jackson Painter.[4] John Gould treated the name *Merops garrulus* as the original description, and renamed it *Myzantha garrula* in his 1865 work *Handbook to the Birds of Australia*, giving it the common name of Garrulous Honeyeater, and noting the alternate name of Chattering Honeyeater. He noted the colonists of Tasmania called it a miner, and aboriginal people of New South Wales called it *cobaygin*. [5] *Que que gang* was a local aboriginal name from the Blue Mountains.[6]

However, in the early 20th century Australian ornithologists started using the name *Manorina melanocephala* instead, because it was listed first by Latham in 1801.[7] This usage did not follow the letter of the International Code of Zoological Nomenclature, and in 2009 the International Commission on Zoological Nomenclature conserved the current name by formally suppressing the name *M.Â garrula*. [8] The species name *melanocephala* is derived from the Ancient Greek words *melas* "black", and *kephale* "head", [9] referring to its black crown. Other common names include Mickey Miner and Soldierbird. Four subspecies are recognised, including subspecies *leachi* found in eastern Tasmania. The mainland population was split into three subspecies in 1999 by Richard Schoddeâ ~titaniota from Cape York Peninsula in Queensland as far south as Mareeba, *lepidota* from central Queensland and inland New South Wales west of Nyngan, and the nominate subspecies *melanocephala* from southeastern New South Wales, Victoria, and southern South Australia. There are broad zones where birds are intermediate between subspecies.[10] Further study is required to settle the taxonomic status of these populations.

The Noisy Miner is one of four species in the genus *Manorina* in the large family of honeyeaters known as Meliphagidae, the other three being the Black-eared Miner (*M.Â melanotis*), the Yellow-throated Miner (*M.Â flavigula*), and the Bell Miner (*M.Â melanophrys*). One of the most obvious characteristics of the genus is a patch of bare yellow skin behind the eyes, which gives them an odd 'cross-eyed' look. Within the genus, the Noisy, Black-eared and Yellow-throated Miners form the subgenus *Myzantha*. [10] The Noisy Miner occasionally hybridizes with the Yellow-throated Miner. Molecular analysis has shown honeyeaters to be related to the Pardalotidae (pardalotes), Acanthizidae (Australian warblers, scrubwrens, thornbills, etc.), and the Maluridae (Australian fairy-wrens) in a large Meliphagoidea superfamily. [12]

[edit] Description

[edit] Appearance

The Noisy Miner is a large honeyeater, 24â ^28 centimetres (9.4â ^11Â in) in length, with a wingspan of 36â ^45 centimetres (14â ^18Â in), and weighing 70â ^80 grams (2.5â ^2.8Â oz). Male, female and juvenile birds all have similar plumage: grey on the back and tail and on the breast, and otherwise white underneath, with white scalloping on the nape and hind-neck and on the breast; off-white forehead and lores; a black band over the crown, bright orange-yellow bill and a distinctive patch of yellow skin behind the eye; a prominent white tip to the tail; a narrow olive-yellow panel in the folded wing; and orange-yellow legs and feet. A juvenile can be distinguished by softer plumage, a brownish tinge to the black on its head and the grey on its back, and a duller, greyish-yellow skin patch behind the eye.

The Noisy Miner is similar in appearance to the Yellow-throated Miner and the Black-eared Miner; however it has a dull white forehead and a black crown, while the others have grey heads.

#### [edit] Geographical variations

Size variation in the Noisy Miner over its range follows Bergmann's rule; namely, birds tend to be larger where the climate is colder.[10] Adults from central-eastern and northern Queensland tend to have little or no olive-yellow edging to the feathers of the back and wings, and have a wider white fringe on the feathers of the hind-neck and back, giving birds from Queensland the appearance of having more distinctive scalloping than other populations. Wing length generally increases with latitude and *M. m. leachi* has measurably shorter wings than the nominate race, although no significant difference in wing length was found in a study of populations north of 30° S and south of the Murray River. The subspecies *leachi* also has finer scalloping on the hind-neck than the nominate race, a more intense yellow tinge to the wing panels, and a slightly broader off-white tip to the tail.

The far north Queensland subspecies *titaniota* has a shorter tail, paler crown, larger yellow skin patch, and paler upper parts without the yellow-olive of the nominate race; and *lepidota*, found in western New South Wales, is smaller than the nominate race with a black crown, and darker more mottled upperparts.[10]

#### [edit] Vocalisations

As the common name suggests, the Noisy Miner is an unusually vocal species. Previously known as the Garrulous Honeyeater, it has a large and varied repertoire of songs, calls, scoldings and alarms. Most are loud and penetrating, and consist of harsh single notes. It has two broad-frequency alarm calls that are used when mobbing intruders into their territory, or when predators (including humans) are sighted; and a narrow-frequency alarm call that is primarily used when airborne predators are seen, such as the Brown Falcon (*Falco berigora*), or other large flying birds including the Australian Magpie (*Cracticus tibicen*) and the Pied Currawong (*Strepera graculina*).[17] The aerial predator alarm call is a series of high-pitched, slurred whistling notes. The broad-frequency alarm calls are a series of 'churr' notes, low pitched and harsh, occurring at low and high levels of intensity. The narrow-band call is used in situations where the bird signals the presence of a predator and restricts information about its own location, while the broad-band alarm is used to attract attention,[18] and can initiate mobbing behaviour. These churring calls vary between individuals,[19] and laboratory tests show Noisy Miners can distinguish calls by different birds. Hence, this may be integral to the complex social structure of the species.[20]

Contact or social facilitation calls are low-pitched sounds that carry long distances. 'Chip' calls are given by individual birds when foraging, and a similar call is given by nestlings that call at an increased rate as the mother approaches the nest.[17] Where there is a high level of social activity, such as during territorial disputes with conspecifics, calls are a series of quick, regular, single notes. The Noisy Miner has a mating display flight song, a soft warble of low-frequency notes, given during short undulating flights by the male, and responded to by the female with a low-frequency whistle.[17] The Noisy Miner is found in open woodland habitats, where it is an advantage to call from the air so as to overcome sound attenuation.[21] Another display call, described as 'yammer', is a rapid rhythmical series of notes that is uttered during open-bill, wing-waving displays. The Noisy Miner has a song described as the 'dawn song'—a communal song of clear whistled notes emitted in chorus in the early hours of the morning from May through January.[17] The dawn song, which is also sung at dusk, is audible over long distances and features duets that often involve antiphony.

A nestling begins to give the 'chip' call soon after it emerges from the egg, and it calls frequently for the first two thirds of the nestling period and constantly for the last third. The call does not vary in the presence of an adult at the nest, so it seems likely that the call is not directed at the adult bird. The nestling becomes silent when an adult gives an alarm call, and



makes a squealing sound when the adult delivers food. The begging call of a fledgling is similar to the call of the nestling, but significantly louder and covering a greater frequency range (which may make it more directional). The rate of calling, on average, is 85 to 100 calls in a minute, and in open scrub the call can be heard up to a kilometre away. Subsong, a juvenile vocalization comprising elements of various calls, begins to be uttered when the fledgling is around thirty days old.

The Noisy Miner also produces non-vocal sounds by clicking or snapping its bill, usually during antagonistic encounters with other bird species, or when mobbing a predator.

[edit] Distribution and habitat

The Noisy Miner is endemic to eastern and south-eastern Australia, occupying a broad arc from Far North Queensland where there are scattered populations, to New South Wales where it is widespread and common from the coast to a line from Angledool to Balranald, through Victoria into south-eastern South Australia, and eastern Tasmania. Its range in South Australia has been steadily expanding since it was first recorded near Adelaide in the early 1890s. It is sedentary over its entire range. The Noisy Miner is territorial, and the territory of a colony is aggressively defendedâ which has led to a significant reduction in avian diversity in areas occupied by the Noisy Miner, with smaller species excluded.[26]

The Noisy Miner primarily inhabits dry, open eucalypt forests without understory shrubs. It is commonly found in open sclerophyll forests, including those on coastal dunes or granite outcrops; forests dominated by spotted gum on mountain ridges and exposed slopes; box and ironbark forests on the foothills of the Great Dividing Range; mixed forests of eucalypts and cypress (Callitris); forests dominated by yapunya, mulga, gidgee, brigalow or emu bush; in stands of belah and scattered clumps of boree; on the edges of woodlands of river red gum including swamp woodlands bordering floodplains, and areas dominated by exotic species such as European ash and willow. It regularly inhabits degraded patches of forest where the understory has been cleared, including recently burned areas, and modified habitats such as lightly-timbered farming and grazing areas, roadside reserves, bushland remnants in towns and cities, and suburban parks and gardens with trees and grass but without dense shrubbery.

The Noisy Miner has benefited from the thinning of woodland on rural properties, heavy grazing that removes the understory, fragmentation of woodland that increases the percentage of edge habitat, and urban landscaping practices that increase open eucalypt environments. It has been described as a â "reverse keystoneâ species, as it is colonizing an ever-increasing range of human-dominated habitats, and aggressively excluding smaller bird species from urban environments.[26] This phenomenon has been also observed in rural areas. A field study across the South West Slopes of New South Wales, showed that the Noisy Miner's presence corresponded with reduced numbers of insectivorous birds such as fantails, whistlers, the Restless Flycatcher (*Myiagra inquieta*), and other honeyeater species, and that this decrease was most marked in sites with better access to water and nutrients.[28] While it has been hypothesized that the proliferation of large-flowering grevillea cultivars has contributed to the abundance of Noisy Miners, recent research has identified the proliferation of lightly treed open areas, and the presence of eucalypt species as the most significant factors in the population increase.[26] Large-flowered grevillea hybrids such as *Grevillea 'Robyn Gordon'* can benefit the Noisy Miner, in that an abundance of resources is usually dominated by larger aggressive honeyeaters,[29] and a continuous nectar source could provide an advantage for the non-migratory species.[30] A field study in box-ironbark country in central Victoria found miner numbers were correlated with the occurrence of yellow gum (*Eucalyptus leucoxylon*), which reliably produces flowers (and nectar) each year.[31] However, the abundance of the Noisy Miner is primarily determined by habitat structure.[32][33]

While the range of the Noisy Miner has not significantly expanded, the density

of the population within that range has substantially increased.[34] High densities of Noisy Miners are regularly recorded in forests with thick understory in southern Queensland, 20 kilometres (12½ mi) or more from the forest/agricultural land edge. Many of these sites have extensive road networks used for forest management, and picnic areas and walking tracks for recreational use, and it has been found that these cleared spaces play a role in the abundance of Noisy Miners in the forests.[35] There is evidence to suggest that higher road densities correspond with higher Noisy Miner population levels.[36] Field work in Victoria showed Noisy Miners infiltrated anywhere from 150 to 300 m (490 to 980 ft) into remnant woodland from the edges, with greater penetration occurring in less densely forested areas. This has implications for the size of woodland habitat needed to contain miner-free areas—around 36½ hectares (89 acres).[37] Revegetation projects restoring buloke woodland, a species of she-oak integral to the survival of the Red-tailed Black Cockatoo (*Calyptorhynchus banksii*), have been interplanted with a nurse species, usually fast-growing Eucalypts. Noisy Miner populations were more likely in those buloke woodlands where Eucalypts had been planted at densities of up to 16 per hectare (6.4 per acre). The presence of Noisy Miners was accompanied by a substantial difference in number and types of other birds found in the woodland.[38]

[edit] Behaviour

[edit] Social organization

The Noisy Miner is a gregarious species, and the birds are rarely seen singly or in twos; they forage, move and roost in colonies that can consist of several hundred birds

Within a colony, a male bird will occupy an 'activity space', which will overlap with the activity spaces of other males. Males with overlapping activity spaces form associations called 'coteries', usually consisting of 10 to 25 birds. Coteries are the most stable unit within the colony. The birds also form temporary flocks when engaged in the same activity. These flocks, called 'coalitions', usually comprise five to eight birds, although coalitions of up to 40 birds can occur when mobbing a potential predator. Membership of the coalition changes frequently as individuals leave the group as it passes beyond the boundary of their activity space, or the activity ends or changes, as when the breeding season begins. Females use activity spaces that overlap with those of male birds, but not other females, so that females will join coalitions with males in their area, but only rarely will there be more than one female in the coalition. The exclusivity of female activity spaces leads to young females being driven out of the colony in which they were born, but it also makes it difficult for them to gain a place in a new colony. A study of banded nestlings that survived in one colony until the next breeding season, found that they were all male birds, suggesting that all female nestlings had died or left the colony. Emigration of males does not seem to occur until the population density of the colony reaches a critical level.

Looking after the young is communal, with males of the coterie bringing food to the nestlings and removing faecal sacs. Communal feeding increases after fledging, when males from nearby coteries may even bring food to the young birds if not driven off. Roosting is usually communal, with two to six adults and juveniles roosting in contact with each other, usually near the end of a hanging branch up to 20 metres (66½ ft) above ground, within their activity space. They select a new site each evening, often selecting and rejecting several sites, and engaging in aggressive calling and chasing as other birds attempt to join the group. They are often the last birds to roost at night, but appear to sleep soundly, undisturbed by torchlight. Noisy miners drink together at the edge of lakes and dams, and from cattle troughs, often perching on a submerged branch. They bathe by diving head first into water and, when almost totally submerged, flapping their wings vigorously and ducking their heads under the water. They shake excess water off and then fly to a nearby branch to preen. They have been observed using rain- or dew-soaked foliage to bathe, and in dry weather will dust-bathe in dry soil or fine litter such as grass

clippings. Bathing is communal, with birds stimulated to participate by observing others. They are occasionally observed anting.[43]

[edit] Flock behaviour

The Noisy Miner engages in most activities in a group. Roosting, foraging, preening, bathing and dust-bathing or anting are communal activities. Dawn song is a communal chorus, particularly during the breeding season. The communal interaction is facilitated by ritualised displays that have been categorised as flight displays, postural displays, and facial displays. In 'long flight' displays, initiated by either male or female birds, groups of up to twenty birds from more than one coterie fly about 40 metres (130 ft) above the canopy for distances of up to 1.5 kilometres (0.93 mi) from the colony, constantly calling and not returning to the colony for about twenty minutes. As they return the remaining birds show signs of agitation, and sometimes fly up to join them. The 'short flight' display is performed by the male, and may be analogous to the territorial advertising displays of other birds. In a ritualised movement, the Noisy Miner flies out from a perch across an open area, in a rhythmic undulating pattern, usually calling in flight. At the end of the clearing it turns on an upward swoop and flies silently back to a perch near the starting point. The 'head-up flight' is performed by the female during the nesting period, and may function to attract male helpers. In its most intense form the body and tail are held almost vertically, with legs dangling and the head held up and back. It is performed by the female when she is selecting the nest site, and when carrying nest-building material, and probably has the function of indicating the location of the nest to other group members.[43]

Postural displays include tall and low poses, pointing, open bill, and wing waving. The 'tall posture' is used when in close contact with another bird and is a mild threat. The bird holds itself upright with neck and legs stretched, and it faces the other bird. The 'low posture' is a submissive gesture; the bird sits low on the perch with legs obscured by fluffed feathers and often faces away from the other bird. Fledglings threatened by adult birds will adopt a low posture and open their bill widely. 'Pointing' is a threat display where the bird stretches out horizontally, with feathers sleeked and the bill pointed at the target of the aggression. A bill snap will sometimes accompany pointing. An 'open bill display' is used by subordinates in encounters between two birds, and by a female on the nest when other birds approach. The 'trident bill display' involves a fully open bill with the tongue raised and protruding and is a higher-intensity submissive display. 'Wing waving' is often performed at the same time as an open bill display. The wings are flexed and held slightly away from the body, and flapped out and up around three to six times. Wing waving may be accompanied by a yammer call. 'Eagle' displays involve holding the wings and tail spread out, in either a vertical or horizontal position.[43]

Eye displays are made by exposing or covering the bare yellow patch behind the eye when the feathers are completely sleeked the entire patch is visible, and when they are fluffed the patch is hidden. Eye displays are used in conjunction with postural displays, with the yellow patch fully displayed by dominant birds using threat postures, and immature birds tending to reduce the size of the eye patch when under attack from other members of the coterie.[43]

On occasion early in the breeding season, mass displays erupt, where twenty or thirty birds perform the various wing-spreading displays, short flights, and constant calling. Displaying birds are attacked by others, and groups of silent but agitated birds watch the interactions. Mass displays are more common in the early morning, can last for up to 40 minutes, and seem to be a combination of sexual and agonistic behaviour.

A 'corroboree' (from the word for a ceremonial meeting of Aboriginal Australians) is a group display where birds converge on adjacent branches and simultaneously pose hunchbacked, giving wing-waving and open-bill displays and the yammer call. A corroboree occurs when birds meet after a change in the social environment, such as a bird returning after an absence, or the repulsion of an intruder, or the coming together of different coterie. The corroboree

appears to have a bonding function, and may involve all members of a colony.[43]

[edit] Agonistic behaviour

Described as "always at war with others of the feathered kind" in early notes,[3] the Noisy Miner is one of the most aggressive of the honeyeaters. Much of the activity within a Noisy Miner colony is agonistic with chasing, pecking, fighting, scolding, and mobbing occurring frequently throughout the day. The birds unite to attack predators and to defend the colony area against all other species of birds; however the species is also highly aggressive intraspecifically.[44]

Female Noisy Miners are aggressive towards each other, and one cause of a male-biased sex-ratio in colonies may be the females' greater intolerance for each other, driving immatures out of the colony and preventing the immigration of new females. Aggression at the nest is common between males. Adult males begin attacking juveniles when they are around 11 weeks old, and attackers can include males that previously cared for the fledgling. Adult females are less aggressive towards young birds, although mothers do occasionally attack their own offspring, and infanticide has been recorded. There is little male to female aggression other than the 'driving flights' that form part of the mating ritual. In direct attacks of young birds pecks are directed at the eye patch. Agonistic behaviour has been observed among nestlings, with aggression intensifying after fledging and at times resulting in the death of a sibling.

The Noisy Miner colony unites to mob inter-specific intruders and predators. The Noisy Miner will approach the threat closely and point, expose eye patches, and often bill-snap. Five to fifteen birds will fly around the intruder, some birds diving at it and either pulling away or striking the intruder. The mobbing continues until the intruder remains still, as with a Tawny Frogmouth (*Podargus strigoides*), or it leaves the area. Mobbing of snakes and Goannas is particularly intense, and most species of bird, even non-predators, entering the territory are immediately chased. The Noisy Miner has been recorded attacking an Australian Owlet-nightjar (*Aegotheles cristatus*) during the day, grebes, herons, ducks and cormorants on lakes at the edge of territories, Crested Pigeons (*Ocyphaps lophotes*), pardalotes, and rosellas. Non-predatory mammals such as bats, cattle, sheep, and wallabies are also attacked, though less vigorously than birds.

Noisy Miner attacks are not limited to chasing the intruder, and aggressive incidents often result in the death of the trespasser. Reports include those of two Noisy Miners repeatedly pecking a House Sparrow (*Passer domesticus*) at the base of its skull and killing it in six minutes; one Noisy Miner grasping a Striated Pardalote (*Pardalotus striatus*) by the wing while another pecked it on the head until it died; and a Sacred Kingfisher (*Todiramphus sanctus*) being chased and harassed for over five hours and then found dead with a fractured skull.[44]

[edit] Response to threats

Noisy Miners make louder alarm calls in noisier sections of urban environments, such as main roads.[46] The most common initial response to alarm calls is to stay in the area and scan for threats, rather than withdraw. A study conducted in Melbourne and a nearby rural area found that Noisy Miners in urban areas were less likely to take flight, and when they did they flew shorter distances. It is unclear whether this is an adaptation or bolder miners had been the ones to settle in the city.[47] A field study in Canberra found that Superb Fairywrens (*Malurus cyaneus*) that lived in areas frequented by Noisy Miners recognised miner alarm calls and took flight, and had learnt to ignore their non-alarm calls, while those that live in areas not frequented by Noisy Miners did not respond to miner alarm calls. This suggests the species has adapted and learnt to discriminate and respond to another species' vocalisations.[48]

[edit] Feeding

The Noisy Miner primarily eats nectar, fruit and insects, and occasionally it feeds on small reptiles or amphibians. It is both arboreal and terrestrial,

feeding in the canopy of trees and on trunks and branches and on the ground. It forages within the colony's territory throughout the year, usually in groups of five to eight birds although hundreds may gather at a stand of flowering trees such as banksia. The Noisy Miner collects nectar directly from flowers, hanging upside down or straddling thin branches acrobatically to access the nectar; it takes fruit from trees or fallen on the ground; gleans or hawks for invertebrates; and picks through leaf litter for insects. It has been recorded turning over the dried droppings of Emu (*Dromaius novaehollandiae*) and Eastern Grey Kangaroo (*Macropus giganteus*) searching for insects.

In a study of birds foraging in suburban gardens, the Noisy Miner was seen to spend more time in banksia, grevillea and eucalypt species, and when in flower, Callistemon, than in other plants including exotics. Most time was spent gleaning the foliage of Eucalypts, and Noisy Miners were significantly more abundant in sites where Eucalypts were present. The Noisy Miner can meet most of its nutritional needs from manna, honeydew and lerp gathered from the foliage of Eucalypts.[26] Lower numbers of Noisy Miner were recorded at banksias and grevilleas than other large honeyeaters such as Little Wattlebird (*Anthochaera chrysoptera*) and Red Wattlebird (*Anthochaera carunculata*).[50]

Detailed studies of the diet of the Noisy Miner record it eating a range of foods including: spiders; insects (leaf beetles, ladybirds, stink bugs, ants, moth and butterfly larvae); nectar (from Jacaranda mimosifolia, Erythrina variegata, Lagunaria patersonia, Callistemon salignus, Callistemon viminalis, Eucalypts Argyle Apple, Sugar Gum, Yellow Gum, Grey Ironbark, and Grey Gum, Banksia ericifolia, B.*integrifolia*, B.*serrata*, Grevillea aspleniifolia, G.*banksii*, G.*hookeriana*, G.*juniperina*, G.*rosmarinifolia*, and Flowering Quince); seeds from oats, wheat and Pepper Tree; fruit from Saltbush, Mistletoe and Crabapple; frogs and skinks; and other matter such as bread, pieces of meat and cheese, and food scraps.

In the first study to demonstrate different learning techniques in a single species, the Noisy Miner was found to employ different cognitive strategies depending upon the resource it was foraging. When searching for nectar, which does not move but is readily depleted, the Noisy Miner uses a spatial memory-based strategy, identifying characteristics of the environment—a strategy that is efficient in new environments and is not affected by changes in the bird's activities. When searching for invertebrates, however, it appears to employ a different strategy based on learned rules of insect movement (they improve at finding invertebrates with practice). The two different strategies imply the existence of adapted cognitive mechanisms, capable of responding appropriately to different foraging contexts.[51]

[edit] Breeding

The Noisy Miner does not use a stereotyped courtship display; displays can involve a "driving" where the male jumps or flies at the female from 1–2 metres (3.3–6.6 ft) away, and if she moves away he pursues her aggressively. The female may perform a "bowed-wing display" where the wings and tail are spread and quivered, with the wings arched and the head pointing down. The male may adopt a vertical or horizontal "eagle display" with wings and tail spread wide and held still for several seconds. Copulation is frequent and conspicuous, with both males and females copulating with several birds, while other members of the colony display or otherwise interfere with the mating pair.[43] Copulation usually occurs on larger, exposed branches close to the nest site and can occur at any time of the day, although slightly more often between 11:00 and 13:00 when communal activities are less frequent. The frenzied courtship activity had led to speculation that the female mates promiscuously to recruit males to help care for the young, however recent genetic testing shows that 96.5% of Noisy Miner broods result from monogamous mating and that multiple paternity is rare. An observation of banded birds noted that while females copulated repeatedly, it was always with the same male. Mate switching between broods is uncommon, with pairs staying together over several years.[53]

The Noisy Miner breeds all year long, with most activity from July through November, though the peak period is subject to seasonal variations with sharp

peaks in laying activity when conditions are particularly favourable for raising young. The nest is built in prickly or leafy trees, and the Noisy Miner is often recorded nesting in eucalypts, and also in wattles, Araucaria, Banksia, Bursaria, Hibiscus, mistletoe, Melaleuca, Pittosporum, Schinus and jacaranda. It seems to prefer moderately dense foliage for nesting, often near the end of drooping horizontal branches. Support for the nest may be the primary criterion of a suitable nest site, rather than characteristics of the vegetation or location.[54] The female alone builds the nest, which is deep and cup-shaped, woven of twigs and grasses with other plant material, animal hair and spider webs. Occasionally the nest will include man-made materials such as twine, scraps of material, and tissue paper. It is lined with wool, hair, feathers, flowers or plant down, and padded with a circular mat woven from fibres pulled from the cocoons of the processional caterpillar. The female Noisy Miner walks around on the ground close to the nest site, picking up material.[54] She gathers material from disused nests of other birds, or dismantles its most recent nest to build a new one. The female completes the nest in five or six days.[54] On average nests have an external diameter of 15â ~17.8 centimetres (5.9â ~7.0Â in) and an external depth of 9â ~11.4 centimetres (3.5â ~4.5Â in). The internal depth of the nest is around 5.5 centimetres (2.2Â in).

Eggs vary greatly in size, shape and markings, but are generally elongated ovals; white to cream or pinkish or buff coloured; freckled, spotted or blotched with reddish brown to chestnut or a purplish red, sometimes with underlying markings of violet or purplish grey. The clutch consists of two to four eggs. Incubation is by the female only, and the incubation period is around sixteen days. Hatching is asynchronous, with up to six days being recorded between the hatching of the first and last chicks in a clutch. Young are naked at hatching, and develop a cover of down within two to three days. The fledging period is around sixteen days, and young begin to find food for themselves between twenty-six and thirty days after fledging, but are still regularly fed by adults to thirty-five days. The young leave the nest before they are fully fledged, and only able to fly downwards, and scramble up. They do not go far from the nest, return to it at night, and take some weeks to completely leave the nest. Many fledglings are found on the ground and in low shrubs during this period, where they continue to be cared for until they can make their way up into the trees. These birds are often mistakenly "rescued". The fledglings seek out siblings if separated, and huddle together for up to three weeks after fledging.

The Noisy Miner has some of the largest group sizes of any communally breeding bird, with up to twenty males and one female attending a single brood.[58] Only males help with a nest, and while many birds may be associated with a particular brood, some males devote all their time to a single nest, while others spread their helping efforts across five or six nests.[53] Behavioural evidence and genetic testing indicate that helpers are male offspring of the breeding pair, or full siblings of the male parent.[53] Males nearly always bring food to the nestling singly, and if several arrive at once one will pass food to a nestling while the others wait. The female leaves the nest quickly when a male bird arrives, and never takes food from one of the helpers. Communal feeding of the young increases after fledging, and the young beg for food with constant â "chip chipâ calls and gaping mouths. The female rarely feeds the young birds after they have fledged.

[edit] Nest predation

Cooperative breeding has been described as a strategy for decreasing nest predation,[59] although one study found no relationship between the number of helpers visiting a nest site and its success or failure. Noisy Miners were seen to have a range of strategies to increase their breeding success including multiple broods, laying eggs early in the season, nesting low in the canopy and group mobbing of predators; these measures did not guarantee against nest failure due to the diversity of potential predators in the Noisy Miner's open woodland habitat.[60]

[edit] Conservation status

Being abundant throughout its significant range, the Noisy Miner is considered of Least Concern for conservation,[1] and its extreme population densities in some areas actually constitute a threat to other species. The strong correlation between the presence of Noisy Miners and the absence of avian diversity has been well documented.[61] The role played by the Noisy Miner in the steep decline of many woodland birds, its impact on endangered species with similar foraging requirements, and the level of leaf damage leading to die-back that accompanies the exclusion of insectivorous birds from remnant woodlands, means that any strategy to restore avian diversity will need to take account of the management of Noisy Miner populations.[62] Some habitat restoration and revegetation projects have inadvertently increased the problem of the Noisy Miner by establishing the open eucalypt habit that they prefer. A focus of many regeneration projects has been the establishing of habitat corridors that connect patches of remnant forest, and the use of Eucalypts as fast-growing nurse species. Both practices have sound ecological value, but allow the Noisy Miner to proliferate, so conservation efforts are being modified by planting a shrubby understory with the eucalypts, and avoiding the creation of narrow protrusions, corners or clumps of trees in vegetation corridors.[34][63] A field study conducted in the Southern Highlands found that Noisy Miners tended to avoid areas dominated by wattles, species of which in the study area had bipinnate leaves. Hence the authors proposed revegetation projects include at least 15% Acacia species with bipinnate leaves if possible, as well as shrubby understory plants.[64]

Translocation of Noisy Miners is unlikely to be a solution to their overabundance in remnant habitats. In a Victorian study where birds were banded and relocated, colonies moved into the now unpopulated area but soon returned to their original territories. The translocated birds did not settle in a new territory. They were not assimilated into resident populations of miners, but instead wandered up to 4.2 kilometres (2.6Â mi) from the release point, moving through apparently suitable habitat occupied by other minersâ ~at least for the first 50Â days following translocation. Two birds with radio tracking devices travelled 18 kilometres (11Â mi) back to their site of capture.[65] Although Noisy Miners are protected across Australia, and a permit is required to cull them, culling has been proposed as the most humane and practical method of reducing their impact, particularly where combined with rehabilitation of the habitat to suit a wider variety of bird life.[62] An unsanctioned cull took place on private rural property over 1991 and 1992, which reportedly resulted in an increase in species diversity.[66]

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#### [edit] External links

Sir Henry Joseph Wood, CH (3 March 1869Â â ^ 19 August 1944) was an English conductor best known for his association with London's annual series of promenade concerts, known as the Proms. He conducted them for nearly half a century, introducing hundreds of new works to British audiences. After his death, the concerts were officially renamed in his honour as the "Henry Wood Promenade Concerts", although they continued to be generally referred to as "the Proms".

Born in modest circumstances to parents who encouraged his musical talent, Wood started his career as an organist. During his studies at the Royal Academy of Music, he came under the influence of the voice teacher Manuel Garcia and became his accompanist. After similar work for Richard D'Oyly Carte's opera companies on the works of Arthur Sullivan and others, Wood became the conductor of a small operatic touring company. He was soon engaged by the larger Carl Rosa Opera Company. One notable event in his operatic career was conducting the British premiere of Tchaikovsky's *Eugene Onegin* in 1892.

From the mid-1890s until his death, Wood focused on concert conducting. He was engaged by the impresario Robert Newman to conduct a series of promenade concerts at the Queen's Hall, offering a mixture of classical and popular music at low prices. The series was successful, and Wood conducted annual promenade series until his death in 1944. By the 1920s, Wood had steered the repertoire entirely to classical music. When the Queen's Hall was destroyed by bombing in 1941, the Proms moved to the Royal Albert Hall.

Wood declined the chief conductorships of the New York Philharmonic and Boston Symphony Orchestras, believing it his duty to serve music in the United

Kingdom. In addition to the Proms, he conducted concerts and festivals throughout the country and also trained the student orchestra at the Royal Academy of Music. He had an enormous influence on the musical life of Britain over his long career: he and Newman greatly improved access to classical music, and Wood raised the standard of orchestral playing and nurtured the taste of the public, presenting a vast repertoire of music spanning four centuries.

[edit] Biography

[edit] Early years

Wood was born in Oxford Street, London, the only child of Henry Joseph Wood and his wife Martha, née Morris. Wood senior had started in his family's pawnbroking business, but by the time of his son's birth he was trading as a jeweller, optician and engineering modeller, much sought-after for his model engines.[1] It was a musical household: Wood senior was an amateur cellist and sang as principal tenor in the choir of St Sepulchre-without-Newgate, known as "the musicians' church".[n 1] His wife played the piano and sang songs from her native Wales. They encouraged their son's interest in music, buying him a Broadwood piano, on which his mother gave him lessons.[3] The young Wood also learned to play the violin and viola.[4]

Wood received little religious inspiration at St Sepulchre, but was deeply stirred by the playing of the resident organist, George Cooper, who allowed him into the organ loft and gave him his first lessons on the instrument.[5] Cooper died when Wood was seven, and the boy took further lessons from Cooper's successor, Edwin M. Lott, for whom Wood had much less regard.[4] At the age of ten, through the influence of one of his uncles, Wood made his first paid appearance as an organist at St Mary Aldermanbury, being paid half a crown.[n 2] In June 1883, visiting the Fisheries Exhibition at South Kensington with his father, Wood was invited to play the organ in one of the galleries, making a good enough impression to be engaged to give recitals at the exhibition building over the next three months.[7] At this time in his life, painting was nearly as strong an interest as music, and he studied in his spare time at the Slade School of Fine Art. He remained a life-long amateur painter.[n 3]

After taking private lessons from the musicologist Ebenezer Prout, Wood entered the Royal Academy of Music at the age of seventeen, studying harmony and composition with Prout, organ with Charles Steggall, and piano with Walter Macfarren. It is not clear whether he was a member of Manuel Garcia's singing class,[n 4] but it is certain that he became its accompanist and was greatly influenced by Garcia.[10] Wood also accompanied the opera class, taught by Garcia's son Gustave.[11] Wood's ambition at the time was to become a teacher of singing, and he gave singing lessons throughout his life. He attended the classes of as many singing teachers as he could,[10] although by his own account, "I possess a terrible voice. Garcia said it would go through a brick wall. In fact, a real conductor's voice." [12]

On leaving the Royal Academy of Music in 1888, Wood taught singing privately and was soon very successful, attracting "more singing pupils than I could comfortably deal with" [13] at half a guinea an hour.[n 5] He also worked as a répétiteur. According to his memoirs, he worked in that capacity for Richard D'Oyly Carte during the rehearsals for the first production of *The Yeomen of the Guard* at the Savoy Theatre in 1888.[14] His biographer Arthur Jacobs doubts this and discounts exchanges Wood purported to have had with Sir Arthur Sullivan about the score.[15] Jacobs describes Wood's memoirs as "vivacious in style but factually unreliable".[16]

It is certain, however, that Wood was répétiteur at Carte's Royal English Opera House for Sullivan's grand opera *Ivanhoe* in late 1890 and early 1891, and for André Messager's *La Basoche* in 1891–92.[17] He also worked for Carte at the Savoy as assistant to François Cellier on *The Nautch Girl* in 1891.[17] Wood remained devoted to Sullivan's music and later insisted on programming his concert works when they were out of fashion in musical circles.[18] During this period, he had several compositions of his own performed, including an oratorio, *St. Dorothea* (1889), a light opera, *Daisy* (1890), and a one-act comic opera, *Returning the Compliment* (1890).[17]

Wood recalled that his first professional appearance as a conductor was at a choral concert in December 1887. Ad hoc engagements of this kind were commonplace for organists, but they brought little prestige such as was given to British conductor-composers such as Sullivan, Charles Villiers Stanford and Alexander Mackenzie, or the rising generation of German star conductors led by Hans Richter and Arthur Nikisch.[19] His first sustained work as a conductor was his 1889 appointment as musical director of a small touring opera ensemble, the Arthur Rouseby English Touring Opera. The company was not of a high standard, with an orchestra of only six players augmented by local recruits at each tour venue. Wood eventually negotiated a release from his contract,[20] and after a brief return to teaching he secured a better appointment as conductor for the Carl Rosa Opera Company in 1891. For that company he conducted *Carmen*, *The Bohemian Girl*, *The Daughter of the Regiment*, *Maritana*, and *Il trovatore*. [21] This appointment was followed by a similar engagement with a company set up by former Carl Rosa singers.[22]

When Signor Lago, formerly impresario of the Imperial Opera Company of St. Petersburg, was looking for a second conductor to work with Luigi Arditi for a proposed London season, Garcia recommended Wood.[23] The season opened at the newly rebuilt Olympic Theatre in London, in October 1892, with Wood conducting the British premiere of Tchaikovsky's *Eugene Onegin*. [24] At that time the operatic conductor was not seen as an important figure, but the critics who chose to mention the conducting gave Wood good reviews.[n 6] The work was not popular with the public, and the season was cut short when Lago absconded, leaving the company unpaid.[26] Before that debacle, Wood had also conducted performances of *Maritana* and rehearsed *Oberon* and *Der Freischütz*. [17] After the collapse of the Olympic opera season, Wood returned once more to his singing tuition. With the exception of a season at the Opera Comique in 1896, Wood's subsequent conducting career was in the concert hall.[27]

[edit] Early years of the Proms

In 1894 Wood went to the Wagner festival at Bayreuth where he met the conductor Felix Mottl,[8] who subsequently appointed him as his assistant and chorus master for a series of Wagner concerts at the newly built Queen's Hall in London.[28] The manager of the hall, Robert Newman, was proposing to run a ten-week season of promenade concerts and, impressed by Wood, invited him to conduct.[28] There had been such concerts in London since 1838, under conductors from Louis Antoine Jullien to Arthur Sullivan.[29] Sullivan's concerts in the 1870s had been particularly successful, because he offered his audiences something more than the usual light music. He introduced major classical works, such as Beethoven symphonies, normally restricted to the more expensive concerts presented by the Philharmonic Society and others.[30] Newman aimed to do the same: "I am going to run nightly concerts and train the public by easy stages. Popular at first, gradually raising the standard until I have created a public for classical and modern music." [31]

Newman's determination to make the promenade concerts attractive to everyone led him to permit smoking during concerts, which was not formally prohibited at the Proms until 1971.[32] Refreshments were available in all parts of the hall throughout the concerts, not only during intervals.[33] Prices were considerably lower than those customarily charged for classical concerts: the promenade (the standing area) was one shilling, the balcony two shillings, and the grand circle (reserved seats) three and five shillings.[34][n 7]

Newman needed to find financial backing for his first season. Dr George Cathcart, a wealthy ear, nose and throat specialist, offered to sponsor it on two conditions: that Wood should conduct every concert, and that the pitch of the orchestral instruments should be lowered to the European standard diapason normal. Concert pitch in England was nearly a semitone higher than that used on the continent, and Cathcart regarded it as damaging for singers' voices.[35] Wood, from his experience as a singing teacher, agreed.[36] As members of Wood's brass and woodwind sections were unwilling to buy new low-pitched instruments, Cathcart imported a set from Belgium and lent them to the players. After a season, the players recognised that the low pitch would be permanently

adopted, and they bought the instruments from him.[35]

On 10 August 1895, the first of the Queen's Hall Promenade Concerts took place. Among those present who later recalled the opening was the singer Agnes Nicholls:[37]

Just before 8 o'clock I saw Henry Wood take up his position behind the curtain at the end of the platform â ^ watch in hand. Punctually, on the stroke of eight, he walked quickly to the rostrum, buttonhole and all, and began the National Anthem... A few moments for the audience to settle down, then the Rienzi Overture, and the first concert of the new Promenades had begun.

The rest of the programme comprised, in the words of an historian of the Proms, David Cox, "for the most part... blatant trivialities." [38] Within days, however, Wood was shifting the balance from light music to mainstream classical works, with Schubert's Unfinished Symphony and further excerpts from Wagner operas.[39] Among the other symphonies Wood conducted during the first season were Schubert's Great C Major, Mendelssohn's Italian and Schumann's Fourth. The concertos included Mendelssohn's Violin Concerto and Schumann's Piano Concerto.[40] During the season Wood presented 23 novelties, including the London premieres of pieces by Richard Strauss, Tchaikovsky, Glazunov, Massenet and Rimsky-Korsakov.[41] Newman and Wood soon felt able to devote every Monday night of the season principally to Wagner and every Friday night to Beethoven, a pattern that endured for decades.[42]

The income from the concerts did not permit generous rehearsal time. Wood had nine hours to rehearse all the music for each week's six concerts.[43] To gain the best results on so little rehearsal, Wood developed two facets of his conducting that remained his trademark throughout his career. First, he bought sets of the orchestral parts and marked them all with minutely detailed instructions to the players; secondly he developed a clear and expressive conducting technique. An orchestral cellist wrote that "if you watched him, you couldn't come in wrong." [44] The violist Bernard Shore wrote, "You may be reading at sight in public, but you can't possibly go wrong with that stick in front of you". [45] Thirty-five years after Wood's death, André Previn recounted a story by one of his players who recalled that Wood "had everything planned out and timed to the minute ... at 10 a.m. precisely his baton went down. You learned things so thoroughly with him, but in the most economical time." [46]

Another feature of Wood's conducting was his insistence on accurate tuning; before each rehearsal and concert he would check the instrument of each member of the woodwind and string sections against a tuning fork.[47] He persisted in this practice until 1937, when the excellence of the BBC Symphony Orchestra persuaded him that it was no longer necessary.[48] To improve ensemble, Wood experimented with the layout of the orchestra. His preferred layout was to have the first and second violins grouped together on his left, with the cellos to his right, a layout that has since become common.[49]

Between the first and second season of promenade concerts, Wood did his last work in the opera house, conducting Stanford's new opera Shamus O'Brien at the Opera Comique. It ran from March until July 1896, leaving Wood enough time to prepare the second Queen's Hall season, which began at the end of August.[50] The season was so successful that Newman followed it with a winter season of Saturday night promenade concerts, but despite being popular they were not a financial success, and were not repeated in later years.[51] In January 1897 Wood took on the direction of the Queen's Hall's prestigious Saturday afternoon symphony concerts.[16] He continually presented new works by composers of many nationalities, and was particularly known for his skill in Russian music. Sullivan wrote to him in 1898, "I have never heard a finer performance in England than that of the Tchaikovsky symphony under your direction last Wednesday". [52] Seventy-five years later, Sir Adrian Boult ranked Wood as one of the two greatest Tchaikovsky conductors in his long experience.[53] Wood also successfully challenged the widespread belief that Englishmen were not capable of conducting Wagner.[54] When Wood and the Queen's Hall Orchestra

performed at Windsor Castle in November 1898, Queen Victoria chose Tchaikovsky and Wagner for the programme.[16] Wood, who modelled his appearance on Nikisch, took it as a compliment that the queen said to him, "Tell me, Mr Wood, are you quite English?"[55]

In 1898, Wood married one of his singing pupils, Olga Michailoff, a divorcee a few months his senior.[n 8] Jacobs describes it as "a marriage of perfect professional and private harmony".[56] As a singer, with Wood as her accompanist, she won praise from the critics.[57]

[edit] Early 20th century

The promenade concerts flourished through the 1890s, but in 1902 Newman, who had been investing unwisely in theatrical presentations, found himself unable to bear the financial responsibility for the Queen's Hall Orchestra and was declared bankrupt. The concerts were rescued by the musical benefactor Sir Edgar Speyer, a banker of German origin. Speyer put up the necessary funds, retained Newman as manager of the concerts, and encouraged him and Wood to continue with their project of improving the public's taste.[58] At the beginning of 1902, Wood accepted the conductorship of that year's Sheffield triennial festival. He continued to be associated with that festival until 1936, changing its emphasis from choral to orchestral pieces. A German critic, reviewing the festival for a Berlin publication, wrote, "Two personalities now represent a new epoch in English musical life â ^ Edward Elgar as composer, and Henry J. Wood as conductor." [59] Later in the year, overtaxed by his enormous workload, Wood's health broke down. Even though this was during the Proms season, Cathcart insisted that Wood should have a complete break and change of scene. Leaving the leader of the orchestra, Arthur Payne, to conduct during his absence, Wood and his wife took a cruise to Morocco, missing the Proms concerts from 13 October to 8 November.[60]

In the early years of the Proms there were complaints in some musical journals that Wood was neglecting British music.[61] In 1899 Newman unsuccessfully attempted to secure for Wood the premiere of Elgar's Enigma Variations,[62] but in the same year Newman passed up the opportunity to introduce the music of Delius to London concertgoers.[63] By the end of the first decade of the new century, however, Wood's reputation in conducting British music was in no doubt; he gave the world, British or London premieres of more than a hundred British works between 1900 and 1910.[60][64] Meanwhile, he introduced his audiences to many European composers. In the 1903 season, he programmed symphonies by Bruckner (No. 7), Sibelius (No. 1), and Mahler (No. 1). In the same year, he introduced several of Richard Strauss's tone poems to London, and in 1905 he gave Strauss's Symphonia Domestica. This prompted the composer to write, "I cannot leave London without an expression of admiration for the splendid Orchestra which Henry Wood's master hand has created in such a short time." [65]

Creating the orchestra admired by Strauss had not been achieved without a struggle. In 1904, Wood and Newman tackled the deputy system, in which orchestral players, if offered a better-paid engagement, could send a substitute to a rehearsal or a concert. The treasurer of the Royal Philharmonic Society described it thus: "A, whom you want, signs to play at your concert. He sends B (whom you don't mind) to the first rehearsal. B, without your knowledge or consent, sends C to the second rehearsal. Not being able to play at the concert, C sends D, whom you would have paid five shillings to stay away." [66] After a rehearsal in which Wood was faced with a sea of entirely unfamiliar faces in his own orchestra, Newman came on the platform to announce: "Gentlemen, in future there will be no deputies; good morning." [67] Forty players resigned en bloc and formed their own orchestra: the London Symphony Orchestra. Wood bore no grudge and attended their first concert, although it was 12 years before he agreed to conduct the orchestra.[68]

Wood had great sympathy for rank-and-file orchestral players and strove for improvements in their pay.[69] He sought to raise their status and was the first British conductor to insist that the orchestra should stand to acknowledge applause along with the conductor.[70] He introduced women into the

Queen's Hall Orchestra in 1913.[9] He said, "I do not like ladies playing the trombone or double bass, but they can play the violin, and they do." [71] By 1918 Wood had 14 women in his orchestra.[72]

Wood conducted his own compositions and arrangements from time to time. He gave his *Fantasia on Welsh Melodies* and *Fantasia on Scottish Melodies* on successive nights in 1909. He composed the work for which he is most celebrated, *Fantasia on British Sea Songs*, for a concert in 1905, celebrating the centenary of the Battle of Trafalgar. It caught the public fancy immediately, with its mixture of sea-shanties, together with Handel's "See the Conquering Hero Comes" and Arne's "Rule, Britannia!". He played it at the Proms more than 40 times, and it became a fixture at the "Last Night of the Proms", the lively concert marking the end of each season. It remained so under his successors, though often rearranged, notably by Sir Malcolm Sargent.[73][n 9] A highlight of the *Fantasia* is the hornpipe ("Jack's the Lad"); Wood said of it:

They stamp their feet in time to the hornpipe â ^ that is until I whip up the orchestra to a fierce accelerando which leaves behind all those whose stamping technique is not of the very finest quality. I like to win by two bars, if possible; but sometimes have to be content with a bar and a half. It is good fun, and I enjoy it as much as they.[77]

Among Wood's other works was his *Purcell Suite*, incorporating themes from Purcell's stage works and string sonatas, which Wood performed at an orchestral festival in Zurich in 1921, and orchestral transcriptions of works by a range of composers from Alb niz to Vivaldi.[78]

Wood worked with his wife for many concerts, and was her piano accompanist at her recitals. In 1906, at the Norwich music festival he presented Beethoven's *Choral Symphony* and Bach's *St Matthew Passion*, with his wife among the singers.[79] In December 1909, after a short illness, Olga Wood died.[80] Cathcart took Wood away to take his mind off his loss.[n 10] On his return, Wood resumed his professional routine, with the exception that, after Olga's death, he rarely performed as piano accompanist for anyone else; his skill in that art was greatly missed by the critics.[81] In June 1911, he married his secretary, Muriel Ellen Greatrex (1882  1967), with whom he had two daughters.[82] In the same year he accepted a knighthood,[83] and declined the conductorship of the New York Philharmonic Orchestra in succession to Mahler, as he felt it his duty to devote himself to the British public.[84]

Throughout the early part of the century, Wood was influential in changing the habits of concertgoers. Until then it had been customary for audiences at symphony or choral concerts to applaud after each movement or section. Wood discouraged this, sometime by gesture and sometimes by specific request printed in programmes. For this he was much praised in the musical and national press.[85] In addition to his work at the Queen's Hall, Wood conducted at the Sheffield, Norwich, Birmingham, Wolverhampton, and Westmorland festivals, and at orchestral concerts in Cardiff, Manchester, Liverpool, Leicester and Hull.[8] His programming was summarised in *The Manchester Guardian*, which listed the number of each composer's works played in the 1911 Proms season; the top ten were: Wagner (121); Beethoven (34); Tchaikovsky (30); Mozart (28); Dvoř k (16); Weber (16); J.S. Bach (14); Brahms (14); Elgar (14); and Liszt (13).[86]

The 1912 and 1913 Prom seasons are singled out by Cox as among the finest of this part of Wood's career. Among those conducting their own works or hearing Wood conduct them were Strauss, Debussy, Reger, Scriabin, Rachmaninoff and Schoenberg.[9] Rehearsing Schoenberg's *Five Pieces for Orchestra*, Wood urged his players, "Stick to it, gentlemen! This is nothing to what you'll have to play in 25 years' time". The critic Ernest Newman wrote: "It is not often that an English audience hisses the music it does not like, but a good third of the people at Queen's Hall last Tuesday permitted themselves that luxury after the performance of the five orchestral pieces of Schoenberg. Another third of the audience was only not hissing because it was laughing, and the remaining third

seemed too puzzled either to laugh or to hiss; so that on the whole it does not look as if Schoenberg has so far made many friends in London." [87] The composer was delighted with the performance and congratulated Wood and the orchestra warmly: "I must say it was the first time since Gustav Mahler that I heard such music played again as a musician of culture demands." [88] Wood programmed the work again in 1914, when it was much more warmly received. [88]

[edit] First World War and post-war

On the outbreak of the First World War in 1914, Newman, Wood and Speyer discussed whether the Proms should continue as planned. They had by this time become an established institution, [n 11] and it was agreed to go ahead. However, anti-German feeling forced Speyer to leave the country and seek refuge in the U.S., and there was a campaign to ban all German music from concerts. [90] Newman put out a statement declaring that German music would be played as planned: "The greatest examples of Music and Art are world possessions and unassailable even by the prejudices and passions of the hour." [91] When Speyer left Britain, the music publishers Chappell's took on the responsibility for the Queen's Hall and its orchestra. The Proms continued throughout the war years, with fewer major new works than before, although there were nevertheless British premieres of pieces by Bartók, Stravinsky and Debussy. An historian of the Proms, A. O. Morgan, wrote, "Concerts often had to be re-timed to coincide with the 'All Clear' between air raids. Falling bombs, shrapnel, anti-aircraft fire and the droning of Zeppelins were ever threatening. But [Wood] kept things on the go and in the end had a very real part to play in boosting morale." [92]

Towards the end of the war, Wood received an offer by which he was seriously tempted: the Boston Symphony Orchestra invited him to become its musical director. [93] He had been guest conductor of the Berlin and New York Philharmonic Orchestras, [94] but he regarded the Boston orchestra as the finest in the world. [17] Nonetheless, as he told Boult, "it was hard to refuse, but I felt it was a patriotic duty to remain in my own country, at the present moment." [95]

After the war, the Proms continued much as before. The second halves of concerts still featured piano-accompanied songs rather than serious classical music. Chappell's, having taken over sponsorship of the Proms and spent £35,000 keeping the Queen's Hall going during the war, wished to promote songs published by the company. The management of Chappell's were also less enthusiastic than Wood and Newman about promoting new orchestral works, most of which were not profitable. [96]

In 1921 Wood was awarded the gold medal of the Royal Philharmonic Society, the first English conductor to receive the honour. [n 12] By now he was beginning to find his position as Britain's leading conductor under challenge from rising younger rivals. Thomas Beecham had been an increasingly influential figure since about 1910. He and Wood did not like one another, and each avoided mention of the other in his memoirs. [98] Adrian Boult, who, at Wood's recommendation, took over some of his responsibilities at Birmingham in 1923, always admired and respected Wood. [99] Other younger conductors included men who had been members of Wood's orchestra, including Basil Cameron and Eugene Goossens. [100] Another protégé of Wood was Malcolm Sargent, who appeared at the Proms as a composer-conductor in 1921 and 1922. [101] Wood encouraged him to abandon thoughts of a career as a pianist and to concentrate on conducting. [102] Wood further showed his interest in the future of music by taking on the conductorship of the student orchestra at the Royal Academy of Music in 1923, rehearsing it twice a week, whenever possible, for the next twenty years. In the same year, he accepted the conductorship of the amateur Hull Philharmonic Orchestra, travelling three times a year until 1939 to rehearse and conduct its concerts. [103]

In 1925 Wood was invited to conduct four concerts for the Los Angeles Philharmonic Orchestra at the Hollywood Bowl. Such was their success, both artistic and financial, that Wood was invited back, and conducted again the following year. In addition to a large number of English pieces, Wood



programmed works by composers as diverse as Bach and Stravinsky. He again conducted there in 1934.[104]

[edit] BBC and the Proms

On his return to England from his first Hollywood trip, Wood found himself in the middle of a feud between the chairman of Chappell's, William Boosey, and the BBC. Boosey had conceived a passionate hostility to the broadcasting of music, fearing that it would lead to the end of live concerts. He attempted to prevent anyone who wished to perform at the Queen's Hall from broadcasting for the BBC. This affected many of the artists whom Wood and Newman needed for the Proms. The matter was unresolved when Newman died in 1926. Shortly afterwards, Boosey announced that Chappell's would no longer support concerts at the Queen's Hall.[105] The prospect that the Proms might not be able to continue caused widespread dismay, and there was a general welcome for the BBC's announcement that it would take over the running of the Proms, and would also run a winter series of symphony concerts at the Queen's Hall.[106]

The BBC regime brought immediate benefits. The use of the second half of concerts to promote Chappell's songs ceased, to be replaced by music chosen for its own excellence: on the first night under the BBC's control, the songs in the second half were by Schubert, Quilter and Parry rather than ballads from Chappell's.[107] For Wood, the greatest benefit was that the BBC gave him twice as much rehearsal time as he had previously enjoyed. He now had a daily rehearsal and extra rehearsals as needed.[108] He was also allowed extra players when large scores called for them, instead of having to rescore the work for the forces available.[108]

In 1929, Wood played a celebrated practical joke on musicologists and critics. "I got very fed up with them, always finding fault with any arrangement or orchestrations that I made ... 'spoiling the original' etc. etc.",[109] and so Wood passed off his own orchestration of Bach's Toccata and Fugue in D minor, as a transcription by a Russian composer called Paul Klenovsky.[n 13] In Wood's later account, the press and the BBC "fell into the trap and said the scoring was wonderful, Klenovsky had the real flare [sic] for true colour etc. ^ and performance after performance was given and asked for." [109] Wood kept the secret for five years before revealing the truth.[111] The press treated the deception as a great joke; The Times entered into the spirit of it with a jocular tribute to the lamented Klenovsky.[112][n 14]

As Wood's working life took a turn for the better, his domestic life started to deteriorate. During the early 1930s, he and his wife gradually became estranged, and their relationship ended in bitterness, with Muriel taking most of Wood's money and, for much of the time, living abroad.[n 15] She refused to divorce him.[115] The breach between Muriel and Wood also caused his estrangement from their daughters.[116] In 1934 he began a happy relationship with a widowed former pupil, Jessie Linton, who had sung for him frequently in the past under her professional name of Jessie Goldsack. One of Wood's players recalled, "She changed him. He had been badly dressed, awful clothes. Jessie got him a new evening suit, instead of the mouldy green one, and he flourished yellow gloves and a cigar ... he became human." [46] As Wood was not free to remarry, she changed her name by deed poll to "Lady Jessie Wood" and was generally assumed by the public to be Wood's wife.[117] In his memoirs, Wood mentioned neither his second marriage nor his subsequent relationship.[117][118]

In his later years, Wood came to be identified with the Proms rather than with the year-round concert season. Boult was appointed director of music at the BBC in 1930. In that capacity he strove to ensure that Wood was invited to conduct a fitting number of BBC symphony concerts outside the Prom season.[119] The BBC chose Wood for important collaborations with Bartók and Paul Hindemith,[n 16] and for the first British performance of Mahler's vast Symphony No. 8.[103] But Jacobs notes that, in the general concert repertory, Wood now had to compete against well-known foreign conductors such as Bruno Walter, Willem Mengelberg, and Arturo Toscanini, "in comparison with whom he was increasingly seen as a workhorse".[103]

[edit] Last years

In 1936, Wood was in charge of his final Sheffield festival. The choral works he conducted included the Verdi Requiem, Beethoven's Missa Solemnis, Berlioz' Te Deum, Walton's Belshazzar's Feast, and, in the presence of the composer, Rachmaninoff's The Bells.[122] The following year, Wood began planning for a grand concert to mark his fiftieth year as a conductor. The Royal Albert Hall was chosen as the venue, having a far larger capacity than the Queen's Hall. The concert was given on 5 October 1938. Rachmaninoff played the solo part in his Second Piano Concerto, and Vaughan Williams, at Wood's request, composed a short choral work for the occasion: the Serenade to Music for orchestra and 16 soloists. The other composers represented in the programme were Sullivan, Beethoven, Bach, Bax, Wagner, Handel and Elgar. The orchestra comprised players from the three London orchestras: the London Symphony, London Philharmonic and BBC Symphony Orchestras. The concert raised £9,000 for Wood's chosen charity, providing health care for musicians.[123] In the same year, Wood published his autobiography, My Life of Music.[103]

On the outbreak of the Second World War in September 1939, the BBC immediately put into effect its contingency plans to move much of its broadcasting away from London to places thought less susceptible to bombing. Its musical activities, including the orchestra, moved to Bristol.[124] The BBC withdrew not only the players, but financial support from the Proms. Wood determined that the 1940 season would nevertheless go ahead. The Royal Philharmonic Society and a private entrepreneur, Keith Douglas, agreed to back an eight-week season, and the London Symphony Orchestra was engaged. The season was curtailed after four weeks, when intense bombing forced the Queen's Hall to close.[125] The last Prom given at the Queen's Hall was on 7 September 1940. In May 1941, the hall was destroyed by bombs.[126]

It was immediately agreed that the 1941 season of Proms should be held at the Albert Hall. It was twice the size of the Queen's Hall, with poor acoustics, but a six-week series was judged a success, and the Albert Hall remained the home of the Proms. Wood, aged seventy-two, was persuaded to have an associate conductor to relieve him of some of the burden. Basil Cameron undertook the task and remained a Prom conductor until his retirement, aged eighty, in 1964.[127] The BBC brought its symphony orchestra back to London and resumed its backing of the Proms in 1942; Boult joined Cameron as Wood's associate conductor during that season.[128] In early 1943, Wood's health deteriorated, and two days after the start of that year's season, he collapsed and was ordered to have a month in bed.[129] Despite wartime vicissitudes, the 1943 season sold nearly 250,000 tickets, with an average audience of about 4,000 – many more than could have fitted into the Queen's Hall.[130]

Despite his age and the difficulties of wartime travel, Wood insisted on going to provincial cities to conduct – as much, according to Jacobs, to help the local orchestras survive as to gratify audiences.[103] His final season was in 1944. The season began well with Wood in good form, but after three weeks raids by the devastating new German flying bombs caused the government to order the closure of places of entertainment.[131] The Proms were immediately relocated to Bedford some 50 miles (80 km) away, where Wood continued to conduct. He was taken ill in early August and was unable to conduct the fiftieth anniversary Prom on 10 August; he was forbidden by his doctor even to listen to its broadcast. Wood died just over a week later on 19 August at Hitchin Hospital in Hitchin, Hertfordshire;[132] his funeral service was held in the town at St Mary's church,[133] and his ashes were interred in the Musicians' Chapel of St Sepulchre-without-Newgate.[134]

[edit] Recordings

Wood's recording career began in 1908, when he accompanied his wife Olga in "Farewell, forests" by Tchaikovsky, for the Gramophone and Typewriter Company, better known as His Master's Voice or HMV. They made eight other records together for HMV over the next two years.[135] After Olga's death, Wood signed a contract with HMV's rival, Columbia, for whom he made a series of discs between 1915 and 1917 with the singer Clara Butt, including excerpts from

Elgar's *The Dream of Gerontius*. [136] Between 1915 and 1925 he conducted 65 recordings for Columbia using the early acoustic recording process, including many discs of Wagner excerpts and a truncated version of Elgar's *Violin Concerto* with Albert Sammons as soloist. [137] When the microphone and electrical recording were introduced in 1925, Wood re-recorded the Elgar concerto, with Sammons, and made 36 other discs for Columbia over the next nine years. [138] The 1929 recording of the Elgar concerto has been reissued on compact disc and is well regarded by some critics. [n 17]

Wood was wooed from Columbia by the young Decca company in 1935. For Decca he conducted 23 recordings over the next two years, including Beethoven's *Fifth Symphony*, Elgar's *Enigma Variations* and Vaughan Williams's *A London Symphony*. [140] In 1938 he returned to Columbia, for whom his five new recordings included the *Serenade to Music* with the 16 original singers, a few days after the premiere, and his own *Fantasia on British Sea Songs*. [141]

Wood's recordings did not remain in the catalogues long after his death. The *Record Guide*, 1956, lists none of his records. [142] A few of his recordings have subsequently been reissued on compact disc, including the Decca and Columbia Vaughan Williams recordings from 1936 and 1938. [143]

#### [edit] Premieres

In Jacobs's 1994 biography, the list of premieres conducted by Wood extends to 18 pages. [144] His world premieres included Britten's *Piano Concerto*; Delius's *A Song Before Sunrise*, *A Song of Summer*, and *Idyll*; Elgar's *The Wand of Youth Suite No. 1*, *Sospiri* and the 4th and 5th *Pomp and Circumstance Marches*; and Vaughan Williams's *Norfolk Rhapsody No. 1*, *Flos Campi* and *Serenade to Music*. [64]

Wood's UK premieres included Bartók's *Dance Suite*; Chabrier's *Joyeuse Marche*; Copland's *Billy the Kid*; Debussy's *Prélude à l'après-midi d'un faune* and *Ibéria*; Hindemith's *Kammermusik 2 and 5*; Janáček's *Sinfonietta*, *Taras Bulba* and *Glagolitic Mass*; Kodály's *Dances from Galanta*; Mahler's *Symphonies Nos. 4, 7 and 8*, and *Das Lied von der Erde*; Prokofiev's *Piano Concerto No. 1* and *Violin Concerto No. 2*; Rachmaninoff's *Piano Concerto No. 1*; Ravel's *Ma Mère l'Oie*, *Rapsodie espagnole*, *La Valse* and *Piano Concerto in D*; Rimsky-Korsakov's *Capriccio Espagnol*, *Scheherazade*, and *Symphony No. 2*; Saint-Saëns's *The Carnival of the Animals*; Schumann's *Konzertstück* for four horns and orchestra; Shostakovich's *Piano Concerto No. 1* and *Symphonies Nos. 7 and 8*; Sibelius's *Symphonies Nos. 1, 6 and 7*, *Violin Concerto*, *Karelia Suite*, and *Tapiola*; Richard Strauss's *Symphonia Domestica*; Stravinsky's *The Firebird (suite)*; Tchaikovsky's *Manfred Symphony* and *Nutcracker Suite*; and Webern's *Passacaglia*. [64]

#### [edit] Honours, memorials and reputation

In addition to the knighthood bestowed in 1911, Wood's state honours were his appointments as Companion of Honour in 1944, to the Order of the Crown (Belgium; 1920), and Officer of the Legion of Honour (France; 1926). He received honorary doctorates from five English universities and was a fellow of both the Royal Academy of Music (1920) and the Royal College of Music (1923). [145]

Jacobs lists 26 compositions dedicated to Wood, including, in addition to the Vaughan Williams *Serenade to Music*, works by Elgar, Delius, Bax, Marcel Dupré, and William Walton. [145] The poet laureate, John Masefield, composed a poem of six verses in his honour, entitled "*Sir Henry Wood*", often referred to by its first line, "*Where does the uttered music go?*". Walton set it to music as an anthem for mixed choir; it received its first performance on 26 April 1946 at St Sepulchre's, on the occasion of a ceremony unveiling a memorial stained-glass window in Wood's honour. [146]

Wood is commemorated in the name of the Henry Wood Hall, the deconsecrated Holy Trinity Church in Southwark, which was converted to a rehearsal and recording venue in 1975. [147] His bust stands upstage centre in the Royal Albert Hall during the whole of each Prom season, decorated by a chaplet on the Last Night of the Proms. His collection of 2,800 orchestral scores and 1,920 sets of parts is now in the library of the Royal Academy of Music. [148] For the

Academy he also established the Henry Wood Fund, giving financial aid to students.[8] The University of Strathclyde named a building at its Jordanhill campus after him.[149] His best-known memorial is the Proms, officially "the Henry Wood Promenade Concerts", [150] but universally referred to by the informal short version.[n 18]

His biographer Arthur Jacobs wrote of Wood:

His orchestral players affectionately nicknamed him "Timber" â ^ more than a play on his name, since it seemed to represent his reliability too. His tally of first performances, or first performances in Britain, was heroic: at least 717Â works by 357Â composers. Greatness as measured by finesse of execution may not be his, particularly in his limited legacy of recordings, but he remains one of the most remarkable musicians Britain has produced.[16]

[edit] Notes and references

Notes

^ According to Wood, his father was urged to become a professional singer by the conductor Sir Michael Costa and others.[2]

^ Two shillings and sixpence: in decimal coinage, 12Â¼ pence. In terms of average earnings, this equates to more than Â£65 in current values.[6]

^ In 1911 Wood gave an exhibition of fifty sketches in oil at the Piccadilly Arcade Gallery, raising Â£200 in aid of the Queen's Hall Orchestra Endowment Fund.[8][9]

^ Wood (p. 29) lists Garcia as among his professors, but Jacobs (p. 13) notes that Wood's name does not appear among the choir lists in which Garcia's pupils all appeared.

^ Ten shillings and sixpence: 52Â¼ pence in decimal terms; in 2009 values somewhere between Â£40 (based on retail prices) and Â£275 (based on average earnings).[6] Jacobs (p. 19) suggests that Wood may have exaggerated his fee when recalling it in his memoirs.

^ George Bernard Shaw, in a long review in *The World*, commented on all the principal singers, the costumes, scenery and choreography, but did not mention the conductor.[25]

^ In decimal coinage, respectively 5, 10, 15 and 25 pence: the equivalent of approximately Â£4 to Â£20 in terms of 2009 retail prices. Tickets for formal symphony concerts at the time cost up to five times as much.[6]

^ In his memoirs Wood refers to her as "Princess Olga Ouroussoff", but according to Jacobs (p. 59) she was entitled to neither the rank nor the surname, although her mother was Princess Sofiya Urusova

^ In 2002 and 2003, the *Fantasia* was performed "with additional Songs arranged by John Wilson, Stephen Jackson (chorusmaster of the BBC Symphony Orchestra) and Percy Grainger";[74] in 2004 "with additional Songs arranged by Stephen Jackson";[75] and in 2005, 2006 and 2007 with "extra Songs arranged by Bob Chilcott".[76]

^ In his memoirs, Wood does not say where or for how long.

^ Although Wood himself did not generally use the term "the Proms", it was common currency by now even in the more formal newspapers. It was used in *The Observer* and *The Musical Times* in 1912. *The Times* and *The Manchester Guardian* used the term from 1918 and 1923 respectively.[89] Even Wood used the term when referring to the Last Night of the Proms, which he called "the Last Prom of the Season".[77]

^ Wood was only the second conductor of any nationality to receive the honour, the first being Hans von BÃ¼low in 1873. Wood received the award four years before it was given to Delius and Elgar (1925). The next conductor to receive the medal was Sir Thomas Beecham (1928).[97]

^ Cox (p. 102) states that there had been a real "Paul Klenovsky", a pupil of Glazunov who died young. Jacobs (p. 232) states that no such composer ever existed, although a Russian composer called Nicolai Klenovsky died in 1915. The *Grove Dictionary of Music and Musicians* supports the latter statement.[110]

^ Later, The Times's music critic (anonymous, but presumed to be Frank Howes, the paper's music critic at the time) was less forgiving than his colleagues. Though his predecessor had called the supposed Klenovsky work "superlatively well done",<sup>[113]</sup> Howes described it, once Wood's authorship was known, as "monstrous and inexcusable".<sup>[114]</sup>

^ After the marital split, Muriel Wood lived in Japan (her brother was British consul in Nagasaki), China and New Zealand. She did not return to England until after Wood's death.<sup>[103]</sup>

^ At BBC symphony concerts, Wood conducted Hindemith's Viola Concerto, with the composer as soloist, and his oratorio *Das Unaufhörliche*<sup>[120]</sup> and Bartók's Piano Concerto No 1 with the composer as soloist.<sup>[121]</sup> Wood also programmed their music during Proms seasons.

^ The recording by Sammons and Wood was chosen in preference to all others by the reviewer Ian Burnside on BBC Radio 3's "Building a Library" feature in July 1999.<sup>[139]</sup>

^ The histories of the concerts by Cox and Orga both use the short form in their titles.

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[edit] External links

Persondata

Name

Wood, Henry J.

Alternative names

Short description

British conductor



Date of birth  
3 March 1869  
Place of birth  
Oxford Street, London  
Date of death  
19 August 1944  
Place of death  
Hitchin Hospital, Hitchin, Hertfordshire

Sarah Trimmer (née Kirby; 6<sup>th</sup> January 1741 – 15<sup>th</sup> December 1810) was a writer and critic of 18th-century British children's literature, as well as an educational reformer. Her periodical, *The Guardian of Education*, helped to define the emerging genre by seriously reviewing children's literature for the first time; it also provided the first history of children's literature, establishing a canon of the early landmarks of the genre that scholars still use today. Trimmer's most popular children's book, *Fabulous Histories*, inspired numerous children's animal stories and remained in print for over a century.

Trimmer was also an active philanthropist. She founded several Sunday schools and charity schools in her parish. To further these educational projects, she wrote textbooks and manuals for women interested in starting their own schools. Trimmer's efforts inspired other women, such as Hannah More, to establish Sunday school programs and to write for children and the poor.

Trimmer's works are dedicated to maintaining many aspects of the social and political status quo. As a high church Anglican, she was intent on promoting the established Church of England and on teaching young children and the poor the doctrines of Christianity. Her writings outlined the benefits of social hierarchy, arguing that each class should remain in its God-given position. Yet, while supporting many of the traditional political and social ideologies of her time, Trimmer questioned others, such as those surrounding gender and the family.

#### [edit] Early life

Sarah Trimmer was born on January 6, 1741, in Ipswich to John Joshua Kirby and Sarah (née Bell); her father was a noted artist and served as President of the Society of Artists. Trimmer had one younger brother, William; she was apparently the better writer, for she would sometimes compose his school essays for him.[1] As a young girl, Trimmer attended Mrs. Justiner's boarding school in Ipswich, an experience she always remembered fondly.[2] In 1755, the family moved to London when her father, who had written several important works on perspective, became the tutor of perspective to the Prince of Wales.[3] Because of her father's connections within the artistic community, Trimmer was able to meet the painters William Hogarth and Thomas Gainsborough as well as the by-then legendary writer and critic Samuel Johnson. She made a favourable impression on Johnson when she immediately produced her pocket copy of John Milton's *Paradise Lost* (1667) to help settle a dispute between her father and Johnson over a particular passage. Johnson, delighted that she admired Milton enough to carry his works with her at all times, "subsequently invited her to his house and presented her with a volume of his famous periodical *The Rambler*".[4] In 1759, at the urging of his former pupil the Prince of Wales (soon to be George III), her father was made Clerk of the Works to the Royal Household at Kew Palace and the family moved to Kew.[5] There she met James Trimmer, whom she married on 21 September 1762; after their marriage, the couple moved to Old Brentford.[6]

#### [edit] Motherhood and philanthropy

Trimmer was close to her parents; after her marriage, she walked to visit her father every day, later accompanied by her eldest children. She and her husband had 12 children in all—six boys and six girls. Trimmer was responsible for her children's education and it was the combination of her duties as a mother and a teacher that initially sparked her interest in education.[7]

Inspired by Robert Raikes, Trimmer also became active in the Sunday school movement, founding the first Sunday school for poor children in Old Brentford

in 1786. She and two of the ministers in her parish, Charles Sturges and Charles Coates, organized a fund drive and established several schools for the poor children of the neighborhood.[8] Initially, five hundred boys and girls wanted to attend Trimmer's Sunday school; unable to accommodate such numbers, she decided to exclude those under five years of age and restricted each family to one pupil.[8] The parish set up three schools, each with about thirty studentsâone for older boys, one for younger boys and one for girls.[8] While some other educational reformers of the period such as Mary Wollstonecraft argued for co-educational instruction, Trimmer was opposed to such pedagogical changes; she believed in educating the sexes separately.[9] The students were taught to read, with the aim of teaching them to read the Bible. The students were also encouraged to keep cleanâ"a present of a brush and comb was given to all who desired them".[10] Trimmer's schools became so well known and admired that Raikes, Trimmer's initial inspiration, recommended those who needed assistance organizing a Sunday school to turn to Trimmer; even Queen Charlotte asked Trimmer's advice on founding a Sunday school at Windsor.[11]

After her visit to the queen, Trimmer was inspired to write *The Economy of Charity*, which describes how readers, specifically women, can establish Sunday schools in their own communities.[12] However, her book accomplished much more than this. While proponents of Sunday schools such as Raikes and Trimmer claimed that the schools would help control the growing social unrest of the poor, critics claimed that these schools would only encourage the social upheaval they were trying to quell.[13] The Hon. John Byng, for example, issued the dire warning that "not only would education 'teach them to read seditious pamphlets, books and publications against Christianity'âbut it would render them unfit for 'the laborious employment to which their rank in society had destined them'".[14] Trimmer agreed that the poor were "destined" by God to be poor but would argue that her schools reinforced that divine social hierarchy. The Sunday school debate was waged in churches, in Parliament and in print; in publishing *The Economy of Charity*, Trimmer was entering this vigorous debate.

As scholar Deborah Wills has argued: "[*The Economy of Charity*] is actually informed by a highly politicized subtext which anticipates, subverts, and counters anti-Sunday School arguments. [Trimmer] outlines a programme through which the Sunday School, when properly administered, can serve as a means of instituting social control and intensifying hierarchy. âTrimmerâs carefully modest and unassuming text is thus revealed as a middle-class manifesto for the appropriation of social, political, and religious power in the name of moral instruction." [13]

For example, Trimmer contends that Sunday schools teach their pupils not merely to read the Bible but how to draw the proper theological and political conclusions from it.[15] Furthermore, Trimmer argues that the responsibility for educating the poor rests on the shoulders of the middle class alone. By eliminating the aristocracy from an active role in her philanthropic programs, "Trimmer ensures that those who actually regulate the Sunday School curriculum are those who will both embody and perpetuate bourgeois cultureâ".[16] As Wills points out, this distinguishes her from other philanthropists of the time such as Hannah More.

â O Lord, I wish to promote thy holy religion which is dreadfully neglected. I am desirous to save young persons from the vices of the age.â  
â Sarah Trimmer[17]

Trimmer also founded and oversaw charity schools in her neighborhood. She directed promising students from her Sunday schools, which met only once a week, to these charity schools, which met several times a week. As she wrote in her journal, these schools seemed to her to "afford a happy prospect of rescuing many poor children from vice and profligacy".[18] While the Sunday schools were funded by subscription, that is, donations from people within the parish, the charity schools were largely funded by the Society for the Propagation of Christian Knowledge (SPCK), which had funded the first charity schools around a century earlier.[19] Trimmer criticized the rote learning that went on in traditional charity schools and tried to institute a more dynamic

catechetical method in her own schools that would stimulate students to ask questions.[9] She wrote in her journal, "my earnest desire is to compose a course of teaching for Charity Schools, by which the children may learn in reality, and not by rote, the principles of the Christian Religion, as taught in the Scriptures".[20] Trimmer also established schools of industry to which she directed her less promising pupils. These schools would teach girls, for example, how to knit and spin. Initially, Trimmer believed that the schools would turn a profit since the girls would spin and knit all day long; however, the girls were unskilled and turned out poor products that could not be sold. Trimmer viewed this project as a failure.[19]

Wilfried Keutsch, a modern scholar of the 18th century, has criticized Trimmer's projects as naive and moralistic:

[There is] no indication that Sarah Trimmer based her many efforts to instruct and improve the children of the poor on detailed social analysis, but it is apparent that she was deeply disturbed not only by their needs but also about the increasing pauperization of the country. Whether she understood that society was changing from a more feudal to a more modern bourgeois structure, in which many of the stabilizing old personal ties were removed and replaced by the cash-nexus, is not clear. "on the whole she displays no interest in the social and economic causes of poverty. Instead she offers a model of improvement which rests on a rigorous division of the working people and the poor into black and white: the deserving and the undeserving poor, the godly and the ungodly, the respectable and dutiful and the rebellious and undutiful, the idle and the industrious, that is, on an alternating identification of poverty with virtue and vice.[21]

Although Sunday schools such as the ones established by Trimmer have often been characterized by modern scholars as a repressive device used by the middle class to impose their morality on the lower classes, Thomas Laqueur has argued that the poor embraced this opportunity to obtain literacy and disregarded many of the moral lessons forced upon them.[22]

[edit] Literary career

In a literary career that spanned more than a quarter of a century, Trimmer authored somewhere between 33[23] and 44 texts.[24] She wrote in a wide range of genres: textbooks, teaching manuals, children's literature, political pamphlets and critical periodicals. While many of her texts were for children, some of her works, such as *The Economy of Charity*, were also for specific adult audiences. Still others were written for both children and adults, such as *The Servant's Friend* (1786), which was meant to instruct servants of all ages.[23]

Throughout her career, Trimmer worked with four different publishers — John Marshall, T.N. Longman, G. Robinson, and Joseph Johnson — and, by 1800, she had the most works of any author in the Newbery catalogue, the catalogue that sold the most children's literature.[23] Eventually, Trimmer stopped publishing with Joseph Johnson, because she disagreed with his politics — he was a supporter of the French Revolution and was publishing works that she considered subversive.[25]

[edit] *An Easy Introduction to the Knowledge of Nature*

Trimmer's first book was *An easy introduction to the knowledge of nature, and reading the holy scriptures, adapted to the capacities of children* (1780), which built on the revolution in children's literature begun by Anna Laetitia Barbauld.[26] In the "Preface", Trimmer writes that Isaac Watts's *Treatise on Education* was the inspiration for the work and that "a book containing a kind of general survey of the works of Nature would be very useful, as a means to open the mind by gradual steps to the knowledge of the SUPREME BEING, preparatory to their reading the holy scriptures".[27] In the text, the reader follows a mother and her two children, Charlotte and Henry (perhaps named after two of Trimmer's own children[28]), on a series of nature walks during which the mother describes the wonders of God's creation. In 1793, a version of this

book was added to the catalogue of the Society for the Propagation of Christian Knowledge; after 77 years, it had sold over 750,000 copies.[29]

Aileen Fyfe, a historian interested in the relationship between science and religion, has argued that Trimmer's text, although inspired by Barbauld's books, differs dramatically from Barbauld's in its religious orientation. Barbauld was a Dissenter and more inclined, according to Fyfe, to "encourage curiosity, observation, and reasoning".[30] In contrast, Trimmer, as a high church Anglican, depicted nature as "awe-inspiring" and as a reflection not only of God's divinity but also of his goodness.[31] These beliefs are reflected even in the structure of the text; Trimmer's aim was to convey a sense of the awe, therefore her text does not progress in an orderly fashion through a study of the natural world. Barbauld's texts, however, emphasize the slow accumulation of knowledge as well as logical thinking. Thus *Evenings at Home*, which she co-wrote with her brother, John Aikin, has a "systematic structure".[32] Another difference between the two writers lies in the role of authority: whereas Barbauld's texts and those she wrote with her brother, emphasize dialogues between teacher and pupil, Trimmer's textual conversations, Fyfe notes, were "controlled by the parent".[30]

However, Donelle Ruwe, a scholar of 18th-century children's literature, has pointed out that *An Easy Introduction* is not entirely a conservative text; it challenges 18th-century notions of the proper roles for women laid out in conduct manuals such as those written by John Gregory and James Fordyce. The mother in Trimmer's text acts as a "spiritual leader" and demonstrates that a woman is capable of "theological reasoning".[29] Such depictions challenge Jean-Jacques Rousseau's claims that women are capable only of memorizing religious dogma and not of sophisticated reasoning. Furthermore, Trimmer's mother tries to educate her children in a straightforward manner instead of employing the "manipulative" tricks of the tutor in Rousseau's *Emile*. [29]

A few years later, inspired by Madame de Genlis's *Adèle et Théodore* (1782), Trimmer commissioned sets of illustrations of the Bible for which she provided the commentary; she also published print/commentary sets of ancient history and British history. These various sets were very popular and could be purchased together (commentary and prints) or individually. The prints were usually hung on walls or bound into books.[33]

[edit] Relations with John Marshall

The children's publisher John Marshall & Co. produced *The Footstep to Mrs. Trimmer's Sacred History*: for the instruction and amusement of little children in 1785. Trimmer had always advocated the use of pictorial material in books for children,[34] and the publisher, who was experienced in producing cheap popular prints, was in a good position to publish them for her. In May 1786 Marshall published a series of prints of scripture history, designed as ornaments for those apartments in which children receive the first rudiments of their education. The prints were sold pasted on boards, for hanging up in nurseries at 1s 6d, in sheets for 8d, sewed in marbled paper for the pocket, at 10d. or else neatly bound in red leather at 1s 2d.[35] They were also published with an accompanying small book entitled, *A description of a set of prints of scripture history*, which was also available in different bindings. The venture proved to be successful and these two works were quickly followed by the publication of five similar "Series of Prints" together with accompanying "Descriptions", compiled by Mrs Trimmer, on the subjects of Ancient history (1786), Roman history (1789), English history (1789), the New Testament (1790) and the Old Testament (1797). These were hugely popular and were reprinted by the Marshalls and their successors at regular intervals over the next thirty years.

In January (1788) Mrs Trimmer and John Marshall announced a new joint venture, *The Family Magazine*; or a repository of religious instruction and rational amusement. It was a monthly periodical designed to counteract the pernicious tendency of immoral books which have circulated of late years among the inferior classes of people,[36] and usually included one engraved plate. The content consisted of "religious tales for Sunday evenings" and "moral tales for

weekdaysâ ; advice on the management of infants and on childrearing was given together with a comparative view of other nations to demonstrate that â "the poor in England possess privileges, and enjoy many comforts, which persons of their rank â | in other countries cannot enjoy.â Descriptions of animals were also included, 'in order to check the practice of cruelty to brute creation.' The final section of the magazine contained 'a selection of Ballads, Songs &c., both ancient and modern, of a Moral Tendency.' Thus, in both its objects and content, this publication introduced many of the ideas which would later bear fruit in Hannah Moreâ s more ambitious and well-known scheme for Cheap Repository Tracts of 1795. The family magazine survived for eighteen months with Trimmer as both the editor and the principal contributor, but eventually she had to give it up seemingly through exhaustion

[edit] Books for charity schools

Because, in Trimmer's opinion, there was a dearth of good educational material to use in charity schools, she decided to write her own. The series of books she produced between 1786 and 1798 were used in Britain and its colonies well into the 19th century.[24] Trimmer was an able promoter of her materials; she knew that her books would not reach large numbers of poor children in charity schools unless they were funded and publicized by the SPCK. She wrote in her journal â my scheme without its aid, will fall to the ground".[37] Thus, she joined the society in 1787. In 1793, she sent 12 copies of her treatise *Reflections upon the Education in Charity Schools with the Outlines of a Plan Appropriate Instruction for the Children of the Poor* to the subcommittee that chose the books funded by the organization. In the treatise, she argued that the current charity school curriculum was outdated (it was over 100 years old) and needed to be replaced. She suggested a list of seven books that she herself would write:

A Spelling Book in two Parts

Scripture Lessons from the Old Testament

Scripture Lessons from the New Testament

Moral Instructions from the Scriptures

Lessons on the Liturgy from the Book of Common Prayer

Exemplary Tales

The Teacher's Assistant

The committee largely accepted her proposal.[38] The Charity School Spelling Book was printed first and was the most widely-used. It was one of the first children's books for the poor that was small but still had large type and large margins (features often considered appropriate only for books for more privileged readers). The stories themselves were also innovative: they emphasized the ordinary lives of ordinary childrenâ ~"these children climbed trees, played with fire, threw cricket bats at sheep and begged in the streets".[39] The book was adopted by Andrew Bell around 1800 for his Madras system of education and by various educational societies throughout Britain and its colonies; it was even used to educate adult slaves in Antigua and Jamaica.[39]

The proposed "Scripture Lessons" became Trimmer's *An Abridgement of Scripture History*, consisting of Lessons selected from the Old Testament, for the Use of Schools and Families which was an anthology of selections from the Bible. Like the Charity School Spelling Book, it was adopted throughout the British educational system and was part of school life well into the mid-19th century. In 1798 SPCK published *Scripture Catechisms*, Part I and II; these works were intended to aid the teacher while the Abridgements (a shorthand name for the *Scripture Histories* of both the Old and New Testament that Trimmer eventually published) were intended to aid the pupil. The "Exemplary Tales" seem not to have been written exactly as planned but Trimmer's *Servant's Friend* and *Two Farmers* fulfilled the purpose she outlined in her plan of publishing pleasurable moral tales. These two books served as Sunday school prizes as well. The *Teacher's Assistant* was an instruction aid and was also widely adopted throughout British schools. The only texts not published by the SPCK

were Trimmer's adaptations and commentaries on the Book of Common Prayer, which she had printed elsewhere.[40]

[edit] Fabulous Histories

Fabulous Histories (later known as *The Story of the Robins*), Trimmer's most popular work, was first published in 1786, and remained in print until the beginning of the 20th century.[41] It tells the story of two families, a robin family and a human family, who learn to live together congenially. Most importantly, the human children and the baby robins must learn to adopt virtue and to shun vice. For Trimmer, practising kindness to animals as a child would hopefully lead one to "universal benevolence" as an adult. According to Samuel Pickering, Jr., a scholar of 18th-century children's literature, "in its depiction of 18th-century attitudes toward animals, Mrs. Trimmer's *Fabulous Histories* was the most representative children's book of the period".[42] The text expresses most of the themes that would come to dominate Trimmer's later works, such as her emphasis on retaining social hierarchies; as Tess Cosslett, a scholar of children's literature explains, "the notion of hierarchy that underpins *Fabulous Histories* is relatively stable and fixed. Parents are above children in terms of authority, and humans above animals, in terms both of dominion and compassion: poor people should be fed before hungry animals" [but] the hierarchical relation of men and women is not so clearly enforced." [43] Moira Ferguson, a scholar of the 18th and 19th centuries, places these themes in a larger historical context, arguing that "the fears of the author and her class about an industrial revolution in ascendance and its repercussions are evident. Hence, [the] text attacks cruelty to birds and animals while affirming British aggression abroad. "The text subtly opts for conservative solutions: maintenance of order and established values, resignation and compliance from the poor at home, expatriation for foreigners who do not assimilate easily." [44] A second overarching theme in the text is rationality; Trimmer expresses the common fear of the power of fiction in her preface, explaining to her childish readers that her fable is not real and that animals cannot really speak.[45] Like many social critics during the 18th century, Trimmer was concerned about fiction's potentially damaging impact on young readers. With the rise of the novel and its concomitant private reading, there was a great fear that young people and especially women would read racy and adventurous stories without the knowledge of their parents and, perhaps even more worrisome, interpret the books as they pleased. Trimmer therefore always referred to her text as *Fabulous Histories* and never as *The Story of the Robins* in order to emphasize its reality; moreover, she did not allow the book to be illustrated within her lifetime "pictures of talking birds would only have reinforced the paradox of the book (it was fiction parading as a history)".[46] Yarde has also speculated that most of the characters in the text are drawn from Trimmer's own acquaintances and family.[47]

[edit] *The Guardian of Education*

Later in her life, Trimmer published the influential *Guardian of Education* (June 1802 to September 1806), which included ideas for instructing children and reviews of contemporary children's books.[48] Although one previous attempt had been made to regularly review children's books in Britain,[49] according to Matthew Grenby, "it was a far less substantial and sustained enterprise than Trimmer's".[50] *The Guardian* included not only reviews of children's books but also extracts from texts Trimmer thought would edify her adult readers. She aimed "to assess the current state of educational policy and praxis in Britain and to shape its future direction".[51] To do so, she evaluated the educational theories of Jean-Jacques Rousseau, John Locke, Mary Wollstonecraft, Hannah More, Madame de Genlis, Joseph Lancaster, and Andrew Bell, among others. In her *Essay on Christian Education*, also published separately later, she proposed her own comprehensive educational program.

Trimmer took her reviewing very seriously and her over 400 reviews constitute a set of distinct values.[52] As Grenby puts it, "her initial questions of any children's books that came before her were always first, was it damaging to religion and second, was it damaging to political loyalty and the established

social hierarchy".[53] Religion was always Trimmer's first priority and her emphasis on Biblical inerrancy illustrates her fundamentalism.[54] She criticized books that included scenes of death, characters who were insane, and representations of sexuality, as well as books that might frighten children.[55] She typically praised books that encouraged intellectual instruction, such as Anna Barbauld's *Lessons for Children* (1778-79).

Trimmer's fundamentalism, Grenby argues, does not necessarily mark her as the rigid thinker that many critics have presumed her to be.[56] Grenby points out that Trimmer, like Rousseau, believed children were naturally good; in this, she was arguing against centuries of tradition, particularly Puritanical attitudes towards raising children.[57] She also agreed with "Rousseau's key idea [while ironically attacking Rousseau's works themselves], later taken up by the Romantics, that children should not be forced to become adults too early".[58]

The *Guardian of Education* established children's literature as a genre with her reviews. Moreover, in one of her early essays, "Observations on the Changes which have taken place in Books for Children and Young Persons", Trimmer wrote the first history of children's literature, setting out the first canon of children's literature. Its landmark books are still cited today by scholars as important in the development of the genre.[59]

From Trimmer's *A Description of a Set of Prints Taken from the New Testament*:  
"Jesus spake unto them, saying, It is I, be not afraid. And Peter answered and said Lord, if it be thou, bid me come to thee on the water: and he said, Come. And when Peter was come out of the ship, he (through the power of CHRIST) walked on the water likewise; but when he saw the wind boisterous, his faith or belief in CHRIST'S power, failed, he was afraid, and beginning to sink, he cried out, Lord, save me! And immediately JESUS stretched forth his hand and caught him, saying, O thou of little faith, wherefore didst thou doubt?"

[edit] Fairy tales

Trimmer is perhaps most famous now for her condemnation of fairy tales, such as the various translations of Charles Perrault's *Histoires ou contes du temps pass  * (originally published in 1697),[60] because they endorsed an irrational view of the world and suggested that children could become successful too easily (in other words, they did not have to work).[61] Chapbooks were the literature of the poor and Trimmer was attempting to separate children's literature from texts she associated with the lower classes; she also feared that children might gain access to this cheap literature without their parents' knowledge.[62] Trimmer criticized the values associated with fairy tales, accusing them of perpetuating superstition and unfavourable images of stepparents.[63] Rather than seeing Trimmer as a censor of fairy tales, therefore, Nicholas Tucker has argued, "by considering fairy tales as fair game for criticism rather than unthinking worship, Mrs Trimmer is at one with scholars today who have also written critically about the ideologies found in some individual stories".[64]

One of the reasons Trimmer believed fairy tales were dangerous was because they led child readers into a fantasy world where adults could not follow and control their exposure to harmful experiences.[65] She was just as horrified by the graphic illustrations included with some fairy tale collections, complaining that "little children, whose minds are susceptible of every impression; and who from the liveliness of their imaginations are apt to convert into realities whatever forcibly strikes their fancy" should not be allowed to see such scenes as Blue Beard hacking his wife's head off.[66]

[edit] French revolution and religion

In the pages of *The Guardian of Education*, Trimmer denounced the French revolution and the philosophers whose works she believed underpinned it,

particularly Jean-Jacques Rousseau. She argued that there was a vast conspiracy, organized by the atheistic and democratic revolutionaries of France, to overthrow the legitimate governments of Europe. These conspirators were attempting to overturn traditional society by "endeavouring to infect the minds of the rising generation, through the medium of Books of Education and Children's Books" (emphasis Trimmer's).[67] Her views were shaped by Abbé Barruel's *Memoirs Illustrating the History of Jacobinism* (1797-8) (she extracted large sections from this text into the *Guardian* itself) but also by her fears of the ongoing wars between France and Britain during the 1790s.[68] Trimmer emphasized Christianity above all in her writings and maintained that one should turn to God in times of trial. As M. Nancy Cutt argues in her book on children's literature, Trimmer and writers like her "claimed emphatically that the degree of human happiness was in direct proportion to the degree of submission to the divine Will. Thus they repudiated the moralists' view that learning should exalt reason and work to the temporal happiness of the individual, which was governed by the best interests of society".[69] Trimmer and her allies contended that French pedagogical theories led to an immoral nation, specifically, "deism, infidelity and revolution".[70]

[edit] Bell vs. Lancasterian school system debate

In 1789, Andrew Bell invented the Madras system of education to order to instruct British colonial subjects in India; it was a disciplinary system which employed a hierarchy of student monitors and very few teachers (economical for the colonies, Bell argued). He published a book, *Experiment in Education* (1797), in order to explain his system, one that he thought could be adapted for the poor in England (in it he endorsed many of Trimmer's own books). A year after reading the *Experiment*, an English Quaker, Joseph Lancaster, adopted many of its principles for his school in London and then published his own book, *Improvements in Education* (1803), which repeated many of Bell's ideas. Because of his Quaker sympathies, Lancaster did not encourage the teaching of the doctrines of the Established Church.[71] Trimmer, appalled by the suggestion that British children did not need to be brought up within the Established Church, wrote and published her *Comparative View of the two systems* in 1805, creating a schism between two very similar systems. According to F. J. Harvey Darton, an early scholar of children's literature, "her effect upon English education" was very considerable, even extraordinary. The two rival systems, Bell's and Lancaster's, were hotly debated all over the country, and the war between Bell and the Dragon, as a cartoonist labelled it, raged in all the magazines, even in the *Edinburgh Review*." [71] Out of the debate arose the two great societies - the National Society for Promoting the Education of the Children of the Poor in the Principles of the Established Church, and the British and Foreign School Society - upon whose work, fundamentally, the whole of [Britain's] later elementary school system was based".[72]

How large the debt of gratitude I owe, How was I counsel'd, aided, prais'd and lov'd. Let others tell, (for as the words of truth 'Tis told where'er Britannia's name is known) Thy apostolic ministry to youth, Thy faithful service to the Church and Throne. 'Tis mine, receiv'd within the social hall, The hidden gems of virtue to record; A genius pure from envy's tainting gall, Meek in reproach, and careless of reward. | For seventy years thy lamp benignly shone, And thousands hail'd it as a guiding star.[73]

~ Jane West

Trimmer's husband died in 1792; this affected her quite deeply, as is evidenced in her journal. In 1800, she and some of her daughters were forced to move to another house in Brentford. This was painful for Trimmer, who wrote in her diary:

Alas, a widow, unacquainted with the ways of the world, ignorant of legal matters, can do but little on occasions like these which now occur. After more than thirty years' residence in a house, in which I have known many comforts, and in a neighbourhood where I have endeavoured to make myself respected, I am likely to be obliged to seek for a new habitation; and there is not one within



so short a distance as to enable me to fulfil the wishes of my heart by attending to the schools. Should I find it necessary to change my abode, the schools will, I fear, unavoidably decline. I shall also be removed to a distance, from some of my children, whose society would comfort my declining years.[74]

She died in Brentford on 15 December 1810, and was buried at St Mary's, Ealing. There is a plaque memorializing her at St. George's, Brentford:

To the memory of SARAH relict of James Trimmer, resident in this parish nearly 50 years, during which she adorned the doctrine of God our Saviour in all things, by her practice a constant attendant in God's House of Prayer. In her own house an example to Christian Matrons, in her neighbourhood ministering to the necessities of all; the destitute, the afflicted and the ignorant, seeking their moral improvement by imparting Christian instruction both in private and also in the Church School raised by her exertions and fostered by her care. By her writings, edifying the members of that branch of Christ's Holy Church in which she was born and which she loved with an ardent but well tempered zeal. She obtained rest from her labours on the 15th December 1810 in the seventieth year of her age.[75]

[edit] Reception and legacy

Trimmer's most popular book, *Fabulous Histories*, was reprinted for at least 133 years and had a profound impact on generations of readers and writers.[76] In 1877, when the firm of Griffith and Farran published it as part of their "Original Juvenile Library," they advertised it as "the delicious story of Dicksy, Flapsy, and Pecksy, who can have forgotten it? It is as fresh today as it was half a century ago." [77] Tess Cosslett has also suggested that the names of Trimmer's birds – Dicksy, Pecksy, Flapsy and Robin – bear a striking resemblance to the rabbits – Flopsy, Mopsy, Cottontail and Peter – in Beatrix Potter's children's books.[78]

Trimmer also influenced the children's writers of her own age; William Godwin's *Fables, Ancient and Modern* (1805), for example, imitates Trimmer's *Ladder to Learning*. [79] Among her contemporary admirers was Frances Burney, who remarked in a letter to her sister Esther about the education of the latter's 10-year-old daughter, "Mrs. Trimmer I should suppose admirable for a girl" (as an introduction to the Scriptures). [80]

While Trimmer was highly respected for her charity work during her lifetime and for her books long after her death, her reputation began to wane at the end of the 19th century and plummeted during the 20th century. One reason for this is that her textbooks, so widely used during the first half of the century, were replaced by secular books in the second half of the century. [81] The tone of her books was no longer seen as consonant with British society. An early scholar of children's literature, Geoffrey Summerfield, describes her this way: "Of all the morally shrill women active in the late 18th and early 19th centuries, she was probably the shrillest. Unbalanced, frenetic, paranoid, she may have been, but no one could deny her energy and perseverance in defending the souls of the children of England from the assaults of the devil." [82] Recently, however, children's literature scholars have attempted to view 18th-century children's literature within its historical context rather than judge it against modern tastes; scholars such as Grenby, Ruwe, Ferguson, Fyfe and Cosslett have reassessed Trimmer's work. Because Trimmer does not fit the mold of 20th-century feminism – that is, since she did not rebel against the social mores of her society as did Mary Wollstonecraft – she did not attract the attention of early feminist scholars. [83] However, as Ruwe points out, "by the confluence of political, historical, and pedagogical events at the turn of the century, a woman such as Trimmer was able to gain a greater visibility in the realm of public letters than was perhaps typical before or after"; [79] Trimmer was a "role model for other women authors", and these later authors often acknowledged their debt explicitly, as did the author of *The Footsteps to*

Mrs. Trimmer's Sacred History.[84]

[edit] Trimmer's children

Trimmer and her husband had twelve children.[85]

Name

Birth date

Death date

Brief biography

Charlotte

27 August 1763

1836

Charlotte married the widower Richard Moore, great-grandson of Sir Thomas Moore, who was himself a great-nephew of the poet John Milton; they had one daughter, Charlotte Selina (1793–1867). Charlotte Trimmer Moore died from heart failure and gangrene in 1836.

Sarah (Selina)

16 August 1764

1829

Selina was governess to the children of Georgiana, Duchess of Devonshire, and Lady Caroline Lamb.

Juliana Lydia

4 May 1766

1844

Juliana Lydia may have assisted her sister Selina in caring for the children of the Duchess of Devonshire. She continued her mother's philanthropic projects in Brentford.

Joshua Kirby

18 August 1767

17 September 1829

Joshua Kirby married Eliza Willett Thompson in 1794, with whom he had seven children. He held several local offices in Brentford and invested in brickfields, a copper mine and a slate quarry. He also built up a flock of merino sheep and exported them to Australia as part of a project initiated by Joseph Banks. His son, Joshua Trimmer (1795–1857), became a geologist of some note. See Greg Finch 'Joshua Kirby Trimmer 1767–1829', Brentford and Chiswick Local History Journal, Vol 19 (2010) pp.4–7

Elizabeth

21 February 1769

24 April 1816

Elizabeth was frequently ill throughout her life, possibly with consumption. She cared for her nephew James as he was dying and died just a few days before him.

William Kirby

20 June 1770

February 1811

William Kirby married Jane Bayne in 1794, with whom he had seven children. He owned a successful brickmaking business and collected fossils. He suffered a stroke in 1810 and died four months later. One of his sons, Spencer, helped export Joshua Kirby Trimmer's merino sheep to Australia.

Lucy

1 February 1772

1813

Lucy married James Harris in 1799, with whom she had six children. William (1807–48) became a successful soldier with the British East India Company and was knighted by Queen Victoria in 1844; he was also an artist, author, engineer, diplomat, naturalist, geographer and sculptor. Robert (1810–65) became a successful captain in the Royal Navy and designed a curriculum for educating new officers. John (1808–29) joined the army and was killed at age 21 in India. Their daughter Lucy (1802–79) continued her grandmother's philanthropic work for the poor, establishing and running several Sunday schools.

James Rustat

31 July 1773

1843

James Rustat married Sarah Cornwallis in 1802; they had one son, James Cornwallis Trimmer (1803â ^16). James' wife died a month after giving birth to their son and Sarah Trimmer's daughter, Elizabeth, cared for him. James Rustat Trimmer invested in his family's merino sheep business and was described as "a brick manufacturer, of Clerkenwell" on official documents. He died of senile dementia in 1843.

John

26 February 1775

1791

John died of consumption at age fifteen.

Edward Decimus

3 January 1777

1777

Edward lived for only a few days.

Henry Scott

1 August 1778

25 November 1859

Henry Scott was ill with consumption in 1792â ^3. He married Mary Driver Syer in 1805; together they had three sons. He was close friends with several artists, including J. M. W. Turner and Henry Howard (who painted his mother's portrait) and was vicar at Heston from 1804 until his death in 1859. He prompted an investigation into the death of Private Frederick John White who had been court-martialed and flogged for insubordination. His son Barrington (1809â ^60) became his curate at Heston for 27 years and eventually domestic chaplain to the Duke of Sutherland, who was connected to Georgiana, Duchess of Devonshire's family; he was also a writer. His son Frederick (1813â ^83) became a wealthy landowner in Heston and served as justice of the peace.

Annabella

26 December 1780

1785

[edit] List of works

This list of works has been taken from Deborah Wills' entry on Trimmer in the Dictionary of Literary Biography.[86] Other entries have been added if they appear in other academic articles or database collections under Trimmer's name.

An Easy Introduction to the Knowledge of Nature, and Reading the Holy Scriptures, adapted to the Capacities of Children (1780)

Sacred History (1782â ^5) (6 volumes)

The Å'conomy of Charity (1786)

Fabulous Histories; Designed for the Instruction of Children, Respecting their Treatment of Animals (1786)

A Description of a Set of Prints of Scripture History: Contained in a Set of Easy Lessons (1786)

A Description of a Set of Prints of Ancient History: Contained in a Set of Easy Lessons. In Two Parts (1786)

The Servantâ s Friend (1786)

The Two Farmers (1787)

The Å'conomy of Charity (1787)

The Sunday-School Catechist, Consisting of Familiar Lectures, with Questions (1788)

The Sunday-scholar's Manual (1788)

The Family Magazine (1788â ^9) (periodical)

A Comment on Dr. Wattsâ s Divine Songs for Children with Questions (1789)

A Description of a Set of Prints of Roman History, Contained in a Set of Easy Lessons (1789)

The Ladder of Learning, Step the First (1789)

A Description of a Set of Prints Taken from the New Testament, Contained in a Set of Easy Lessons (1790)

Easy Lessons for Young Children (c.1790) [not on Wills' list]  
 Sunday School Dialogues (1790) (edited by Trimmer)  
 A Companion to the Book of Common Prayer (1791)  
 An Explanation of the Office for the Public Baptism of Infants (1791)  
 An Attempt to Familiarize the Catechism of the Church of England (1791)  
 The Little Spelling Book for Young Children (4th ed., 1791) [not on Wills' list]  
 Reflections upon the Education of Children in Charity Schools (1792)  
 A Friendly Remonstrance, concerning the Christian Covenant and the Sabbath Day;  
 Intended for the Good of the Poor (1792)  
 The Ladder of Learning, Step the Second (1792)  
 A Description of a Set of Prints of English History, Contained in a Set of Easy  
 Lessons (1792)  
 An Abridgement of Scripture History; Consisting of Lessons Selected from the  
 Old Testament (1792)  
 A Scriptures Catechism (1797) (2 parts) [not on Wills' list]  
 A Description of a Set of Prints Taken from the Old Testament (c.1797) [not on  
 Willis' list]  
 The Silver Thimble (1799)  
 An Address to Heads of Schools and Families (1799?)  
 The Charity School Spelling Book (c.1799) (2 parts)  
 The Teacher's Assistant: Consisting of Lectures in the Catechised Form (1800)  
 A Geographical Companion to Mrs. Trimmer's Scripture, Antient, and English  
 Abridged Histories, with Prints (1802)  
 A Help to the Unlearned in the Study of the Holy Scriptures (1805)  
 An Abridgement of the New Testament (1805?)  
 A Comparative View of the New Plan of Education Promulgated by Mr. Joseph  
 Lancaster (1805)  
 The Guardian of Education (1802â ^6) (periodical)  
 A New Series of Prints, Accompanied by Easy Lessons; Being an Improved Edition  
 of the First Set of Scripture Prints from the Old Testament (1808)  
 A Concise History of England (1808)  
 Instructive Tales: Collected from the Family Magazine (1810)  
 An Essay on Christian Education (1812) (posthumous)  
 Sermons, for Family Reading (1814) (posthumous)  
 Some Account of the Life and Writings of Mrs. Trimmer (1814) (posthumous)  
 A Description of a Set of Prints of the History of France, Contained in a Set  
 of Easy Lessons (1815) (posthumous)  
 A Selection from Mrs. Trimmer's Instructive Tales; The Good Nurse... (1815)  
 (posthumous)  
 Miscellaneous Pieces, Selected from the Family Magazine (1818) (posthumous)  
 Prayers and Meditations Extracted from the Journal of the Late Mrs. Trimmer  
 (1818) (posthumous)  
 A Selection from Mrs. Trimmer's Instructive Tales; The Rural Economists...  
 (1819) (posthumous)

- ^ Trimmer, Some Account, 8â ^9; Wills, DLB, 343.
- ^ Yarde, Life and Works of Sarah Trimmer, 15; Wills, DLB, 343.
- ^ Heath, 387; Wills, DLB, 343.
- ^ Yarde, Life and Works of Sarah Trimmer, 17; Wills, 343.
- ^ Rodgers, 113.
- ^ Grenby, "Introduction", viâ ^vii; Wills, DLB, 343.
- ^ Rodgers, 115; Wills, DLB, 343.
- ^ a b c Yarde, 31.
- ^ a b Rodgers, 118â ^19.
- ^ Yarde, 33.
- ^ Heath, 389; Wills, DLB, 345.
- ^ Rodgers, 124; Wills, DLB, 345.
- ^ a b Wills, "Sarah Trimmerâ s Å´conomy of Charity", 157â ^58.
- ^ Qtd. in Wills, â Sarah Trimmerâ s Å´conomy of Charity", 160.

^ Wills, â Sarah Trimmerâ s Å´conomy of Charity", 159.  
 ^ Wills, â Sarah Trimmerâ s Å´conomy of Charity", 162.  
 ^ Trimmer, Some Account, 117.  
 ^ Trimmer, Some Account, 220.  
 ^ a b Yarde, 40â ^43.  
 ^ Trimmer, Some Account, 218.  
 ^ Keutsch, 47.  
 ^ Laqueur, 21.  
 ^ a b c Grenby, "Introduction", viiiâ ^ix.  
 ^ a b Heath, 385.  
 ^ Janowitz, Anne. â Amiable and Radical Sociability: Anna Barbauldâ s â "Free Familiar Conversation.â â " Romantic Sociability: Social Networks and Literary Culture in Britain 1770â ^1840. Eds. Gillian Russell and Clara Tuite. Cambridge: Cambridge University Press (2002), 71.  
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 ^ Yarde, Sarah Trimmer of Brentford and Her Children, 20.  
 ^ a b c Ruwe, 10â ^11.  
 ^ a b Fyfe, 469.  
 ^ Fyfe, 460.  
 ^ Fyfe, 471.  
 ^ Grenby, "Introduction," viii; Wills, DLB, 345.  
 ^ Barbara Brandon Schnorrenberg, â Trimmer, Sarah (1741â ^1810),â " in Oxford Dictionary of National Biography, online ed., ed. Lawrence Goldman, Oxford: OUP, <http://www.oxforddnb.com/view/article/27740>  
 ^ Morning Post and Daily Advertiser 16 Sept 1786  
 ^ Prospectus in the John Johnson Collection, Bodleian Library, Prospectuses of Journals 22 (16).  
 ^ Trimmer, Some Account, 296.  
 ^ Heath, 391â ^92.  
 ^ a b Heath, 392â ^93.  
 ^ Heath, 394â ^97.  
 ^ Grenby, "Introduction", viii; Wills, DLB, 344.  
 ^ Pickering, 29.  
 ^ Cosslett, 41.  
 ^ Ferguson, 7.  
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 ^ Jackson, 143.  
 ^ Yarde, Sarah Trimmer of Brentford and Her Children, 33â ^4.  
 ^ Grenby, "Introduction", x.  
 ^ Immel, Andrea. "James Petit Andrews's 'Book' (1790): The First Critical Survey of English Children's Literature." Children's Literature 28 (2000): 147â ^63.  
 ^ Grenby, "Introduction", xiv.  
 ^ Grenby, "Introduction", xii.  
 ^ Grenby, "Introduction", xvi.  
 ^ Grenby, "Introduction", xviiâ ^xviii.  
 ^ Grenby, "Introduction", xxi.  
 ^ Grenby, "Introduction", xxxv.  
 ^ See, for example, Summerfield, 188â ^205.  
 ^ Grenby, "Introduction", xxiv.  
 ^ Grenby, "Conservative Woman", 148â ^49.  
 ^ Grenby, "Introduction", xl.  
 ^ Perrault, Charles (1697) (in French). Histoires ou contes du temps passÃ©. Paris: Claude Barbin. OCLCÂ 22635076.

^ Grenby, "Conservative Woman", 152.  
 ^ Tucker, 106â ^107.  
 ^ Tucker, 108â ^10.  
 ^ Tucker, 114.  
 ^ Rowe, 58.  
 ^ Qtd. in Rowe, 60; see also Tucker, 111â ^12.  
 ^ Trimmer, Sarah. *The Guardian of Education*, 1:2, 10, 81, 145.  
 ^ Cutt, 8.  
 ^ Cutt, 9.  
 ^ Cutt, 17.  
 ^ a b Darton, 159â ^60.  
 ^ Darton, 160; Wills, DLB, 347.  
 ^ Trimmer, *Some Account*, 431â ^32.  
 ^ Trimmer, *Some Account*, 456.  
 ^ Yarde, 29.  
 ^ Cosslett, 33.  
 ^ Qtd. in Cosslett, 37.  
 ^ Cosslett, 37.  
 ^ a b Ruwe, 3â ^4.  
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 ^ Heath, 399.  
 ^ Summerfield, 188; for Summerfield's analysis of Trimmer's works, see 188â ^205.  
 ^ Ruwe, 2; for a theoretical discussion of this problem, see Margaret J. M. Ezell, *Writing Women's Literary History*. Baltimore: Johns Hopkins University Press (1993).  
 ^ Ruwe, 14.  
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[edit] External links

Persondata

Name

Trimmer, Sarah

Alternative names

Short description

author

Date of birth

6 January 1741

Place of birth

Ipswich, England  
Date of death  
15 December 1810  
Place of death  
Brentford, England

Imagism was a movement in early 20th-century Anglo-American poetry that favored precision of imagery and clear, sharp language; it was described as the most influential movement in English poetry since the activity of the Pre-Raphaelites.[1].As a poetic style it gave Modernism its early start in the 20th century.[2] and yet as Rene Taupin remarked 'It is more accurate to consider Imagism not as a doctrine, nor even as a poetic school, but as the association of a few poets who were for a certain time in agreement on a small number of important principle'.[3] or as has so aptly said of it 'a succession of creative moments' rather than any continuous or sustained period of development.[4]. The Imagists rejected the sentiment and discursiveness typical of much Romantic and Victorian poetry. This was in contrast to their contemporaries, the Georgian poets, who were by and large content to work within that tradition. Group publication of work under the Imagist name appearing between 1914 and 1917 featured writing by many of the most significant figures in modernist poetry in English, as well as a number of other modernist figures prominent in fields other than poetry.

Based in London, the Imagists were drawn from Great Britain, Ireland and the United States. Somewhat unusually for the time, the Imagists featured a number of women writers among their major figures. Imagism is also significant historically as the first organised Modernist English language literary movement or group. In the words of T. S. Eliot: "The point de repÃˆre usually and conveniently taken as the starting-point of modern poetry is the group denominated 'imagists' in London about 1910." [5]

At the time Imagism emerged, Longfellow and Tennyson were considered the paragons of poetry, and the public valued the sometimes moralising tone of their writings. In contrast, Imagism called for a return to what were seen as more Classical values, such as directness of presentation and economy of language, as well as a willingness to experiment with non-traditional verse forms. The focus on the "thing" as "thing" (an attempt at isolating a single image to reveal its essence) also mirrors contemporary developments in avant-garde art, especially Cubism. Although Imagism isolates objects through the use of what Ezra Pound called "luminous details", Pound's Ideogrammic Method of juxtaposing concrete instances to express an abstraction is similar to Cubism's manner of synthesizing multiple perspectives into a single image.[6]

[edit] Pre-Imagism

Well-known poets of the Edwardian era of the 1890s, such as Alfred Austin, Stephen Phillips, and William Watson, had been working very much in the shadow of Tennyson, producing weak imitations of the poetry of the Victorian era. They continued to work in this vein into the early years of the 20th century.[7] As the new century opened, Austin was still the serving British Poet Laureate, a post which he held up to 1913. In the century's first decade, poetry still had a large audience; volumes of verse published in that time included Thomas Hardy's *The Dynasts*, Christina Rossetti's posthumous *Poetical Works*, Ernest Dowson's *Poems*, George Meredith's *Last Poems*, Robert Service's *Ballads of a Cheechako* and John Masefield's *Ballads and Poems*. Future Nobel Prize winner William Butler Yeats was devoting much of his energy to the Abbey Theatre and writing for the stage, producing relatively little lyric poetry during this period. In 1907, the Nobel Prize for Literature was awarded to Rudyard Kipling.

The origins of Imagism are to be found in two poems, *Autumn* and *A City Sunset* by T. E. Hulme.[8] These were published in January 1909 by the Poets' Club in London in a booklet called *For Christmas MDCCCXVIII*. Hulme was a student of mathematics and philosophy; he had been involved in the setting up of the club in 1908 and was its first secretary. Around the end of 1908, he presented his



paper A Lecture on Modern Poetry at one of the club's meetings.[9] Writing in A. R. Orage's magazine *The New Age*, the poet and critic F. S. Flint (a champion of free verse and modern French poetry) was highly critical of the club and its publications. From the ensuing debate, Hulme and Flint became close friends. In 1909, Hulme left the Poets' Club and started meeting with Flint and other poets in a new group which Hulme referred to as the "Secession Club"; they met at the Eiffel Tower restaurant in London's Soho[10] to discuss plans to reform contemporary poetry through free verse and the tanka and haiku and the removal of all unnecessary verbiage from poems. The interest in Japanese verse forms can be placed in a context of the late Victorian and Edwardian revival of interest in Chinoiserie and Japonism as witnessed in the 1890s vogue for William Anderson's Japanese prints donated to the British Museum, performances of Noh plays in London, and the success of Gilbert and Sullivan's operetta *The Mikado* (1885). Direct literary models were available from a number of sources, including F. V. Dickins's 1866 *Hyak nin is'shiu*, or, *Stanzas by a Century of Poets, Being Japanese Lyrical Odes*, the first English-language version of the *Hyakunin isshu*, a 13th-century anthology of 100 tanka, the early 20th-century critical writings and poems of Sadakichi Hartmann, and contemporary French-language translations.

The American poet Ezra Pound was introduced to the group in April 1909 and found that their ideas were close to his own. In particular, Pound's studies of Romantic literature had led him to an admiration of the condensed, direct expression that he detected in the writings of Arnaut Daniel, Dante, and Guido Cavalcanti, amongst others. For example, in his 1911-12 series of essays *I gather the limbs of Osiris*, Pound writes of Daniel's line "penser de lieis m'es repaus" ("it rests me to think of her") (from the canzone *En breu brizara'l temps braus*): "You cannot get statement simpler than that, or clearer, or less rhetorical".[11] These criteria of directness, clarity and lack of rhetoric were to be amongst the defining qualities of Imagist poetry. Through his friendship with Laurence Binyon, Pound had already developed an interest in Japanese art by examining Nishiki-e prints at the British Museum, and he quickly became absorbed in the study of related Japanese verse forms.[12][13]

In an article in *La France*, 1915, the French critic, Remy de Gourmont described the Imagists as descendants of the French Symbolistes[14] and in a 1928 letter to the French critic and translator René Taupin, Pound was keen to emphasise another ancestry for Imagism, pointing out that Hulme was indebted to a Symbolist tradition, linking back via William Butler Yeats, Arthur Symonds and the Rhymers' Club generation of British poets to Mallarmé.[15] and the Symbolist source was amplified further in Taupin's study published in 1929,[16] in which he concluded however great the divergence of technique and language 'between the image of the Imagist and the 'symbol' of the Symbolists there is a difference only of precision'.[17] In 1915, Pound edited the poetry of another 1890s poet, Lionel Johnson for the publisher Elkin Mathews. In his introduction, he wrote

â  
 No one has written purer imagism than [Johnson] has, in the line  
 Clear lie the fields, and fade into blue air,  
 It has a beauty like the Chinese.[18]  
 â "

[edit] Early publications and statements of intent

In 1911, Pound introduced two other poets to the Eiffel Tower group: his former fiancée Hilda Doolittle (who had started signing her work H.D.) and her future husband Richard Aldington. These two were interested in exploring Greek poetic models, especially Sappho, an interest that Pound shared. The compression of expression that they achieved by following the Greek example complemented the proto-Imagist interest in Japanese poetry, and, in 1912, during a meeting with them in the British Museum tea room, Pound told H.D. and Aldington that they were Imagistes and even appended the signature H.D. Imagiste to some poems they were discussing.[19]

When Harriet Monroe started her *Poetry* magazine in 1911, she had asked Pound

to act as foreign editor. In October 1912, he submitted three poems each by H.D. and Aldington under the Imagiste rubric. That same month, Pound's book *Ripostes* was published with an appendix called *The Complete Poetical Works of T. E. Hulme*, which carried a note that saw the first appearance of the word Imagiste in print. Aldington's poems, *Choricos*, *To a Greek Marble*, and *Au Vieux Jardin*, were in the November issue of *Poetry*, and H.D.'s, *Hermes of the Ways*, *Orchard*, and *Epigram*, appeared in the January 1913 issue; Imagism as a movement was launched. *Poetry*'s April issue published what came to be seen as "Imagism's enabling text", [20] the haiku-like poem of Ezra Pound entitled "In a Station of the Metro":

The apparition of these faces in the crowd;  
Petals on a wet, black bough. [21]

The March issue of *Poetry* contained *A Few Don'ts* by an Imagiste and the essay entitled *Imagisme* both written by Pound, with the latter being attributed to Flint. The latter contained this succinct statement of the group's position:

Direct treatment of the "thing", whether subjective or objective.  
To use absolutely no word that does not contribute to the presentation.  
As regarding rhythm: to compose in sequence of the musical phrase, not in sequence of the metronome. [22]

Pound's note opened with a definition of an image as "that which presents an intellectual and emotional complex in an instant of time". Pound goes on to state that "It is better to present one Image in a lifetime than to produce voluminous works". [23] His list of "don'ts" reinforced his three statements in "Imagism", while warning that they should not be considered as dogma but as the "result of long contemplation". Taken together, these two texts comprised the Imagist programme for a return to what they saw as the best poetic practice of the past. F.S. Flint commented 'we have never claimed to have invented the moon. We do not pretend that our ideas are original'. [24] The preface to *Some Imagist Poets* in 1916 [25] comments Imagism does not merely mean the presentation of pictures. Imagism refers to the manner of presentation, not to the subject.'

[edit] *Des Imagistes*

Determined to promote the work of the Imagists, and particularly of Aldington and H.D., Pound decided to publish an anthology under the title *Des Imagistes*. It was first published in Alfred Kreyenborg's little magazine *The Glebe* and was later published in 1914 by Alfred and Charles Boni in New York and by Harold Monroe at the Poetry Bookshop in London. It became one of the most important and influential English-language collections of modernist verse. [26] Included in the thirty-seven poems were ten poems by Aldington, seven by H.D., and six by Pound. The book also included work by F.S. Flint, Skipwith Cannell, Amy Lowell, William Carlos Williams, James Joyce, Ford Madox Ford, Allen Upward and John Cournos.

Pound's editorial choices were based on what he saw as the degree of sympathy that these writers displayed with Imagist precepts, rather than active participation in a group as such. Williams, who was based in the United States, had not participated in any of the discussions of the Eiffel Tower group. However, he and Pound had long been corresponding on the question of the renewal of poetry along similar lines. Ford was included at least partly because of his strong influence on Pound, as the younger poet made the transition from his earlier, Pre-Raphaelite-influenced style towards a harder, more modern way of writing. The inclusion of a poem by Joyce, *I Hear an Army*, which was sent to Pound by W.B. Yeats, [27] took on a wider importance in the history of literary modernism, as the subsequent correspondence between the two led to the serial publication, at Pound's behest, of *A Portrait of the Artist as a Young Man* in *The Egoist*. Joyce's poem is not written in free verse, but in rhyming quatrains. However, it strongly reflects Pound's interest in poems written to be sung to music, such as those by the troubadours and Guido Cavalcanti. The book met with little popular or critical success, at least partly because it had no introduction or commentary to explain what the poets were attempting to do, and a number of copies were returned to the publisher.

[edit] Some Imagist Poets

The following year, Pound and Flint fell out over their different interpretations of the history and goals of the group arising from an article on the history of Imagism written by Flint and published in *The Egoist* in May 1915.[28] Flint was at pains to emphasise the contribution of the Eiffel Tower poets, especially Storer. Pound, who believed that the "Hellenic hardness" that he saw as the distinguishing quality of the poems of H.D. and Aldington was likely to be diluted by the "custard" of Storer, was to play no further direct role in the history of the Imagists. He went on to co-found the Vorticists with his friend, the painter and writer Wyndham Lewis.[29]

Around this time, the American Imagist Amy Lowell moved to London, determined to promote her own work and that of the other Imagist poets. Lowell was a wealthy heiress from Boston who loved Keats and cigars. She was also an enthusiastic champion of literary experiment who was willing to use her money to publish the group. Lowell was determined to change the method of selection from Pound's autocratic editorial attitude to a more democratic manner. This new editorial policy was stated in the Preface to the first anthology to appear under her leadership: "In this new book we have followed a slightly different arrangement to that of our former Anthology. Instead of an arbitrary selection by an editor, each poet has been permitted to represent himself by the work he considers his best, the only stipulation being that it should not yet have appeared in book form." [30] The outcome was a series of Imagist anthologies under the title *Some Imagist Poets*. The first of these appeared in 1915, planned and assembled mainly by H.D. and Aldington. Two further issues, both edited by Lowell, were published in 1916 and 1917. These three volumes featured most of the original poets, (also including imagist poetry by the American poet John Gould Fletcher), [31] with the exception of Pound, who had tried to persuade her to drop the Imagist name from her publications and who sardonically dubbed this phase of Imagism "Amy-gism."

Lowell persuaded D. H. Lawrence to contribute poems to the 1915 and 1916 volumes, [32] making him the only writer to publish as both a Georgian poet and an Imagist. Marianne Moore also became associated with the group during this period. However, with World War I as a backdrop, the times were not easy for avant-garde literary movements (Aldington, for example, spent much of the war at the front), and the 1917 anthology effectively marked the end of the Imagists as a movement.

[edit] The Imagists after Imagism

In 1929, Walter Lowenfels jokingly suggested that Aldington should produce a new Imagist anthology. [33] Aldington, by now a successful novelist, took up the suggestion and enlisted the help of Ford and H.D. The result was the *Imagist Anthology 1930*, edited by Aldington and including all the contributors to the four earlier anthologies with the exception of Lowell, who had died, Cannell, who had disappeared, and Pound, who declined. The appearance of this anthology initiated a critical discussion of the place of the Imagists in the history of 20th-century poetry.

Of the poets who were published in the various Imagist anthologies, Joyce, Lawrence and Aldington are now primarily remembered and read as novelists. Marianne Moore, who was at most a fringe member of the group, carved out a unique poetic style of her own that retained an Imagist concern with compression of language. William Carlos Williams developed his poetic along distinctly American lines with his variable foot and a diction he claimed was taken "from the mouths of Polish mothers". [34] Both Pound and H.D. turned to writing long poems, but retained much of the hard edge to their language as an Imagist legacy. Most of the other members of the group are largely forgotten outside the context of the history of Imagism.

[edit] Legacy

Despite the movement's short life, Imagism would deeply influence the course of modernist poetry in English [35]. Richard Aldington, in his 1941 memoir, writes: "I think the poems of Ezra Pound, H.D., Lawrence, and Ford Madox Ford will continue to be read. And to a considerable extent T. S. Eliot and his

followers have carried on their operations from positions won by the Imagists." On the other hand, Wallace Stevens found shortcomings in the Imagist approach: "Not all objects are equal. The vice of imagism was that it did not recognize this." [36] With its demand for harness, clarity and precision and its insistence on fidelity to appearances coupled with its rejection of irrelevant subjective emotions Imagism had later effects that are demonstratable in T. S. Eliot 'Preludes' and 'Moving at the Window' in D. H. Lawrence animal and flower pieces. The rejection of conventional verse forms in the nineteen-twenties owed much to the Imagists repudiation of the Georgian Poetry style. [37]

The influence of Imagism can be seen clearly in the work of the Objectivist poets, [38] who came to prominence in the 1930s under the auspices of Pound and Williams. The Objectivists worked mainly in free verse. Clearly linking Objectivism's principles with Imagism's, Louis Zukofsky insisted, in his introduction to the 1931 Objectivist issue of Poetry, on writing "which is the detail, not mirage, of seeing, of thinking with the things as they exist, and of directing them along a line of melody." Zukofsky was a major influence on the Language poets, [39] who carried the Imagist focus on formal concerns to a high level of development. Basil Bunting, another Objectivist poet, was a key figure in the early development of the British Poetry Revival, a loose movement that also absorbed the influence of the San Francisco Renaissance poets. [40]

Imagism influenced a number of poetry circles and movements. With the Imagists Free verse became a discipline and acquired status as a legitimate poetic form. [41] In the 1950s, especially, with the Beat generation, the Black Mountain poets, and others associated with the San Francisco Renaissance. In his seminal 1950 essay Projective Verse, Charles Olson, the theorist of the Black Mountain group, wrote "ONE PERCEPTION MUST IMMEDIATELY AND DIRECTLY LEAD TO A FURTHER PERCEPTION"; [42] his credo derived from and supplemented the Imagists. [43]

Among the Beats, Gary Snyder and Allen Ginsberg in particular were influenced by the Imagist emphasis on Chinese and Japanese poetry. William Carlos Williams was another who had a strong impact on the Beat poets, encouraging poets like Lew Welch and writing an introduction for the book publication of Ginsberg's Howl (1955).

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#### [edit] Further reading

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Some Imagist Anthologies at The Modernist Journals Project: *Des Imagistes* (The Glebe: Feb. 1914), *Des Imagistes* (New York, 1914), *Des Imagistes* (London, 1914), *Some Imagist Poets* (1915), *Some Imagist Poets*, 1916, *Some Imagist Poets*, 1917

Imagists.org

The 1915 issue of *Some Imagist Poets*

Bibliography of Japan in English-Language Verse

Video of a Lecture about Imagist poetry and East Asian culture, London

University School of Advanced Study

J.T. Barbarese et al.: "In a Station of the Metro" at *Modern American Poetry*

Quiz: An Imagist Poem or a Ridiculous Parody?

"My Belarusy" (Belarusian: *Мая Беларусь*, *Maya Bielarusy*; "My, Bielarusy"; "We Belarusians") is the unofficial title of the national anthem of Belarus and the first line of its lyrics. Officially, "My Belarusy" is titled "the State Anthem of the Republic of Belarus" (Belarusian: *Дзяржаўны Гімн Рэспублікі Беларусь*, *Dziaržaŭny Hymn Respubliki Bielarusy*). The anthem was adopted in 1955 for use in the Byelorussian Soviet Socialist Republic.[1] The music of the Byelorussian SSR anthem was composed by Niescier Sakaŭski and the lyrics were written by Mikhas Klimkovich. After the dissolution of the Soviet Union, the music composed by Sakaŭski was kept and the lyrics were discarded. New lyrics, which were written by Klimkovich and Uladzimir Karyzny, were adopted by a presidential decree issued on July 2, 2002. The lyrics of the anthem now sing of a friendly Belarus, honoring past military battles and looking forward to the future. The music was kept due to the historical connections it has to Belarus.

#### [edit] Anthem of the Byelorussian SSR

"My Belarusy" was originally used as the anthem of the Byelorussian Soviet Socialist Republic (Belarusian: *Дзяржаўны Гімн Рэспублікі Беларусь*, *Dziaržaŭny Hymn Respubliki Bielarusy*, Russian: *Державный Гимн Белорусской Советской Республики*, *Dzherzhavnyy Himn Belorusskoy Sovetskoy Respubliki*), starting from February 24, 1955. The original anthem was composed by Sakalowski and the lyrics were written by Maxim Klimkovich. It was presented in front of a jury in 1944, but it took 11 years of modifications before it was officially adopted.[2] Soon after Belarus became an independent country, the national

anthem was modified to drop the Communist-era lyrics. An attempt was made in 1995 to adopt Natalla Arsiennieva's poem "O God Almighty" as the national anthem, but the suggestion was not acted on even though it was supported by a parliamentary committee.[3]

[edit] Anthem of the Republic of Belarus

The only legal mention of the national anthem before 2002 is in the Constitution of the Republic of Belarus. Section One, Article 19 of the constitution states that "The symbols of the Republic of Belarus as a sovereign state shall be its national flag, national emblem and national anthem." While the constitution only mentioned the use of the flag, anthem and arms as national symbols, each symbol had to be defined by law.[4] A law introducing an anthem was not enacted until Presidential Decree 350 took effect, on July 18, 2002, the day before Belarus's independence day. The decree's main objective was to establish lyrics for the anthem and introduce musical notation along with the new lyrics. Moreover, the decree designated when, where, and how the anthem was to be performed.[5]

Before issuing the decree, President Alexander Lukashenko listened to five possible candidates for the national anthem. Three out of the five candidates, including the one ultimately chosen, used the music composed by Sakalouski and began their lyrics with the line My Belarusy.[6] According to the newspaper Soviet Byelorussia, President Lukashenko decided on the anthem on June 12, 2002 and chose to have its first performance on July 3, Belarusian independence day, the anniversary of the date in 1944 when the Wehrmacht was driven away from Minsk by the Red Army.[7] However, the first performance actually took place on July 2 at a concert organized by the government as part of the Belarusian independence festivities.

Belarus did not have an anthem before one was adopted in the Soviet-era. When Lukashenko issued his decree selecting a new national anthem, only slight changes were made to the Soviet-era hymn. While the references to Russia, the Communist Party of the Soviet Union and Vladimir Lenin were replaced; the overall theme of "friendship of peoples" and the original music composed by Sakalouski were preserved. The government decided to keep Sakalouski's music in order to maintain historical continuity, and also on account of its popularity and musical quality[8] After the national anthem was adopted, the process of adopting national symbols was completed.[8]

[edit] Reaction

The organization Freedom House commented on the adoption of the anthem in a report about the country, published in 2003. On page 125 of the "Country Report of Belarus", Freedom House says that President Lukashenko has "reintroduced the state symbols used by the old Byelorussian Soviet Socialist Republic. In 2002, the president approved a streamlined version of the Soviet-era anthem "My Belarusy" ("We Belarusians"), as the country's new national anthem." The report also mentioned President Lukashenko's ban of the symbols that were used since Belarus's independence in 1991, such as the Pahonia arms and the white, red, white flag, which Lukashenko claims are associated with fascism (due to the fact that the pro-Nazi Belarusian Central Rada in World War II used these symbols) .[9] In 2003, Dr. Taras Kuzio wrote in Radio Free Europe that President Lukashenko "is the quintessential Soviet Belarusian patriot who presides over a regime steeped in Soviet nostalgia." Kuzio said that the motives of Russia and Belarus in re-adopting Soviet-era symbols are part of restoring that nostalgia.[10]

[edit] Regulations

The anthem must be performed in accordance with the lyrics and sheet music established by law. Every day, state-owned Belarusian television and radio stations are required to play the national anthem upon signing on at 6 a.m. and again upon signing off (usually around midnight). The anthem can also be performed on certain occasions, such as at government meetings, before sporting events and presidential inaugurations. While the anthem is being performed, citizens are required to stand at attention and those in military or police uniform must salute.[11]

[edit] Other songs

A favorite in the anthem competition was the poem called "Young Belarus"  
 (Д Д°Д»Д°Д'Д°Ñ Д`ДµД»Д°Ñ Ñ Ñ Ñ ) by Janka Kupala. However, the poem was never set to a  
 musical composition so Young Belarus could not be selected as the anthem.[12]

Belarus and Russia have been working towards a closer relationship with each other, resulting in the proposed Union of Russia and Belarus. While Belarus and Russia will be able to keep their own symbols, a song called "Sovereign Union of Nations" (Belarusian: *Дэ́да́нн Дзвоні́ць Дзвоні́ць Дзвоні́ць Дзвоні́ць*, Russian: *Дзвоні́ць Дзвоні́ць Дзвоні́ць Дзвоні́ць*, *Derzhavny soyuz narodov*) has been proposed as the Union's unofficial anthem. The song, which was modified from the National Anthem of the Soviet Union, refers to a wider union of the two nations.[13]

Some Belarusian emigrants use "Vajacki marÅ¡;" and "Mahutny BoÅ¾a" as their anthem. "Vajacki MarÅ¡;" was the official anthem of the Belarusian National Republic,[14] a state that was created in 1918 but lasted only 10 months,[15] during the German occupation of Belarus in World War I. "Mahutny BoÅ¾a" is a hymn, but is now used as a song by those who oppose the Lukashenko Government.[14]

[edit] Official lyrics

Belarusian

## Transliteration

English translation[16]

[illegible]
$$\mathbb{D} \sim \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \rightarrow \mathbb{D} \oplus \mathbb{D}^\circ \quad \mathbb{D}^{1/2} \mathbb{D}^\circ \tilde{\mathbb{N}} \quad \mathbb{D}^{3/4} \mathbb{D}' \mathbb{D}^\circ \tilde{\mathbb{N}}, \quad \hat{\mathbb{A}} \hat{\mathbb{a}} \hat{\mathbb{N}} \quad \tilde{\mathbb{N}} \tilde{\mathbb{N}} \rightarrow \mathbb{D} \gg \mathbb{D}^\circ \quad \mathbb{D}^{1/2} \mathbb{D}^\circ \tilde{\mathbb{N}} \quad \mathbb{D}^{3/4} \mathbb{D}' \mathbb{D}^\circ \tilde{\mathbb{N}}, \quad \hat{\mathbb{a}} \sim$$
$$\mathfrak{D}''\mathfrak{D}^{\circ}\tilde{N} \quad \mathfrak{D} \cdot \mathfrak{D}^{\circ}\mathfrak{D}; \mathfrak{D}^{\circ}\mathfrak{D}^2\mathfrak{D}\mu\tilde{N} \quad \mathfrak{D}^{1/2}\tilde{N} \quad , \quad \tilde{N} \quad \mathfrak{D}^{3/4}\mathfrak{D}^{1/2}\mathfrak{D}\mu\tilde{N} \quad \mathfrak{D}^{1/2}\tilde{N} \quad \tilde{N} \quad \mathfrak{D} \gg \tilde{N} \quad \tilde{N} \quad .$$
$$\mathbb{D}^{\wedge} \mathbb{D}^{\frac{3}{4}} \tilde{\mathbb{N}} \quad \mathbb{D}^{\prime} \mathbb{D}^{\circ} \quad \mathbb{D} \ulcorner \quad \tilde{\mathbb{N}} \quad \mathbb{D} \cdot \mathbb{D}^2 \tilde{\mathbb{N}} \sim \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \quad \mathbb{D}^{\frac{1}{2}} \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \quad \mathbb{D}^2 \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \quad \tilde{\mathbb{N}} \sim,$$
$$\mathbb{D}:\tilde{N}\tilde{N}\mathbb{D}^3\mathbb{D}:\mathbb{D}\mu\tilde{N}\mathbb{D}^0\mathbb{D}^{\frac{1}{4}}\mathbb{D}^{\frac{3}{4}}\mathbb{D}\mathbb{D}^{\frac{1}{2}}\tilde{N}\hat{A}\hat{a}^{\wedge}\tilde{N}\mathbb{D}^0\mathbb{D}'\mathbb{D}^0\tilde{N}\tilde{N}\tilde{N}^{\sim}\tilde{N}\tilde{N}\tilde{N}\mathbb{D}^3!$$
$$\mathfrak{D}^\vee \tilde{N} \quad \tilde{N} \quad \mathfrak{D}_\zeta \mathfrak{D}_\mu \tilde{N}.$$

My, bielarusyÂ â ^ mirnyja ludzi, Sercam addanyja rodnej ziamli.

Å Ä yra siabrujem, sily hartujem

My Å- pracavitaĵ, volnaĵ siamĵi.

PrypieÅ-:SlaÅ-sia ziamli naÅ;aj Å.vietlaje imia,SlaÅ-sia, narodaÅ- braterski

sajuz!NaÅja lubimaja maci-Radzima,VieÅ na Åyvi i kvitniej, BielarÅ,!(Repeat last two lines)

Razam z bratami mu<sup>3</sup>/<sub>4</sub>na viakami

My baranili rodny paroh,

Å- bitvach za volu, bitvach za dolu

Svoj zdabyvali Ā, ciah pieramoh!

PrzypieÅ-

Dru<sup>3</sup>/<sub>4</sub>ba naroda -  $\hat{a}$   $\hat{a}$   $\hat{a}$  si<sup>3</sup>/<sub>4</sub> a naroda -  $\hat{a}$   $\hat{a}$   $\hat{a}$

NaÅ; zapavietny, sonieÄ ny Å;lach.

Horda Å<sup>3</sup>/<sub>4</sub> uzvisia Å- jasnyja vysi,

À ¸ciach pieramoÀ¾nyÀ â ^ radaÀ,ci À,ciach!

PrypîeÅ-

We, Belarusians, are peaceful people, Wholeheartedly devoted to our Motherland.

We are faithful friends, growing up and

Living in a hardworking and independent family.

RefrainGlory to the blessed name of our land,Glory to the brotherly union of peoples!Our dearly beloved Motherland,May you live long and prosper,

Belarus! (Repeat Last two lines)

Together with our brothers, we for centuries

Courageously defended our home's threshold.



In battles for freedom, and battles for our lot  
We have won our banners of victory!

Refrain

Friendship of peoples is the strength of peoples  
And it is our sacred sunlit path.  
Proudly we fly in the clear blue skies,  
The banner of victory, the sunshine's flag!

Refrain

[edit] Anthem of the Byelorussian SSR

For comparison, below is a part of the anthem of the Byelorussian SSR.

Belarusian lyrics:

Дэ́нь, дэ́муД»Д°Н́ Н́ Н́ Н́, Д· Д±Н́ Д°Н́ Д¼Н́ Н́ Д Н́ Н́ Н́ Н́  
Д Д°Д·Д°Д¼ Н́ Н́ Д°Д°Д»Н́ Д° Н́ Н́ Д°Н́ Н́ Н́ Д´Д°Н́ Д³Д³.  
ДѢ Д±Н́Н́ Д²Д°Н́ Д·Д° Д²Д³Д»Н́, Н́ Д±Н́Н́ Д²Д°Н́ Д·Д° Д´Д³Д»Н́  
Д´ Н́Д¹ Д·Д´Д°Д±Н́ Д»i Д¼Н́ Н́ Н́ Н́ Д³ ДꞤДµН́ Д°Д¼Д³Д³!  
Д´Д°Н́ Д°Д±â Н́ Д´Д¼Д°Д»Д° Д,ДµД¼Н́Д¼Д° Н́Д¼Н́,  
Д´Д°Н́ Н́ Н́ Н́ Д° Н́ Н́ Д°Н́ Н́ Н́ Д²Н́ Д´Д·Дµ Д¼Д°Н́ Н́ ДꞤД°Н́ Д³Д´.  
Д´Д°Н́ Н́ Н́ Н́ Н́ Д»Д°Д²Д°! ДiД»Д°Д²Д° Д Д°Д´Д·Н́Д¼Дµ!  
ДiД»Д°Д²Д° Н́ Д°Д±Дµ, Д±ДµД»Д°Н́ Н́ Н́ Д°Н́ Д¼Д°Н́ Д³Д´! (2x)

Transliteration:

My, bieÅ arusy, z bratniaju RuÅ,siu  
Razam Åukali k ÅiÅ aÅ,ciu daroh.  
Å- bitvach za volu, u bitvach za dolu  
Å¹ joj zdabyli my Å,ciah pieramoh!  
Nas abjadnaÅ a Lenina imia,  
Partyja k ÅiÅ aÅ,ciu viadzie nas u pachod.  
Partyi slava! Slava Radzimie!  
Slava tabie, bieÅ aruski narod!(2x)

English translation:

We, Belarusians, together with fraternal Rus',  
Looked for roads to fortune.  
In struggles for freedom, in struggles for fate,  
We have gained our banner of victories.  
The name of Lenin united us,  
The Party leads us in the quest to happiness.  
Glory to the Party! Glory to the Motherland!  
Glory to you, Belarusian people!(2x)

[edit] Sheet music

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[edit] External links

McCormick Tribune Plaza & Ice Rink or McCormick Tribune Plaza is a multi-purpose venue within Millennium Park in the Loop community area of Chicago, Illinois, in the United States. On December 20, 2001, it became the first attraction in Millennium Park to open.[2] The \$3.2 million plaza was funded by a donation from the McCormick Tribune Foundation.[3] It has served as an ice skating rink, a dining facility and briefly as an open-air exhibition space.

The plaza operates as McCormick Tribune Ice Rink, a free public outdoor ice skating rink that is generally open four months a year, from mid-November until mid-March, when it hosts over 100,000 skaters annually. It is known as one of Chicago's better outdoor people-watching locations during the winter months.[4][5] It is operated by the Chicago Department of Cultural Affairs rather than the Chicago Park District, which operates most major public ice skating rinks in Chicago.

For the rest of the year, it serves as Plaza at Park Grill or Park Grill Plaza, Chicago's largest outdoor dining facility.[6] The 150-seat park grill hosts various culinary events as well as music during its months of outdoor operation,[6][7] and it is affiliated with the 300-seat indoor Park Grill restaurant located beneath AT&T Plaza and Cloud Gate. The outdoor restaurant offers scenic views of the park.

[edit] History

Lying between Lake Michigan to the east and the Loop to the west, Grant Park has been Chicago's front yard since the mid-19th century. Its northwest corner, north of Monroe Street and the Art Institute, east of Michigan Avenue, south of Randolph Street, and west of Columbus Drive, had been Illinois Central rail yards and parking lots until 1997, when it was made available for development by the city as Millennium Park.[8] As of 2007, Millennium Park, which is located in the northwest corner of Grant Park, trails only Navy Pier as a Chicago tourist attraction.[9]

The earliest plans for Millennium Park were unveiled by Chicago's mayor, Richard M. Daley, in March 1998 and included "a reflecting pool that would double as a skating rink in winter".[10] The architectural firm of Skidmore, Owings & Merrill came up with the master plan for the park; their original

design for the ice rink placed it along upper Randolph Street, on the park's northern edge. However, McCormick Tribune Plaza & Ice Rink was built on the western edge of Millennium Park. The Chicago Tribune's Pulitzer Prize-winning architecture critic Blair Kamin called this move "a masterstroke" and praised the new location "where the skaters symbolize the year-round vitality of the city".[11] Kamin noted the location on the east side of Michigan Avenue allowed those at the plaza and ice rink to enjoy the skyline of the Historic Michigan Boulevard District.[11] Another addition to the plaza and rink's design was the 300-seat restaurant;[2] the final architectural design was completed by OWP&P Architects,[11] who were also the architects for the adjoining Wrigley Square.[12]

Although the rink was budgeted for \$5 million, it was constructed for only \$3.2 million (\$4.2 million today), making it one of the few Millennium Park attractions to cost less than was initially budgeted.[13] The rink was funded by and named for the McCormick Tribune Foundation,[3] which was established by former Chicago Tribune owner and publisher Robert R. McCormick. The McCormick Tribune Foundation is a supporter of the McCormick Tribune Freedom Museum and the McCormick Tribune Campus Center at the Illinois Institute of Technology, both of which are also located in Chicago.[14][15]

McCormick Tribune Plaza & Ice Rink was the first feature in Millennium Park to open. Its grand opening was celebrated on December 20, 2001,[16] a few weeks ahead of the Millennium Park underground parking garage. Mayor Daley, McCormick Tribune Foundation Chairman of the Board John W. Madigan, Millennium Park private donor group chief John Bryan, actress Bonnie Hunt and other local celebrities attended the event.[2] The new ice rink was seen as a replacement for "Skate on State", a public skating rink on State Street in the Loop[17][18] which closed in 2001.[19]

From June 21 to September 15, 2002, McCormick Tribune Plaza hosted the inaugural exhibit in Millennium Park,[20] Exelon Presents Earth From Above by Yann Arthus-Bertrand, a French aerial photographer. Arthus-Bertrand used planes and helicopters to photograph sites in over 60 countries on every continent,[21][22] and displayed more than 120 of these photographs in dozens of cities, starting in Paris and including Tokyo and Geneva.[20] In the summer of 2002, the book associated with the exhibit had sold over 1.5 million copies,[21] and the photographs were displayed in Brazil, Lebanon, Poland, Sweden, Germany, Britain, Norway, Hungary and along the banks of the Volga River in Russia.[20]

Chicago was the first American city to host the Earth From Above exhibition.[21][23][24] The exhibit featured 4-by-6-foot (1.2Â m Ã 1.8Â m) photographic prints that were laminated onto thin 5-by-7.5-foot (1.5Â m Ã 2.3Â m) aluminum panels that protected them from ultraviolet rays.[20] The photographs included scenes of natural beauty such as a Filipino Bajau village built on coral reefs, a formation of rocks in Madagascar, an inlet in the Ionian Islands that is home to endangered sea turtles, and architectural highlights such as the Palace of Versailles and the Hagia Sophia in Istanbul. It also showed scenes of tragedy such as the 1999 earthquake in Turkey and the destruction of the Amazonian rain forest.[21][23] The exhibit used photovoltaic solar panels to store electrical energy during the day that then lit the exhibit at night.[20][25]

Part of the 2006 film *The Weather Man*, starring Nicolas Cage, was shot at the rink.[26] In 2008, Millennium Park hosted a winter celebration called the Museum of Modern Ice. The installation included a 95-by-12-foot (29.0Â m Ã 3.7Â m) ice wall in the park and a large abstract painting by Gordon Halloran, which was embedded in the McCormick Tribune Ice Rink. The works were titled *Paintings Below Zero*. [27] In 2008â2009 the logo for the unsuccessful Chicago bid for the 2016 Summer Olympics was displayed in the rink's ice.[28]

The ice rink served as the "headquarters" for the 2011 edition of Hockey Weekend Across America; the NHL on NBC broadcast its studio coverage from the rink on February 20 of that year. Eddie Olczyk opened the show by skating with the Stanley Cup in the Millennium Park rink.[29]

[edit] Details

The ice skating rink at McCormick Tribune Plaza is 200 by 80 feet (61 by 24 m). Due to the rink's rounded corners, the total skating surface is 15,910 square feet (1,478 m<sup>2</sup>), [30][31] which critic Blair Kamin called "amplified". [11] For comparison, this is a considerably larger skating surface than the Rockefeller Center rink in New York City, which is 120 by 60 feet (37 by 18 m). [32]

The Millennium Park rink has a lobby which provides skaters a respite from the natural environs, as well as toilets and public lockers. [3] During the 2003–04 season the rink rented 77,667 pairs of ice skates. [32] By 2009–2010, its ninth season, it was attracting more than 100,000 skaters a year. While availability of the rink depends on the weather, it also has a state-of-the-art chiller system that can maintain the ice in the event of unseasonably warm weather. Thus, temperature is not the only factor involved in decisions to close the rink. [3] In his review of the plaza and rink, Kamin gave it two stars (out of a possible four), called the structure "solid, though unremarkable", and praised its uses throughout the year. [11]

When the rink is closed, its surface becomes a 150-seat cafe that complements the 300-seat indoor Park Grill dining facility. [30][33] Street level features such as McCormick Tribune Plaza are linked to elevated features such as Cloud Gate and AT&T Plaza, which are atop the Park Grill Restaurant and can be reached via balustraded stairs. [34]

[edit] Operations

Through 2006 and 2007, the McCormick Tribune Ice Rink was one of several operated by the Chicago Park District. [35] Since then, although the Chicago Park District still operates ten public ice skating rinks, [36] the Millennium Park ice rink is operated by a division of the Chicago Department of Cultural Affairs, [37][38] itself a Department of the City of Chicago Government. [39][40]

[edit] Ice rink

McCormick Tribune Ice Rink is generally open for skating afternoons and evenings seven days a week, with longer hours on weekends. [41] However, it is occasionally closed for private events. [35][36] Skating is free and skate rental is available. [30] Except for its first year, the rink has been scheduled to be open from mid-November until mid-March, weather permitting. [35][36] For the 2009–10 winter season, the rink is scheduled to be open from November 20, 2009 to March 14, 2010, with abbreviated holiday schedules on Thanksgiving, Christmas Eve, Christmas Day and New Year's Eve. [41] Skating is accompanied by loudspeaker music, [4] which is mostly seasonal music during the holidays. [42]

Rink attendance is heavier on the weekends and other times when school is not in session. [43][44] Romantic holidays such as Christmas Eve and Valentine's Day are also quite crowded. [42] The ice rink is a popular people watching location during the winter months; [4][5][31] many view events at the McCormick Tribune Plaza from AT&T Plaza, above and to the east. [45] The ice skating rink has become so popular that when the weather was too warm for the rink's opening in November 2005, the story became international news. [46] The book 1,000 Places to See in the U.S.A. & Canada Before You Die suggests a visit to McCormick Tribune Plaza during the skating season, and describes Millennium Park as a renowned attraction. [47]

There are days when themed skating is encouraged. Santa attire was encouraged on Saturday, December 13, 2008, and zombie attire was encouraged the next day, as part of an attempt to set a Guinness World Record for number of zombies on ice. [48] The rink also serves as a host to the annual Chicago Winter Dance Festival; during the festival there is a month of free skating instruction and demonstration at the rink, and there is free dance instructions behind the glass doors of the Jay Pritzker Pavilion stage. [49]

[edit] Park Grill Plaza

During much of the offseason alfresco dining is available in a 150-seat cafe set up on the ice rink, [33] in what is then referred to as the Park Grill Plaza. This outdoor dining experience is associated with the Park Grill Restaurant and the Park Grill Cafe, which are both located under the Cloud Gate

on AT&T Plaza.[3] Architecture critic Blair Kamin compares the in-park eating options available at the Park Grill with New York's former Tavern on the Green and Chicago's Cafe Brauer.[11] The Park Grill Plaza is the largest outdoor dining venue in Chicago,[6] and hosts a variety of events, including a benefit called "Chefs on the Grill" in which guests interact with invited chefs who are competing to produce the best dish. Wine tastings are also hosted there,[7] and during the summer, the Park Grill Plaza hosts musical performances on Thursdays.[6] During the skating season, there are rinkside tables and the Park Grill Cafe offers take out and to-go service.[50] Outdoor dining service begins in May.[51]

McCormick Tribune Plaza & Ice Rink is one of two features in the park to include accessible restrooms; the other is Jay Pritzker Pavilion. The restrooms are located adjacent to the Park Grill.[1] Although McCormick Plaza is a winter focal point, the park's restroom facilities at this feature are not heated for winter use.[52]

According to Fodor's, the restaurant is known for a view that makes up for unimpressive service.[53] However, Citysearch speaks positively about the service.[54] Metromix, Fodor's and Frommer's all laud the location of the restaurant,[53][55][56] which serves New American cuisine.[53][55][57] Frommer's gives the restaurant 2 out of 3 stars and notes that the restaurant has a kids menu to accommodate the numerous families that visit the park.[55] Metromix notes that the restaurant is well known for its signature Park Grill Burger. The northern area of the Plaza has been named the North Lounge and has furniture for lounging; it has a distinct menu including options from the Plaza's menu, as well as its own offerings.[56] The indoor restaurant has seating for 300, a VIP room,[56] and serves dinner, lunch, and weekend brunch.[54][56]

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#### [edit] External links

Coordinates: 41°52′25.68″N 87°37′25.55″W﻿ / ﻿41.8826889°N 87.6237639°W﻿ / 41.8826889; -87.6237639

"Soprano Home Movies" is the thirteenth episode of the sixth season of the HBO television drama series *The Sopranos* and seventy-eighth episode overall. It served as the midseason premiere to the second part of the show's sixth season, the broadcast of which was split into two. It was written by supervising producers Diane Frolov and Andrew Schneider, series creator/executive producer David Chase and executive producer Matthew Weiner; it was directed by frequent series director Tim Van Patten. The episode first aired in the United States on April 8, 2007.

"Soprano Home Movies", which is set eight months after the preceding episode,[1] details a weekend that series protagonist Tony Soprano (James Gandolfini) and his wife Carmela (Edie Falco) spend with his sister Janice (Aida Turturro) and brother-in-law Bobby (Steve Schirripa) at a lakefront vacation home in upstate New York and the complications that arise during this weekend.

The scenes set at the vacation home were filmed in Putnam Valley, New York. "Soprano Home Movies" was watched by 7.66Â million American viewers. Critical reception of the midseason premiere was mostly favorable; critics praised the episode for its calm, contemplative storytelling. The episode garnered a number of award nominations and was the episode submitted to Emmy Award voters to represent the season, leading to a nomination for Outstanding Drama Series, an award the show subsequently won.

#### [edit] Starring

\* = credit only

#### [edit] Guest Starring

In a flashback to 2004, a neighborhood teenage boy witnesses Johnny Sack's (Vincent Curatola) arrest and Tony Soprano's dropping of a pistol in the snow as he flees the scene. The same teenage boy later picks up and fires the gun.

Three years later, in June 2007, Essex County authorities arrest Tony on a gun charge. Tony spends a short period of time in custody before appearing in court with his attorney, Neil Mink (David Margulies) and is released on bail. In Brooklyn, a party is held for Phil Leotardo (Frank Vincent), who has recently returned from the hospital.

Tony returns home to a warm welcome. Later, he and Carmela travel to Janice and Bobby's upstate New York lakefront vacation home to celebrate Tony's forty-seventh birthday, where Tony fires Bobby's customized AR-10 assault rifle in the nearby woods. Bobby gives Tony the firearm as a birthday present. The two later relax by fishing on the lake in Bobby's boat. Tony raises the fact that Bobby has never "popped his cherry" in regard to murdering someone and juxtaposes this with the kill record of Bobby's father. Bobby replies that he has "come close," but that his father never wanted it for him. In North Caldwell, New Jersey, A.J. (Robert Iler) uses his parents' bedroom to entertain his girlfriend and has friends over for a party while his parents are away.

Tony, Carmela, Bobby and Janice celebrate Tony's birthday with karaoke, drinking and Monopoly. An argument starts after a discussion of Monopoly house rules. Over Tony's objections, Janice relates a childhood story of their father and mother; tensions reach a crescendo with Tony's remarks about Janice's looks and past promiscuity. Bobby hits Tony in the face and the two have a fight, ending with Tony bloodied and bruised on the floor. Janice scolds Bobby for hitting Tony and Bobby runs outside, where he drives off drunk in his SUV and reverses into a tree. He returns inside and apologizes to Tony and the two couples go to their beds. Tony wakes up in the middle of the night and tells Bobby and Janice that Bobby beat him in a fair fight. The next day, the couples seem to make amends, but as the day progresses Tony increasingly obsesses over losing the fight to Bobby.

Tony and Bobby leave for a pre-arranged business meeting with two Quebecers who want to sell them past-the-date medication. As a part of the deal, Tony agrees to arrange the murder of one of the Quebecers' former brother-in-law and asks Bobby to take care of it. Back at the vacation home, Carmela and Tony leave for home and Bobby sets off for Montreal, where the man he agreed to murder lives. He finds his target in the laundry room of an apartment building and kills him by shooting him twice.

Back home, Tony watches the "Soprano Home Movies" DVD given to him by Janice as a birthday present. Mink calls, informing Tony that the gun charge, though dropped by Essex County, has been picked up by the FBI. Bobby returns to his lakefront house, picks up his daughter and gazes out over the lake in silence.[2][3]

[edit] Production

[edit] Writing

"Soprano Home Movies" was written by four of the show's five season six writers: supervising producers and writing team Diane Frolov and Andrew Schneider, series creator and showrunner David Chase and executive producer Matthew Weiner, who had been promoted from co-executive producer before the production of "Soprano Home Movies" began. The four developed the episode's story outline along with executive producer and co-showrunner[4][5]Terence Winter.[6][7] "Soprano Home Movies" is Frolov and Schneider's fourth and final official writing credit for the series; it is Chase's twenty-seventh and Weiner's ninth. Chase and Weiner collaborated on two more of the season's episodes: "Kennedy and Heidi" and "The Blue Comet".

The episode title derives from Janice's birthday present to Tony: a DVD onto which she has had transferred old home movies of them and their sister during their childhood.

[edit] Filming

"Soprano Home Movies" was the first episode of the final batch of episodes to be produced, following a six-month-long production hiatus. In preparation for

shooting the episode, series creator/executive producer David Chase held several rehearsals with the lead actors.

The scenes at the lakefront vacation home were filmed over two weeks in June 2006 in Putnam Valley, New York. Additional interior shots were filmed six months later at Silvercup Studios, New York, where a replica of the cabin had been built in a sound stage. The lake seen multiple times in the episode is Lake Oscawana. The scenes of Tony and Bobby fishing were filmed on location on the lake but much closer to the shore than it appears in the episode. The scenes set in Montreal were actually filmed in Clinton Hill, Brooklyn. Filming of the scenes set in New Jersey and the Soprano residence took place on location in Essex County, New Jersey and in Silvercup Studios. The ripping of Bobby's shirt when he commits his first murder was not in the script but was added during production. While filming the cabin fight scene between Tony and Bobby in Silvercup Studios, Steve Schirripa accidentally headbutted James Gandolfini. The fight scene was choreographed but Gandolfini didn't step out of the way in time. His nose was bloodied but not broken. The real headbutting was kept in the episode.[9]

[edit] Cast notes

Gregory Antonacci, who plays Phil Leotardo's advisor Butch DeConcini on the show, is now billed in the opening credits. Joseph R. Gannascoli has been removed from the main credits as his character was murdered two episodes prior to "Soprano Home Movies". The characters Dr. Jennifer Melfi (Lorraine Bracco) and Junior Soprano (Dominic Chianese) do not appear in the episode, but the actors who play them are still listed in the opening credits.

[edit] Deceased

[edit] Reception

[edit] Ratings

"Soprano Home Movies" drew an average of 7.66 million viewers when it first aired on HBO on Sunday April 8, 2007 in the United States. This estimate was done by Nielsen Ratings. This was a significant drop from the 2006 season premiere episode, "Members Only", which attracted 9.47 million viewers and the lowest ratings for a Sopranos premiere since the season two opening episode, "Guy Walks Into a Psychiatrist's Office...", which drew roughly the same number of viewers as "Soprano Home Movies" (7.64 million viewers).[10][11]

[edit] Critical response

The episode was generally well received by critics. Tom Biro of television weblog TV Squad gave the episode a favorable review, writing "All in all, big thumbs up from me." [12] Marisa Carroll of PopMatters called the midseason premiere "stellar" and wrote that "David Chase repeatedly re-imagines ordinary family scenariosâ ~like a weekend trip to the mountainsâ ~in brutal, gangster terms. [...] Such signature exaggerations remain both hilarious and unsettling." She awarded the episode a score of 9 out of 10 (shared with the following two episodes). [13] Tim Goodman of the San Francisco Chronicle praised the episode, writing "the series remains as vital and interesting as ever [...] There may be no better (or realistic) way to go forward into this Sopranos swan song." [14] Kim Reed of Television Without Pity gave the midseason premiere an Aâ , writing "...while, on the surface, not much happened, I think there were a ton of callbacks to previous episodes and that familiar Soprano tension was used to good effect." [15] Maureen Ryan of the Chicago Tribune wrote "this is loose, contemplative Sopranos storytelling at its best." [16] Lisa Schwarzbaum of Entertainment Weekly was impressed with the midseason premiere and wrote that, despite not being a very eventful episode on the surface, "everything happened". [17] Alan Sepinwall of The Star Ledger gave "Soprano Home Movies" a positive review and praised it for featuring the character of Bobby Bacala in a more prominent role, writing "The hour was largely a refresher course on Tony, Janice and their history, but it also gave Bacala the dignity he's so often been deprived by the writers." [18] Alessandra Stanley of The New York Times gave the episode a mixed review, calling it "solemn" and wrote that "even before last season the series had started to sag in places, a creative fatigue that matched the main characters' weariness and also the audience's." [19] Brian

Zoromski of IGN awarded "Soprano Home Movies" a score of 9.5 out of 10, citing the calm, subtle storytelling as a great strength.[20]

[edit] Awards

In 2007, "Soprano Home Movies" was nominated in four categories for the 59th Primetime Emmy Awards. The episode was submitted for consideration in the category of Outstanding Drama Series. This led to a nomination and the showâ ~which was judged by six episodes from the second part of the sixth season, including "Soprano Home Movies"â ~won.[21][22][23] It was also nominated but failed to win in the categories of Outstanding Cinematography for a Single-Camera Series (Phil Abraham), Outstanding Single-Camera Picture Editing for a Drama Series (William B. Stich), and Outstanding Supporting Actress in a Drama Series (Aida Turturro).[24][25] The episode was also submitted for Emmy consideration in the categories of Outstanding Supporting Actor in a Drama Series (Steve Schirripa) and Outstanding Writing for a Drama Series (David Chase, Diane Frolov, Andrew Schneider, and Matthew Weiner); however, it was not nominated.[26] In 2008, Tim Van Patten was nominated for the Directors Guild of America Award for Outstanding Directing â ^ Drama Series, but lost out to Mad Men's Alan Taylor, also a director for The Sopranos, who happened to win the Emmy Award for directing "Kennedy and Heidi" at the 59th Primetime Emmy Awards.[27][28]

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[edit] External links

The Anglo-Saxon Chronicle is a collection of annals in Old English chronicling the history of the Anglo-Saxons. The original manuscript of the Chronicle was created late in the 9th century, probably in Wessex, during the reign of Alfred the Great. Multiple copies were made of that original which were distributed to monasteries across England, where they were independently updated. In one case, the Chronicle was still being actively updated in 1154.

Nine manuscripts survive in whole or in part, though not all are of equal historical value and none of them is the original version. The oldest seems to have been started towards the end of Alfred's reign, while the most recent was written at Peterborough Abbey after a fire at that monastery in 1116. Almost all of the material in the Chronicle is in the form of annals, by year; the earliest are dated at 60 BC (the annals' date for Caesar's invasions of Britain), and historical material follows up to the year in which the chronicle was written, at which point contemporary records begin. These manuscripts collectively are known as the Anglo-Saxon Chronicle.

The Chronicle is not unbiased: there are occasions when comparison with other medieval sources makes it clear that the scribes who wrote it omitted events or told one-sided versions of stories; there are also places where the different versions contradict each other. Taken as a whole, however, the Chronicle is the single most important historical source for the period in England between the departure of the Romans and the decades following the Norman Conquest. Much of the information given in the Chronicle is not recorded elsewhere. In addition, the manuscripts are important sources for the history of the English language; in particular, the later Peterborough text is one of the earliest examples of Middle English in existence.

Seven of the nine surviving manuscripts and fragments now reside in the British Library. The remaining two are in the Bodleian Library at Oxford and the Parker Library of Corpus Christi College, Cambridge.

[edit] Composition

All of the surviving manuscripts are copies, so it is not known for certain where or when the first version of the Chronicle was composed. It is generally agreed that the original version was written in the late 9th century by a scribe in Wessex.[2][3][notes 1] After the original Chronicle was compiled, copies were made and distributed to various monasteries. Additional copies were made, for further distribution or to replace lost manuscripts, and some copies were updated independently of each other. Some of these later copies are those that have survived.[4]

The earliest extant manuscript, the Winchester Chronicle, was written by a single scribe up to the year 891. The scribe wrote the year number, DCCCXCII, in the margin of the next line; subsequent material was written by other scribes.[5] This appears to place the composition of the chronicle at no later than 892; further evidence is provided by Bishop Asser's use of a version of the Chronicle in his work *Life of King Alfred*, known to have been composed in 893.[6] It is known that the Winchester manuscript is at least two removes from the original Chronicle; as a result, there is no proof that the Chronicle was compiled at Winchester.[7] It is also difficult to fix the date of composition, but it is generally thought that the chronicles were composed during the reign of Alfred the Great (871â ^99), as Alfred deliberately tried to revive learning and culture during his reign, and encouraged the use of English as a written language. The Chronicle, as well as the distribution of copies to other centres of learning, may be a consequence of the changes Alfred introduced.[8]

[edit] Surviving manuscripts

Of the nine surviving manuscripts, seven are written entirely in Old English (also known as Anglo-Saxon). One, known as the Bilingual Canterbury Epitome, is in Old English with a translation of each annal into Latin. Another, the Peterborough Chronicle, is in Old English except for the last entry, which is in early Middle English. The oldest (Corp. Chris. MS 173) is known as the Winchester Chronicle or the Parker Chronicle (after Matthew Parker, an Archbishop of Canterbury, who once owned it). Six of the manuscripts were printed in an 1861 edition for the Rolls Series by Benjamin Thorpe with the text laid out in columns labelled A to F. Following this convention, the three additional manuscripts are often called [G], [H] and [I]. The surviving manuscripts are listed below.

[edit] Relationships between the manuscripts

The manuscripts are all thought to derive from a common original, but the connections between the texts are more complex than simple inheritance via

copying. The diagram at right gives an overview of the relationships between the manuscripts. The following is a summary of the relationships that are known.[5]

[A2] was a copy of [A], made in Winchester, probably between 1001 and 1013. [B] was used in the compilation of [C] at Abingdon, in the mid-11th century. However, the scribe for [C] also had access to another version, which has not survived.

[D] includes material from Bede's Ecclesiastical History and from a set of 8th-century Northumbrian annals and is thought to have been copied from a northern version that has not survived.

[E] has material that appears to derive from the same sources as [D] but does not include some additions that appear only in [D], such as the Mercian Register. This manuscript was composed at the monastery in Peterborough, some time after a fire there in 1116 that probably destroyed their copy of the Chronicle; [E] appears to have been created thereafter as a copy of a Kentish version, probably from Canterbury.

[F] appears to include material from the same Canterbury version that was used to create [E].

Asser's Life of King Alfred, which was written in 893, includes a translation of the Chronicle's entries from 849 to 887. Only [A], of surviving manuscripts, could have been in existence by 893, but there are places where Asser departs from the text in [A], so it is possible that Asser used a version that has not survived.[notes 2]

Æthelweard wrote a translation of the Chronicle into Latin in the late 10th century; the version he used probably came from the same branch in the tree of relationships that [A] comes from.[10]

Asser's text agrees with [A] and with Æthelweard's text in some places against the combined testimony of [B], [C], [D] and [E], implying that there is a common ancestor for the latter four manuscripts.[11]

At Abingdon, some time between 1120 and 1140, an unknown author wrote a Latin chronicle known as the Annals of St Neots. This work includes material from a copy of the Chronicle, but it is very difficult to tell which version because the annalist was selective about his use of the material. It may have been a northern recension, or a Latin derivative of that recension.[10]

All the manuscripts described above share a chronological error between the years 756 and 845, but it is apparent that the composer of the Annals of St Neots was using a copy that did not have this error and which must have preceded them. Æthelweard's copy did have the chronological error but it had not lost a whole sentence from annal 885; all the surviving manuscripts have lost this sentence. Hence the error and the missing sentence must have been introduced in separate copying steps, implying that none of the surviving manuscripts are closer than two removes from the original version.[11]

[edit] History of the manuscripts

[edit] The Winchester Chronicle

[A]: The Winchester (or Parker) Chronicle is the oldest manuscript of the Chronicle that survives. It was begun at Old Minster, Winchester, towards the end of Alfred's reign. The manuscript begins with a genealogy of Alfred, and the first chronicle entry is for the year 60 BC.[5] The section containing the Chronicle takes up folios 1â 32.[12] Unlike the other manuscripts, [A] is of early enough composition to show entries dating back to the late 9th century in the hands of different scribes as the entries were made. The first scribe's hand is dateable to the late 9th or very early 10th century; his entries cease in late 891, and the following entries were made at intervals throughout the 10th century by several scribes. The eighth scribe wrote the annals for the years 925â 955, and was clearly at Winchester when he wrote them since he adds some material related to events there; he also uses ceaster, or "city", to mean Winchester.[13] The manuscript becomes independent of the other recensions after the entry for 975. The book, which also had a copy of the Laws of Alfred and Ine bound in after the entry for 924, was transferred to Canterbury some time in the early 11th century,[5] as evidenced by a list of books that

Archbishop Parker gave to Corpus Christi.[12] While at Canterbury, some interpolations were made; this required some erasures in the manuscript. The additional entries appear to have been taken from a version of the manuscript from which [E] descends.[13] The last entry in the vernacular is for 1070. After this comes the Latin *Acta Lanfranci*, which covers church events from 1070â ~1093. This is followed by a list of popes and the Archbishops of Canterbury to whom they sent the pallium. The manuscript was acquired by Matthew Parker, Archbishop of Canterbury (1559â ~1575)[5] and master of Corpus Christi College, Cambridge, following the dissolution of the monasteries, and bequeathed to the college on his death. It now forms part of the Parker Library.

[edit] The Abingdon Chronicle I

[B] The Abingdon Chronicle I was written by a single scribe in the second half of the 10th century. The Chronicle takes up folios 1â ~34.[14] It begins with an entry for 60 BC and ends with the entry for 977. A manuscript that is now separate (British Library MS. Cotton Tiberius Aiii, f. 178) was originally the introduction to this chronicle; it contains a genealogy, as does [A], but extends it to the late 10th century. [B] was at Abingdon in the mid-11th century, because it was used in the composition of [C]. Shortly after this it went to Canterbury, where interpolations and corrections were made. As with [A], it ends with a list of popes and the archbishops of Canterbury to whom they sent the pallium.[5]

[edit] The Abingdon Chronicle II

[C] includes additional material from local annals at Abingdon, where it was composed.[5] The section containing the Chronicle (folios 115â ~64) is preceded by King Alfred's Old English translation of Orosius's world history, followed by a menologium and some gnomic verses of the laws of the natural world and of humanity.[15] Then follows a copy of the chronicle, beginning with 60 BC; the first scribe copied up to the entry for 490, and a second scribe took over up to the entry for 1048. [B] and [C] are identical between 491 and 652, but differences thereafter make it clear that the second scribe was also using another copy of the Chronicle. This scribe also inserted, after the annal for 915, the Mercian Register, which covers the years 902â ~924, and which focuses on Aethelflaed. The manuscript continues to 1066 and stops in the middle of the description of the Battle of Stamford Bridge. In the 12th century a few lines were added to complete the account.[5]

[edit] The Worcester Chronicle

[D] The Worcester Chronicle appears to have been written in the middle of the 11th century. After 1033 it includes some records from Worcester, so it is generally thought to have been composed there. Five different scribes can be identified for the entries up to 1054, after which it appears to have been worked on at intervals. The text includes material from Bede's *Ecclesiastical History* and from a set of 8th-century Northumbrian annals. It is thought that some of the entries may have been composed by Archbishop Wulfstan. [D] contains more information than other manuscripts on northern and Scottish affairs, and it has been speculated that it was a copy intended for the Anglicised Scottish court. From 972 to 1016, the sees of York and Worcester were both held by the same personâ ~Oswald from 972, Ealdwulf from 992, and Wulfstan from 1003, and this may explain why a northern recension was to be found at Worcester. By the 16th century, parts of the manuscript were lost; eighteen pages were inserted containing substitute entries from other sources,[5] including [A], [B], [C], and [E]. These pages were written by John Joscelyn, who was secretary to Matthew Parker.[16]

[edit] The Peterborough Chronicle

[E] The Peterborough Chronicle: In 1116, a fire at the monastery at Peterborough destroyed most of the buildings. The copy of the Chronicle kept there may have been lost at that time or later, but in either case shortly thereafter a fresh copy was made, apparently copied from a Kentish versionâ ~most likely to have been from Canterbury.[5] The manuscript was written at one time and by a single scribe, down to the annal for 1121.[17] The scribe added



material relating to Peterborough Abbey which is not in other versions. The Canterbury original which he copied was similar, but not identical, to [D]: the Mercian Register does not appear, and a poem about the Battle of Brunanburh in 937, which appears in most of the other surviving copies of the Chronicle, is not recorded. The same scribe then continued the annals through to 1131; these entries were made at intervals, and thus are presumably contemporary records. Finally, a second scribe, in 1154, wrote an account of the years 1132â ^1154; but his dating is known to be unreliable. This last entry is in Middle English, rather than Old English. [E] was once owned by William Laud, Archbishop of Canterbury 1633â ^1654, so is also known as the Laud Chronicle.[5] The manuscript contains occasional glosses in Latin, and is referred to (as "the Saxon storýe of Peterborowe church") in an antiquarian book from 1566.[17] According to Joscelyn, Nowell had a transcript of the manuscript. Previous owners include William Camden[18] and William L'Isle; the latter probably passed the manuscript on to Laud.[19]

[edit] The Canterbury Bilingual Epitome

[F] The Canterbury Bilingual Epitome: At about 1100, a copy of the Chronicle was written at Christ Church, Canterbury,[20] probably by one of the scribes who made notes in [A]. This version is written in both Old English and Latin; each entry in Old English was followed by the Latin version. The version the scribe copied (on folios 30â ^70[21]) is similar to the version used by the scribe in Peterborough who wrote [E], though it seems to have been abridged. It includes the same introductory material as [D] and, along with [E], is one of the two chronicles that does not include the "Battle of Brunanburh" poem. The manuscript has many annotations and interlineations, some made by the original scribe and some by later scribes,[5] including Robert Talbot.[21]

[edit] Copy of the Winchester Chronicle

[A2]/[G] Copy of the Winchester Chronicle: [A2] was copied from [A] at Winchester in the eleventh century and follows a 10th-century copy of an Old English translation of Bede's Ecclesiastical History.[12] The last annal copied was 1001, so the copy was made no earlier than that; an episcopal list appended to [A2] suggests that the copy was made by 1013. This manuscript was almost completely destroyed in the 1731 fire at Ashburnham House, where the Cotton Library was housed.[5] Of the original 34 leaves, seven remain, ff. 39â ^47 in the manuscript.[22] However, a transcript had been made by Laurence Nowell, a 16th century antiquary, which was used by Abraham Wheloc in an edition of the Chronicle printed in 1643.[5] Because of this, it is also sometimes known as [W], after Wheloc.[5] The appellations [A], [A2], and [G] derive from Plummer, Smith, and Thorpe, respectively.[22]

[edit] Cottonian Fragment

The Cottonian Fragment [H] consists of a single leaf, containing annals for 1113 and 1114. In the entry for 1113 it includes the phrase "he came to Winchester"; hence it is thought likely that the manuscript was written at Winchester. There is not enough of this manuscript for reliable relationships to other manuscripts to be established.[5] Ker notes that the entries may have been written contemporarily.[23]

[edit] Easter Table Chronicle

[I] Easter Table Chronicle: A list of Chronicle entries accompanies a table of years, found on folios 133-37 in a badly burned manuscript containing miscellaneous notes on charms, the calculation of dates for church services, and annals pertaining to Christ Church, Canterbury.[24] Most of the Chronicle's entries pertain to Christ Church, Canterbury. Until 1109 (the death of Anselm of Canterbury) they are in English; all but one of the following entries are in Latin.[25] Part of [I] was written by a scribe soon after 1073,[5] in the same hand and ink as the rest of the Caligula MS. After 1085, the annals are in various contemporary hands. The original annalist's entry for the Norman conquest is limited to "Her forÃ°ferde eadward kyng"; a later hand added the coming of William the Conqueror, "7 her com willelm." [25] At one point this manuscript was at St Augustine's Abbey, Canterbury.[5][26]

[edit] Lost manuscripts

Two manuscripts are recorded in an old catalogue of the library of Durham; they are described as *cronica duo Anglica*. In addition, Parker included a manuscript called *Hist. Angliae Saxonica* in his gifts but the manuscript that included this, now Cambridge University Library MS. Hh.1.10, has lost 52 of its leaves, including all of this copy of the chronicle.[11][27]

[edit] Sources, reliability and dating

The Chronicle incorporates material from multiple sources. The entry for 755, describing how Cynewulf took the kingship of Wessex from Sigebehrt, is far longer than the surrounding entries, and includes direct speech quotations from the participants in those events. It seems likely that this was taken by the scribe from existing saga material.[28] Early entries, up to the year 110, probably came from one of the small encyclopaedic volumes of world history in circulation at the time the Chronicle was first written. The chronological summary to Bede's *Ecclesiastical History* was used as a source. The Chronicle gives dates and genealogies for Northumbrian and Mercian kings, and provides a list of Wessex bishops; these are likely to have had separate sources. The entry for 661 records a battle fought by Cenwalh that is said to have been fought "at Easter"; this precision implies a contemporary record, which survived and was re-used by the Chronicle scribe.[29]

Contemporary annals began to be kept in Wessex during the 7th century.[30][notes 3] The material compiled in Alfred's reign included annals relating to Kentish, South Saxon, Mercian and, particularly, West Saxon history, but, with the exception of the Cynewulf entry, does not gather momentum until it comes to the Danish invasions of the late 8th century onwards.[31] The Chronicle grew out of the tradition of the Easter Tables, drawn up to help the clergy determine the dates of feasts in future years: a page consisted of a sequence of horizontal lines followed by astronomical data, with a space for short notes of events to distinguish one year from another. As the Chronicle developed, it lost its list-like appearance, and such notes took up more space, becoming more like historical records. Many later entries, especially those written by contemporaries, contained a great deal of historical narrative under the year headings.[32]

As with any historical source, the Chronicle has to be treated with some caution. For example, between 514 and 544 the Chronicle makes reference to Wihtgar, who is supposedly buried on the Isle of Wight at "Wihtgar's stronghold" (which is "Wihtgar's byrg" in the original) and purportedly gave his name to the island. However, the name of the "Isle of Wight" derives from the Latin "Vectis", not from Wihtgar. The actual name of the fortress was probably "Wihtwarabyrg", "the stronghold of the inhabitants of Wight", and either the chronicler or an earlier source misinterpreted this as referring to Wihtgar.[33][34]

The dating of the events recorded also requires care. In addition to dates that are simply inaccurate, scribes occasionally made mistakes that caused further errors. For example, in the [D] manuscript, the scribe omits the year 1044 from the list on the left hand side. The annals copied down are therefore incorrect from 1045 to 1052, which has two entries. A more difficult problem is the question of the date at which a new year began, since the modern custom of starting the year on 1 January was not universal at that time. The entry for 1091 in [E] begins at Christmas and continues throughout the year; it is clear that this entry follows the old custom of starting the year at Christmas. Some other entries appear to begin the year on 25 March, such as the year 1044 in the [C] manuscript, which ends with Edward the Confessor's marriage on 23 January, while the entry for 22 April is recorded under 1045. There are also years which appear to start in September.[35]

The manuscripts were produced in different places, and each manuscript reflects the biases of its scribes. It has been argued that the Chronicle should be regarded as propaganda, produced by Alfred's court and written with the intent of glorifying Alfred and creating loyalty.[36] This is not universally accepted,[notes 4] but the origins of the manuscripts clearly colour both the description of interactions between Wessex and other kingdoms,

and the descriptions of the Vikings' depredations. An example can be seen in the entry for 829, which describes Egbert's invasion of Northumbria. According to the Chronicle, after Egbert conquered Mercia and Essex, he became a "bretwalda", implying overlordship of all of England. Then when he marched into Northumbria, the Northumbrians offered him "submission and peace". The Northumbrian chronicles incorporated into Roger of Wendover's 13th-century history give a different picture: "When Egbert had obtained all the southern kingdoms, he led a large army into Northumbria, and laid waste that province with severe pillaging, and made King Eanred pay tribute." [38][39]

Occasionally the scribes' biases can be seen by comparing different versions of the manuscript they created. For example, Ælfgar, earl of East Anglia, and son of Leofric, the earl of Mercia, was exiled briefly in 1055. The [C], [D] and [E] manuscripts say the following: [40][41]

[C]: "Earl Ælfgar, son of Earl Leofric, was outlawed without any fault . . ."

[D]: "Earl Ælfgar, son of Earl Leofric, was outlawed well-nigh without fault . . ."

[E]: "Earl Ælfgar was outlawed because it was thrown at him that he was traitor to the king and all the people of the land. And he admitted this before all the men who were gathered there, although the words shot out against his will."

Another example that mentions Ælfgar shows a different kind of unreliability in the Chronicle: that of omission. Ælfgar was Earl of Mercia by 1058, and in that year was exiled again. This time only [D] has anything to say: "Here Earl Ælfgar was expelled, but he soon came back again, with violence, through the help of Gruffydd. And here came a raiding ship-army from Norway; it is tedious to tell how it all happened." [40] In this case other sources exist to clarify the picture: a major Norwegian attempt was made on England, but [E] says nothing at all, and [D] scarcely mentions it. It has sometimes been argued that when the Chronicle is silent, other sources that report major events must be mistaken, but this example demonstrates that the Chronicle does omit important events. [41]

[edit] Use by Latin and Anglo-Norman historians

The three main Anglo-Norman historians, John of Worcester, William of Malmesbury, and Henry of Huntingdon, each had a copy of the Chronicle, which they adapted for their own purposes. [42] Simeon of Durham also had a copy of the Chronicle. [11] Some later medieval historians also used the Chronicle, and others took their material from those who had used it, and so the Chronicle became "central to the mainstream of English historical tradition". [42]

Henry of Huntingdon used a copy of the Chronicle that was very similar to [E]. There is no evidence in his work of any of the entries in [E] after 1121, so although his manuscript may have been actually been [E], it may also have been a copy—either one taken of [E] prior to the entries he makes no use of, or a manuscript from which [E] was copied, with the copying taking place prior to the date of the last annal he uses. Henry also made use of the [C] manuscript. [11]

The Waverley annals made use of a manuscript that was similar to [E], though it appears that it did not contain the entries focused on Peterborough. The manuscript of the chronicle translated by Geoffrey Gaimar's cannot be identified accurately, though according to historian Dorothy Whitelock it was "a rather better text than 'E' or 'F'". Gaimar implies that there was a copy at Winchester in his day (the middle of the 12th century); Whitelock suggests that there is evidence that a manuscript that has not survived to the present day was at Winchester in the mid-tenth century. If it survived to Gaimar's time that would explain why [A] was not kept up to date, and why [A] could be given to the monastery at Canterbury. [11]

John of Worcester's *Chronicon ex chronicis* appears to have had a manuscript that was either [A] or similar to it; he makes use of annals that do not appear in other versions, such as entries concerning Edward the Elder's campaigns and information about Winchester towards the end of the chronicle. His account is often similar to that of [D], though there is less attention paid to Margaret of Scotland, an identifying characteristic of [D]. He had the Mercian register,

which appears only in [C] and [D]; and he includes material from annals 979â ^982 which only appears in [C]. It is possible he had a manuscript that was an ancestor of [D]. He also had sources which have not been identified, and some of his statements have no earlier surviving source.[11]

A manuscript similar to [E] was available to William of Malmesbury, though it is unlikely to have been [E] as that manuscript is known to have still been in Peterborough after the time William was working, and he does not make use of any of the entries in [E] that are specifically related to Peterborough. It is likely he had either the original from which [E] was copied, or a copy of that original. He mentions that the chronicles do not give any information on the murder of Alfred Atheling, but since this is covered in both [C] and [D] it is apparent he had no access to those manuscripts. On occasion he appears to show some knowledge of [D] but it is possible that his information was taken from John of Worcester's account. He also omits any reference to a battle fought by Cenwealh in 652; this battle is mentioned in [A], [B], and [C], but not in [E]. He does mention a battle fought by Cenwealh at Wirtgernesburg, which is not in any of the extant manuscripts, so it is possible he had a copy now lost.[11]

#### [edit] Importance

The Anglo-Saxon Chronicle is the single most important source for the history of England in Anglo-Saxon times. Without the Chronicle and Bede's *Historia ecclesiastica gentis Anglorum* (the Ecclesiastical History of the English People), it would be impossible to write the history of the English from the Romans to the Norman Conquest.[43] It is clear that records and annals of some kind began to be kept in England at the time of the earliest spread of Christianity, but no such records survive in their original form. Instead they were incorporated in later works, and it is thought likely that the Chronicle contains many of these. The history it tells is not only that witnessed by its compilers, but also that recorded by earlier annalists, whose work is in many cases preserved nowhere else.[44]

Its importance is not limited to the historical information it provides, however. It is just as important a source for the early development of English.[43] The Peterborough Chronicle changes from the standard Old English literary language to early Middle English after 1131, providing some of the earliest Middle English text known.[5]

The Chronicle is not without literary interest. Inserted at various points since the 10th century are Old English poems in celebration of royal figures and their achievements: "The Battle of Brunanburh" (937), on King Æthelstan's victory over the combined forces of Vikings, Scots and the Strathclyde Britons, and five shorter poems, "Capture of the Five Boroughs" (942), "The Coronation of King Edgar" (973), "The Death of King Edgar" (975), "The Death of Prince Alfred" (1036), and "The Death of King Edward the Confessor" (1065).

#### [edit] History of editions and availability

An important early printed edition of the Chronicle appeared in 1692, by Edmund Gibson, an English jurist and divine who became Bishop of Lincoln in that year. Titled *Chronicum Saxonicum*, it printed Latin and Old English versions of the text in parallel columns and became the standard edition until the 19th century.[45] It was superseded in 1861 by Benjamin Thorpe's *Rolls* edition, which printed six versions in columns, labelled A to F, thus giving the manuscripts the letters which are now used to refer to them.

John Earle wrote *Two of the Saxon Chronicles Parallel* (1865).[46] Charles Plummer edited this book, producing a *Revised Text* with notes, appendices, and glossary in two volumes in 1892 and 1899.[47][48] This edition of the A and E texts, with material from other versions, was widely used; it was reprinted in 1952.[48]

#### [edit] Editions of the individual manuscripts

Beginning in the 1980s, a new set of scholarly editions have been printed under the series title "The Anglo-Saxon Chronicle: A Collaborative Edition". Some volumes are still projected, such as a volume focusing on the northern recension, but existing volumes such as Janet Bately's edition of [A] are now standard references.[5] A recent translation of the Chronicle is Michael

Swanton's *The Anglo-Saxon Chronicle*, which presents translations of [A] and [E] on opposite pages, with interspersed material from the other manuscripts where they differ.

A facsimile edition of [A], *The Parker Chronicle and Laws*, appeared in 1941 from the Oxford University Press, edited by Robin Flower and Hugh Smith.[48] A recent scholarly edition of the [B] text is *The Anglo-Saxon Chronicle: A Collaborative Edition*, 4, MS B by S. Taylor (Cambridge, 1983).[5] The [C] manuscript was edited by H.A. Rositzke; *The C-Text of the Old English Chronicles*, in *Beiträge z. engl. Phil.*, XXXIV, Bochum-Langendreer, 1940; and the [D] manuscript in *An Anglo-Saxon Chronicle from British Museum Cotton MS., Tiberius B. iv*, edited by E. Classen and F.E. Harmer, Manchester, 1926. Rositzke also published a translation of the [E] text in *The Peterborough Chronicle* (New York, 1951). The [F] text was printed in F.P. Magoun, Jr., *Annales Domitiani Latini: an Edition in "Mediaeval Studies of the Pontifical Institute of Mediaeval Studies"*, IX, 1947, pp. 235âˆ²295.[48] The first edition of [G] was Abraham Whelock's 1644 *Venerabilis Bedae Historia Ecclesiastica*, printed in Cambridge;[48] there is also an edition by Angelica Lutz, *Die Version G der angelsächsischen Chronik: Rekonstruktion und Edition* (Munich, 1981).[5]

[edit] See also

^ For example, Richard Abels says that "historians are in basic agreement that the original *Chronicle* extended to at least 890." Keynes and Lapidge suggest that "the return of the Vikings to England appears to have occasioned the 'publication', in late 892 or early 893, of the *Anglo-Saxon Chronicle*".[2][3]

^ For example, Asser omits Esla from Alfred's genealogy; [A] includes Esla but [D] does not.[9]

^ The *Chronicle* entry for 648 may mark the point after which entries that were written as a contemporary record begin to appear.[30]

^ For example, Keynes and Lapidge comment that we should "resist the temptation to regard it as a form of West Saxon dynastic propaganda".[37]

^ Bosworth, *The Elements of Anglo-Saxon Grammar*, p. 277.

^ a b Abels, *Alfred the Great*, p. 15.

^ a b Keynes and Lapidge, *Alfred the Great*, p. 41.

^ Swanton, *The Anglo-Saxon Chronicle*, pp. xxâˆ²xxi.

^ a b c d e f g h i j k l m n o p q r s t u v Swanton, *The Anglo-Saxon Chronicle*, pp. xxiâˆ²xxviii.

^ Keynes and Lapidge, *Alfred the Great*, p. 55.

^ Wormald, "Alfredian Manuscripts", p. 158, in Campbell et al., *The Anglo-Saxons*.

^ Hunter Blair, *Roman Britain*, p. 12.

^ Keynes and Lapidge, *Alfred the Great*, pp. 228âˆ²229, n. 4.

^ a b Swanton, *The Anglo-Saxon Chronicle*, pp. xixâˆ²xx.

^ a b c d e f g h Whitelock, *English Historical Documents*, pp. 113âˆ²114.

^ a b c Ker, *Catalogue of Manuscripts*, p. 57.

^ a b Whitelock, *English Historical Documents*, pp. 109âˆ²112.

^ Ker, *Catalogue of Manuscripts*, p. 249.

^ Ker, *Catalogue of Manuscripts*, pp. 251âˆ²52.

^ Ker, *Catalogue of Manuscripts*, 254.

^ a b Ker 424-26.

^ Harrison, "William Camden and the F-Text," p. 222.

^ Howorth, "The Anglo-Saxon Chronicle," p. 155.

^ Gneuss, *Handlist*, p. 63.

^ a b Ker, *Catalogue of Manuscripts*, p. 187.

^ a b Ker, *Catalogue of Manuscripts*, p. 231.

^ Ker, *Catalogue of Manuscripts*, p. 188.

^ Ker, *Catalogue of Manuscripts*, p. 174.

^ a b Ker, *Catalogue of Manuscripts*, p. 175.

^ "Cotton Catalogue". Archived from the original on 23 April 2007.  
<http://www.hrionline.ac.uk/cotton/cotframe.htm>. Retrieved 11 April 2007. See Caligula A.15, under "Provenance", which gives a description of the manuscript and some of its history.

^ "Cambridge, University Library, Hh. 1. 10 â ^ The Production and Use of English Manuscripts:1060 to 1220".  
<http://www.le.ac.uk/english/em1060to1220/mss/EM.CUL.Hh.1.10.htm>. Retrieved 23 July 2011.

^ Greenfield, A New Critical History, p. 60.

^ Swanton, The Anglo-Saxon Chronicle, pp. xviiiâ ^xix.

^ a b Yorke, Kings and Kingdoms, p.Â 128.

^ Lapidge, Encyclopedia of Anglo-Saxon England, p. 35.

^ Crystal, The Cambridge Encyclopedia, 15.

^ Ekwall, Dictionary of English Place-Names.

^ Swanton, The Anglo-Saxon Chronicle, p. 16.

^ Swanton, The Anglo-Saxon Chronicle, pp. xivâ ^xvi.

^ Campbell, The Anglo-Saxon State, p. 144.

^ Keynes and Lapidge, Alfred the Great, p.Â 55.

^ Swanton, The Anglo-Saxon Chronicle, pp. 60â ^61.

^ P. Wormald, "The Ninth Century", p. 139, in Campbell et al., The Anglo-Saxons.

^ a b Translations from Swanton, The Anglo-Saxon Chronicle, pp. 184â ^18.

^ a b Campbell et al., The Anglo-Saxons, p. 222.

^ a b Lapidge, Encyclopedia of Anglo-Saxon England, p. 36.

^ a b Hunter Blair, An Introduction, p. 355.

^ Hunter Blair, Roman Britain, p. 11.

^ The title in full is *Chronicon Saxonum; Seu Annales Rerum in Anglia Praecipue Gestarum, a Christo Nato ad Annum Usque MCLIV. Deducti, ac Jam Demum Latinitate Donati. Cum Indice Rerum Chronologico; Accedunt Regulae ad Investigandas Nominum Locorum Origines; Et Nominum Locorum ac Vivorum in Chronico Memoratorum Explicatio*. A detailed description of a first edition is listed at "Law Books â ^ October 2002 List".  
<http://www.lawbookexchange.com/oct02/law-books-oct02-2.html>. Retrieved 13 April 2007.[dead link]

^ John Earle (1865). Two of the Saxon chronicles parallel: with supplementary extracts from the others. Clarendon Press.  
<http://books.google.com/books?id=FT0LAAAAAYAAJ>.

^ John Earle; Charles Plummer (1892). Two of the Saxon Chronicles Parallel: Text, appendices and glossary. Clarendon Press.  
<http://books.google.com/books?id=V7osAAAAMAAJ>.

^ a b c d e Whitelock, English Historical Documents, p.Â 129.

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[edit] External links

*Banksia aemula*, commonly known as the wallum banksia, is a lignotuberous shrub of the Proteaceae family. Found from Bundaberg south to Sydney on the Australian east coast, it is encountered as a shrub or a taller tree to 8Â m (25Â ft) in coastal heath on deep sandy soil, known as Wallum. It has wrinkled orange bark and shiny green serrated leaves, with green-yellow flower spikes, known as inflorescences, appearing in autumn. The flower spikes turn grey as they age and large grey follicles appear. *Banksia aemula* resprouts from its woody lignotuber after bushfires.

First described by the botanist Robert Brown in the early 19th century, it derives its specific epithet 'similar' from its resemblance to the closely related *Banksia serrata*. No varieties are recognised. It was known for many years in New South Wales as *Banksia serratifolia*, contrasting with the use of *B.Â aemula* elsewhere. However, the former name, originally coined by Richard Anthony Salisbury, proved invalid, and *Banksia aemula* has been universally adopted as the correct scientific name since 1981. A wide array of mammals, birds, and invertebrates visit the inflorescences and are instrumental in pollination; honeyeaters are particularly prominent visitors. Grown as a garden plant, it is less commonly seen in horticulture than its close relative *B.Â*

serrata.

[edit] Description

*Banksia aemula* is generally a gnarled shrub or small tree to 8 m (25 ft), although usually smaller. The trunk has thick orange-brown wrinkled and warty bark, and the new growth is hairy but becomes smooth as it ages.[1] New shoot growth is in spring and summer.[2] The shiny green leaves are obovate to oblong in shape and measure 3–22 cm (1.4–9 in) in length, and 1–2 cm (0.4–0.8 in) in width. The leaf ends are truncate and the margins flat and serrated. Flowering is in autumn, from March to June; the green-yellow flower spikes, known as inflorescences, are terminal, found on the ends of branches and emerging from the foliage. Measuring 4 to 20 cm (1.6–8 in) in height and 8 to 9 cm (2.8–3.2 in) in width, they are various shades of pale and greenish yellow.[1] Anywhere from 800 to 1700 individual small flowers arise from a central woody spike (or rachis). Initially tipped with white conical pollen presenters, the flowers open sequentially from the bottom to the top of the inflorescence over one to two weeks,[3] in a process known as anthesis. Each flower produces nectar for around seven days after opening.[4] The flower spikes turn grey as they age and up to 25 finely furred grey follicles appear, which can be very large, measuring 3–4.5 cm (1.2–2.6 in) long, 2–3.5 cm (0.8–1.4 in) high, and 2–3.5 cm (0.8–1.4 in) wide. They split open either after bushfire or spontaneously, and release oval seeds 4–4.7 cm (1.6–1.9 in) in length, composed of a wedge-shaped body 1–1.5 cm (0.4–0.6 in) long and 1.1–1.6 cm (0.4–0.6 in) wide, and curved wing 2–3.2 cm (0.8–1.3 in) wide. *Banksia aemula* resprouts from its woody lignotuber after fire.[1]

*Banksia aemula* closely resembles *Banksia serrata*, but the latter can be distinguished by a greyer, not orange-brown, trunk, and adult leaves wider than 2 cm (0.8 in) in diameter. Inflorescences of *serrata* are generally a duller grey-yellow in colour, and have longer (2–3 mm), more fusiform (spindle-shaped) or cylindrical pollen presenters tipping unopened flowers.[5][6] Finally, the follicles are smaller.[7]

[edit] Taxonomy

*Banksia aemula* was called wallum by the Kabi people of the Sunshine Coast, giving rise not only to its common name of wallum banksia but also to the name of the ecological community it grows in.[8] Banyalla is another aboriginal name for the species.[7]

*Banksia aemula* was collected by Scottish botanist Robert Brown in June 1801 in the vicinity of Port Jackson, and published by him in his 1810 work *Prodromus Florae Novae Hollandiae et Insulae Van Diemen*. The specific name, Latin for 'similar', refers to its similarity to *B. serrata*. [7] Brown also collected a taller tree-like specimen from Sandy Cape which he called *Banksia elatior*; the specific name is the comparative form of the Latin adjective *altus* "elevated".[9][10]

For many years in New South Wales, the wallum banksia had gone by the scientific name of *Banksia serratifolia*. Richard Anthony Salisbury had published this binomial name in 1796, which was followed by Otto Kuntze, and then Karel Domin in 1921. Botanist and banksia authority Alex George conclusively established *aemula* as the correct name to be used in his 1981 revision of the genus. He pointed out that Salisbury's original described the leaves only, was insufficient to diagnose the species and is hence a *nomen dubium*—the description could have fit juvenile leaves of *B. paludosa* as well. In fact, Brown himself had been unsure whether *serratifolia* applied to what he called *Banksia aemula*. Salisbury's taxon appeared as *Banksia serraefolia* in Knight's 1809 work *On the cultivation of the plants belonging to the natural order of Proteaceae*, but that entry might also refer to *serrata*. [1] Where Salisbury got his material is unclear, but John White had sent material to James Edward Smith now held in the Linnean Society marked as *B. serratifolia* Salisb. as well as *B. aemula* R.Br. [11]

Under Brown's taxonomic arrangement, *B. aemula* and *B. elatior* were placed in subgenus *Banksia verae*, the "True Banksias", because the inflorescence is a typical *Banksia* flower spike. *Banksia verae* was renamed *Eubanksia* by Stephan



Endlicher in 1847, and demoted to sectional rank by Carl Meissner in his 1856 classification. Meissner further divided *Eubanksia* into four series, with *B.Â aemula* placed in series *Quercinae* on the basis of its toothed leaves.[12] When George Bentham published his 1870 arrangement in *Flora Australiensis*, he discarded Meissner's series, replacing them with four sections. *B.Â aemula* was placed in *Orthostylis*, a somewhat heterogeneous section containing 18 species.[13] This arrangement would stand for over a century.

In 1891, German botanist Otto Kuntze challenged the generic name *Banksia* L.f., on the grounds that the name *Banksia* had previously been published in 1775 as *Banksia* J.R.Forst & G.Forst, referring to the genus now known as *Pimelea*. Kuntze proposed *Sirmuelleria* as an alternative, republishing *B.Â aemula* as *Sirmuelleria serratifolia*. The challenge failed, and *Banksia* L.f. was formally conserved.[1]

[edit] Current placement

Alex George published a new taxonomic arrangement of *Banksia* in his classic 1981 monograph *The genus Banksia* L.f. (Proteaceae).[1] Endlicher's *Eubanksia* became *B.Â subg. Banksia*, and was divided into three sections. *B.Â aemula* was placed in *B.Â sect. Banksia*, and this was further divided into nine series, with *B.Â aemula* placed in *B.Â ser. Banksia*. He thought its closest relative was clearly *Banksia serrata* and then *B.Â ornata*, and that the three formed a link with western species. Since Brown's original publication had treated all of Fraser's specimens as syntypes (shared type specimens) for the species, George also chose a lectotype (a single specimen to serve as the type specimen).[1]

In 1996, Kevin Thiele and Pauline Ladiges published a new arrangement for the genus, after cladistic analyses yielded a cladogram significantly different from George's arrangement. Thiele and Ladiges' arrangement retained *B.Â aemula* in series *Banksia*, placing it in *B.Â subser. Banksia* along with *serrata* as its sister taxon (united by their unusual seedling leaves) and *ornata* as next closest relative.[14] This arrangement stood until 1999, when George effectively reverted to his 1981 arrangement in his monograph for the *Flora of Australia* series.[15]

Under George's taxonomic arrangement of *Banksia*, *B.Â aemula*'s taxonomic placement may be summarised as follows:

- Genus *Banksia*
- Subgenus *Banksia*
- Section *Banksia*
- Series *Banksia*
- B.Â serrata*
- B.Â aemula*
- B.Â ornata*
- B.Â baxteri*
- B.Â speciosa*
- B.Â menziesii*
- B.Â candolleana*
- B.Â sceptrum*

In 2002, a molecular study by Austin Mast again showed the three eastern species to form a group, but they were only distantly related to other members of the series *Banksia*. Instead, they formed a sister group to a large group comprising the series *Prostratae*, *Ochraceae*, *Tetragonae* (including *Banksia elderiana*), *Banksia lullfitzii* and *Banksia baueri*. [16]

In 2005, Mast, Eric Jones and Shawn Havery published the results of their cladistic analyses of DNA sequence data for *Banksia*. They inferred a phylogeny greatly different from the accepted taxonomic arrangement, including finding *Banksia* to be paraphyletic with respect to *Dryandra*. [17] A new taxonomic arrangement was not published at the time, but early in 2007 Mast and Thiele initiated a rearrangement by transferring *Dryandra* to *Banksia*, and publishing *B.Â subg. Spathulatae* for the species having spoon-shaped cotyledons; in this way they also redefined the autonym *B.Â subg. Banksia*. They foreshadowed publishing a full arrangement once DNA sampling of *Dryandra* was complete. In the meantime, if Mast and Thiele's nomenclatural changes are taken as an

interim arrangement, then *Banksia aemula* is placed in *Banksia*. [18]

[edit] Distribution and habitat

*Banksia aemula* is found along the east coast of Australia from around 70 km (45 mi) north of Bundaberg in central Queensland down to Sydney. [2]

Specifically, its southernmost occurrence is at La Perouse on the northern side of Botany Bay. [19] It is also found on Fraser, Moreton and North Stradbroke Islands. Almost all populations are within a few kilometres of the coast, except for one at Agnes Banks in western Sydney, and two just north and south of Grafton at Coaldale and Glenreagh, and a last around 30 km (19 mi) southwest of Bundaberg. [2]

*Banksia aemula* is most commonly found in deep sandy soils, either on dunes or flattish areas which may be seasonally wet. On coastal dunes in southern Queensland, it replaces *Banksia serrata*, which occupies the same niche to the south. [11] The latter areas, with open woodland or heathland, are known as wallum. [7] In Queensland it is found with *Banksia robur*, with the latter species found in flatter wetter areas and *Banksia aemula* found on rises. It is also found with *Banksia oblongifolia* in Queensland. [2] In some areas of wallum, it may grow as a small tree, along with mallee forms of the red bloodwood (*Corymbia gummifera*). [20] In Coolool National Park, it is an occasional emergent plant (along with *Melaleuca quinquenervia* and *Eucalyptus umbra*) in closed graminoid heathland, a community of shrubs 0.5 m (1.5 ft) high containing *Xanthorrhoea fulva*, *Empodisma minus*, *Petrophile shirleyae*, and *Hakea* and *Leptospermum* species. [21] On the New South Wales Central Coast, it generally grows as a 1.2 m (3 ft) high shrub and is a canopy component of *Banksia aemula* open heathland, located on coastal headlands on highly leached Pleistocene white sands overlying Triassic and Permian strata. Areas include Wybung Head in Munmorah State Conservation Area, and near Myall Lakes. Other plants it grows in association with include *Ricinosarpus pinifolius*, *Brachyloma daphnoides*, *Dillwynia glaberrima*, *D. retorta*, *Allocasuarina distyla*, *Bossiaea ensata*, *Aotus ericoides*, *Phyllota phyllicoides*, and *Empodisma minus*. Sandmining has eradicated much of the community around Redhead. In less leached yellower sands, the community (and *Banksia aemula*) is replaced by a taller heath containing *Banksia serrata* and *Banksia oblongifolia*. [22]

At the southern end of its range, *Banksia aemula* is a component of the Eastern Suburbs *Banksia* Scrub (ESBS), designated an endangered ecological community. This community is found on younger, windblown sands than the heathlands to the north. [23]

The Agnes Banks Woodland in western Sydney has been recognised by the New South Wales Government as an Endangered Ecological Community. Here *Banksia aemula* is an understory plant in low open woodland, with scribbly gum (*Eucalyptus sclerophylla*), narrow-leaved apple (*Angophora bakeri*) and *Banksia serrata* as canopy trees, and *Banksia oblongifolia*, *Conospermum taxifolium*, *Ricinosarpus pinifolius*, *Dillwynia sericea* and nodding geebung (*Persoonia nutans*) as other understory species. [24]

On North Stradbroke Island, *Banksia aemula* is one of three canopy tree species of *Eucalyptus signata* dominated forest 12–15 m (40–50 ft) high, the third species being *Eucalyptus umbra*. This forest is found on a ridge 100 m (400 ft) above sea level formed from an ancient sand dune. Here bracken (*Pteridium esculentum*) dominates the understory. Other tall shrubs associated include *Persoonia cornifolia* and *Acacia concurrens*. Here individual wallum banksias were measured at 8.3–12.1 m (25–40 ft) high, with a maximum diameter at breast height of 44 cm (20 in). [25]

[edit] Ecology

Most Proteaceae and all *Banksia* species, including *Banksia scabrella*, have proteoid roots, roots with dense clusters of short lateral rootlets that form a mat in the soil just below the leaf litter. These roots are particularly efficient at absorbing nutrients from nutrient-poor soils, such as the phosphorus-deficient native soils of Australia. [26] A study of six wallum species, including *Banksia aemula*, found they have adapted to very low levels of phosphorus and are highly sensitive to increased levels of the element, leading to phosphorus toxicity.

Some evidence suggests they are efficient at using potassium, and sensitive to calcium toxicity as well.[27] A field study on North Stradbroke Island noted increased root growth in autumn (around April), but that overall root growth was more constant than other species looked at, possibly because its deeper roots had more regular access to groundwater.[28]

A 1998 study in Bundjalung National Park in northern New South Wales found that *Banksia aemula* inflorescences are foraged by a variety of small mammals, including marsupials such as Yellow-footed Antechinus (*Antechinus flavipes*), and rodents such as Pale Field Rat (*Rattus tunneyi*), Australian Swamp Rat (*R. lutreolus*) and Grassland Melomys (*Melomys burtoni*) and even the House Mouse (*Mus musculus*). These animals carry pollen loads comparable to those of nectarivorous birds, making them effective pollinators. Grey-headed Flying Foxes (*Pteropus poliocephalus*) were also observed visiting *Banksia aemula* and their heads and bellies were noted to contact stigmas while feeding.[29] Bird species that have been observed feeding at the flowers of *Banksia aemula* include Rainbow Lorikeet, Scarlet,[30] and Lewin's Honeyeaters.[3] Several other honeyeaters were recorded on *Banksia aemula* inflorescences for The Banksia Atlas, including the New Holland, Brown, White-cheeked, and Tawny-crowned Honeyeaters, Noisy Miner, Little Wattlebird and Noisy Friarbird.[2] The Bundjalung field study found the Brown Honeyeater carried much higher loads of *Banksia aemula* pollen than other species measured, which included White-cheeked and Yellow-faced Honeyeaters and Silvereyes.[29] Insects such as ants and bees (including the introduced honeybee) have also been recorded.[2]

*Banksia aemula* resprouts from a lignotuber or shoots from epicormic buds after fire.[2] Fire management of *Banksia aemula* heath in Southeast Queensland recommends 7- to 20-year fire intervals.[31] Intervals of 10-15 years are recommended for the Eastern Suburbs Banksia Scrub, as longer leads to overgrowth by *Leptospermum laevigatum*. [32] Experimenting with seed germination and early growth of *Banksia aemula* showed that phosphorus was toxic to seedlings, inhibiting growth at double normal soil concentrations and causing seedling death at quadruple normal soil concentrations. The addition of potassium or magnesium ameliorated these effects a little although potassium in high concentrations impacted on growth as well. Overall, seedlings grow slowly over the first 21 weeks of life compared with other plant species, the reasons for which are unclear, although it may be that it offers an increased chance of survival in a nutrient- or water-poor environment. Seed was killed by exposure to 150 °C, but survived seven minute exposure to 100 °C.[33]

A study of coastal heaths on Pleistocene sand dunes around the Myall Lakes found *Banksia aemula* grew on ridges (dry heath) and *B. oblongifolia* on slopes (wet heath), and the two species did not overlap.[34] Manipulation of seedlings in the same study area showed that *B. aemula* grows longer roots seeking water and that seedlings do grow in wet heath, but it is as yet unclear why the species does not grow in wet heath as well as dry heath.[35] Unlike similar situations with banksia species in Western Australia, the two species did not appear to impact negatively on each other.[36] A field study on seedling recruitment conducted at Broadwater National Park and Dirrawong Reserve on the New South Wales North Coast showed that generally *Banksia aemula* produced seedlings in low numbers but the attrition rate was low, and that seedlings had a greater survival rate on dry rather than wet heaths.[37] Field work including the experimental planting out of seedlings at Crowdy Bay National Park showed that *Banksia aemula* seedling roots reach the water table within six months of germination, and that they can germinate in the presence or absence of recent bushfire. The reasons for bradyspory (that is fewer seeds with greater percentage of survival) is unclear, but may be a defence against seed-eating animals.[38] Similarly in field work on North Stradbroke Island, *Banksia aemula* was noted to shed its winged seeds over time between (as well as after) fire, and germinate and grow readily with little predation by herbivores.[25]

[edit] Cultivation

In 1788, *Banksia aemula* was one of the first banksias to be cultivated in England,[7] where it was illustrated in Curtis's Botanical Magazine and its

rival, The Botanical Register.[39] Its shiny green leaves, showy flower spikes, huge follicles and wrinkled bark are attractive horticultural features.[39] It is also a bird- and insect-attracting plant.[40]

Trials in Western Australia and Hawaii have shown *Banksia aemula* to be resistant to *Phytophthora cinnamomi* dieback.[41][42] It requires a well drained slightly acid (pH 5.5â ^6.5) soil,[39] preferably fairly sandy and a sunny aspect. Summer watering is also prudent, as it does not suffer water stress well.[7] Slow-growing,[43] the plant takes four to six years to flower from seed.[39] It is less commonly grown than *Banksia serrata*. [5] An investigation into optimum temperatures for germination found a nighttime temperature of 20â ^28 Â°C, and a daytime of 24â ^33 Â°C gave best results, and recommended summer planting times.[44]

It has also been used as a rootstock for grafting *Banksia speciosa*, and has potential in bonsai.[39] The red textured timber has been used in cabinet-making.[7]

[edit] Cultural references

Although *Banksia attenuata* was the common banksia in Australian children's author May Gibbs' own childhood in Western Australia, the old flower spikes of *Banksia aemula* with their large follicles are thought to have been the inspiration for the villains of her *Snugglypot* and *Cuddlepig* books, the "Big Bad Banksia Men".[43]

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Dan Leno (20 December 1860 – 31 October 1904), born George Wild Galvin, was a leading English music hall comedian and musical theatre actor during the late Victorian era. He was best known, aside from his music hall act, for his dame roles in the annual pantomimes that were popular at London's Theatre Royal, Drury Lane, from 1888 to 1904.

Leno was born in St Pancras, London, and began to entertain as a child. In 1864, he joined his parents on stage in their music hall act, and he made his first solo appearance, aged nine, at the Britannia Music Hall in Coventry. As a youth, he was famous for his clog dancing, and in his teen years, he became the star of his family's act. He adopted the stage name Dan Leno and, in 1884, made his first performance under that name in London. As a solo artist, he became increasingly popular during the late 1880s and 1890s, when he was one of the highest-paid comedians in the world. He developed a music hall act of talking about life's mundane subjects, mixed with comic songs and surreal observations, and created a host of mostly working-class characters to illustrate his stories. In 1901, still at the peak of his career, he performed his "Huntsman" sketch for Edward VII at Sandringham. The monarch was so impressed that Leno became publicly known as "the king's jester".

Leno also appeared in burlesque and, every year from 1888 to 1904, in the Drury Lane Theatre's Christmas pantomime spectacles. He was generous and active in charitable causes, especially to benefit performers in need. Leno continued to appear in musical comedies and his own music hall routines until 1902, although he suffered increasingly from alcoholism. This, together with his long association with dame and low comedy roles, prevented him from being taken seriously as a dramatic actor, and he was turned down for Shakespearean roles. Leno began to behave in an erratic and furious manner by 1902, and he suffered a mental breakdown in early 1903. He was committed to a mental asylum, but was discharged later that year. After one more show, his health declined, and he died aged 43.

[edit] Biography

[edit] Family background and early life

Leno was born in St Pancras, London. He was the youngest of six children, including two elder brothers, John and Henry, and an elder sister, Frances. Two other siblings died in infancy.[1] His parents, John Galvin (1826–1864) and his wife Louisa, née Dutton (1831–1891), performed together in a music hall double act called "The Singing and Acting Duettists". They were known professionally as Mr. and Mrs. Johnny Wild.[2] They were not very successful, and the family struggled in poverty.[3][n 1]

Having had very little schooling, and being raised by performers, Leno learned to entertain as a child.[3] In 1862, Leno's parents and elder brothers appeared at the Surrey Music Hall in Sheffield, then performed in northern cities later in the year.[5] In 1864, at the age of four, Leno joined his parents on stage for the first time, at the Cosmothea Music Hall in Paddington, under the billing "Little George, the Infant Wonder, Contortionist, and Posturer".[3][6]

When Leno was still four, his father, an alcoholic, died at the age of 37. The family moved to Liverpool a few months later, where his mother married William Grant, a comedian of Lancastrian and Irish descent, who performed in music halls throughout the British provinces under the stage name of William Leno.[3][7] Grant was a seasoned actor and had previously been employed by Charles Kean in his theatre company at the Princess's Theatre in London.[8] In 1866, the family home in Marylebone was demolished to make way for St Pancras railway station[9] and, as a result, Leno's sister Frances was sent to live with an uncle, while his brother John, who performed occasionally with his parents, took full-time employment.[3] Leno, his mother, stepfather and brother Henry moved north and settled in Liverpool, where they performed in various halls and theatres, including the Star Music Hall, but often returned to London to perform in the capital's music halls.[3][7]

[edit] Early career

In 1865, Leno and his brother Henry, who first taught Leno to dance, formed a

clog dancing double act known as "The Great Little Lenos". This was the first time that Leno used his stepfather's stage name, "Leno", which he never registered legally.[10] The same year, Leno also appeared in his first pantomime, in Liverpool, where he had a supporting part as a juvenile clown in *Fortunatus; or, The Magic Wishing Cap* alongside his parents, who appeared as "Mr and Mrs Leno & ^ Comic Duettists".[11] On 18 July 1866, Leno, Henry and their parents appeared on the opening night of the Cambridge Music Hall in Toxteth, Liverpool, under the billing "Mr. and Mrs. Leno, the Great, Sensational, Dramatic and Comic Duettists and The Brothers Leno, Lancashire Clog, Boot and Pump Dancers".[12] The following year, the brothers made their first appearance without their parents at the Britannia music hall in Hoxton.[3] Although initially successful, the pair would experience many bouts of unemployment and often busked outside London pubs to make a living.[10] Tired of surviving on little or no money, Henry left the clog dancing act to take up a trade in London, forcing Leno to consider a future as a solo performer. Henry later founded a dance school.[n 2] Soon, however, Henry was replaced intermittently in the act by the boys' uncle, Johnny Danvers, who was a week older than Leno.[10][n 3] Leno and Danvers were close from an early age.[14]

Leno made his debut as a solo performer in 1869, returning to the Britannia music hall in Hoxton, where he became known as "The Great Little Leno, the Quintessence of Irish Comedians".[n 4] The name was suggested by his stepfather, William, who thought the Irish connection would appeal to audiences on their upcoming visit to Dublin.[13] Arriving in Ireland the same year, the Lenos were struggling financially and stayed with William's relatives. In addition to his performances as part of the family act, young Leno appeared as a solo act under an Irish-sounding stage name, "Dan Patrick".[1] This allowed him to earn a separate fee of 23 shillings per performance plus living expenses.[13] The name "Dan" was chosen to honour Dan Lowery, a northern music hall comedian and music hall proprietor whom the Lenos had met a few months earlier.[15] During this tour of Ireland, the Lenos appeared in Dublin in a pantomime written by Leno's father: *Old King Humpty; or, Harlequin Emerald Isle and Katty of Killarney* (1869), in which Leno received praise from Charles Dickens, who was in the audience and told him: "Good little man, you'll make headway!"[16]

In 1870, the Lenos appeared in another pantomime by Leno's father, *Jack the Giant Killer; or, Harlequin Grim Gosling, or the Good Fairy Queen of the Golden Pine Grove*, in which Leno played the title character and also featured in the variety entertainment that preceded the pantomime. This was his last theatrical role until 1886.[17] Throughout the 1870s, Leno and his parents performed as "The Comic Trio (Mr. & Mrs. Leno and Dan Patrick) In Their Really Funny Entertainments, Songs and Dances".[1] In the family act with his parents and Danvers, young Leno often took the leading role in such sketches as his stepfather's *The Wicklow Wedding*. Another of their sketches was *Torpedo Bill*, in which Leno played the title role, an inventor of explosive devices. His parents played a "washerwoman" and a "comic cobbler".[13] This was followed by another sketch, *Pongo the Monkey*. [18] Opening at Pullan's Theatre of Varieties in Bradford on 20 May 1878, this burlesque featured Leno as an escaped monkey; it became his favourite sketch of the period.[13]

The teenage Leno's growing popularity led to bookings at, among others, the Varieties Theatre in Sheffield and the Star Music Hall in Manchester.[19] At the same time, Leno's clog dancing continued to be so good that in 1880 he won the world championship at the Princess's Music Hall in Leeds,[1] for which he received a gold and silver belt weighing 44.5 oz (1.26Â kg).[6][7] His biographer, the pantomime librettist J. Hickory Wood, described his act: "He danced on the stage; he danced on a pedestal; he danced on a slab of slate; he was encored over and over again; but throughout his performance, he never uttered a word".[20]

In 1878, Leno and his family moved to Manchester.[21] There, he met Lydia Reynolds, who, in 1883, joined the Leno family theatre company, which already consisted of his parents, Danvers and Leno. The following year, Leno and



Reynolds married; around this time, he adopted the stage name "Dan Leno".[21] On 10 March 1884, the Leno family took over the running of the Grand Varieties Theatre in Sheffield.[22] The Lenos felt comfortable with their working class Sheffield audiences. On their opening night, over 4,000 patrons entered the theatre, paying sixpence to see Dan Leno star in Doctor Cut 'Em Up. In October 1884, facing tough competition, the Lenos gave up the lease on the theatre.[23]

In 1885, Leno and his wife moved to Clapham Park, London, and Leno gained new success with a solo act that featured comedy patter, dancing and song.[21] On the night of his London debut, he appeared in three music halls: the Foresters' Music Hall in Mile End, Middlesex Music Hall in Drury Lane and Gatti's-in-the-Road, where he earned £5 a week in total (£400 in 2013 adjusted for inflation).[24][25] Although billed as "The Great Irish Comic Vocalist and Clog Champion" at first, he slowly phased out his dancing in favour of character studies, such as "Going to Buy Milk for the Twins",[7] "When Rafferty Raffled his Watch" and "The Railway Guard".[1] His dancing had earned him popularity in the provinces, but Leno found that his London audiences preferred these sketches and his comic songs.[6][26] Leno's other London venues in the late 1880s included the Collins Music Hall in Islington, the Queen's Theatre in Poplar and the Standard in Pimlico.[27]

Leno was a replacement in the role of Leontes in the 1888 musical burlesque of the ancient Greek character Atalanta at the Strand Theatre, directed by Charles Hawtrey.[28] It was written by Hawtrey's brother, George P. Hawtrey, and it starred Frank Wyatt, Willie Warde and William Hawtrey.[29] The Illustrated Sporting and Dramatic News praised Leno's singing and dancing and reported that: "He brings a good deal of fun and quaintness to the not very important part of Leontes."[30] Leno accepted the role at short notice, with no opportunity to learn the script. But his improvised comedy helped to extend the life of the show. When Leno and Stanley left a few months later, the production closed.[31]

[edit] Music hall

During the 1890s, Leno was the leading performer on the music hall stage, rivalled only by Albert Chevalier, who moved into music hall from the legitimate theatre.[32][33] Their styles and appeal were very different: Leno's characters were gritty working-class realists, while Chevalier's were overflowing in romanticism, and his act depicted an affluent point of view. The two represented the opposite poles of cockney comedy.[32][n 5]

For his music hall acts, Leno created characters that were based on observations about life in London, including shopwalkers, grocer's assistants, beefeaters, huntsmen, racegoers, firemen, fathers, henpecked husbands, garrulous wives, pantomime dames, a police officer, a Spanish bandit, a fireman and a hairdresser.[1] One such character was Mrs. Kelly, a gossip. Leno would sing a verse of a song, then begin a monologue, often his You know Mrs. Kelly? routine, which became a well-known catchphrase: "You see we had a row once, and it was all through Mrs. Kelly. You know Mrs. Kelly, of course. ... Oh, you must know Mrs. Kelly; everybody knows Mrs. Kelly."[6][35][36]

For his London acts, Leno purchased songs from the foremost music hall writers and composers. One such composer was Harry King, who wrote many of Leno's early successes.[37] Other well-known composers of the day who supplied Leno with numbers included Harry Dacre and Joseph Tabrar.[37] From 1890, Leno commissioned George Le Brunn to compose the incidental music to many of his songs, including "The Detective", "My Old Man", "Chimney on Fire", "The Fasting Man", "The Jap", "All Through A Little Piece of Bacon" and "The Detective Camera".[37] Le Brunn also provided the incidental music for three of Leno's best-known songs that depicted life in everyday occupations: "The Railway Guard" (1890), "The Shopwalker" and "The Waiter" (both from 1891).[38] The songs in each piece became instantly distinctive and familiar to Leno's audiences, but his occasional changes to the characterisations kept the sketches fresh and topical.[39]

"The Railway Guard" featured Leno in a mad characterisation of a railway station guard dressed in an ill-fitting uniform, with an unkempt beard and a

whistle. The character was created by exaggerating the behaviour that Leno saw in a real employee at Brixton station who concerned himself in other people's business while, at the same time, not doing any work.[40] "The Shopwalker" was full of comic one-liners and was heavily influenced by pantomime. Leno played the part of a shop assistant, again of manic demeanour, enticing imaginary clientele into the shop before launching into a frantic selling technique sung in verse.[41] Leno's depiction of "The Waiter", dressed in an over-sized dinner jacket and loose-fitting white dicky, which would flap up and hit his face, was of a man consumed in self-pity and indignation. Overworked, overwrought and overwhelmed by the number of his customers, the waiter gave out excuses for the bad service faster than the customers could complain:[41][36]

Yes, sir! No, sir! Yes, sir! When I first came here these trousers were knee-breeches. Legs worn down by waiting. Sir! What did you say? How long would your steak be? Oh, about four inches I should say, about four inches. No, sir! sorry sir. Can't take it back now, sir. You've stuck your fork in and let the steam out!

[edit] Pantomime

Leno's first London appearance in pantomime was as Dame Durden in Jack and the Beanstalk, which he performed at London's Surrey Theatre in 1886, having been spotted singing "Going to Buy Milk" by the Surrey Theatre manager, George Conquest.[42] Conquest also hired Leno's wife to star in the production.[43] The pantomime was a success, and Leno received rave reviews; as a result, he was booked to star as Tinpanz the Tinker in the following year's pantomime, which had the unique title of Sinbad and the Little Old Man of the Sea; or, The Tinker, the Tailor, the Soldier, the Sailor, Apothecary, Ploughboy, Gentleman Thief.[43]

After these pantomime performances proved popular with audiences, Leno was hired in 1888 by Augustus Harris, manager at the Theatre Royal, Drury Lane, to appear in that year's Christmas pantomime, Babes in the Wood.[44] Harris's pantomime productions at the huge theatre were known for their extravagance and splendour. Each one had a cast of over a hundred performers, ballet dancers, acrobats, marionettes and animals, and included an elaborate transformation scene and an energetic harlequinade. Often they were partly written by Harris.[45][46] Herbert Campbell and Harry Nicholls starred with Leno in the next fifteen Christmas productions at Drury Lane. Campbell had appeared in the theatre's previous five pantomimes and was a favourite of the writer of those productions, E. L. Blanchard. Blanchard left the theatre when Leno was hired, believing that music hall performers were unsuitable for his Christmas pantomimes.[44] This was not a view shared by audiences or the critics, one of whom wrote:

I am inclined to think "the cake" for frolicsome humour is taken by the dapper new-comer, Mr. Dan Leno, who is sketched as the galvanic baroness in the wonderfully amusing dance which sets the house in a roar. The substantial "babes", Mr. Herbert Campbell and Mr. Harry Nicholls, would have no excuse if they did not vie in drollery with the light footed Dan Leno.[47]

Babes in the Wood was a triumph: the theatre reported record attendance, and the run was extended until 27 April 1889.[48] Leno considerably reduced his music-hall engagements as a consequence.[48][49] Nevertheless, between April and October 1889, Leno appeared simultaneously at the Empire Theatre and the Oxford Music Hall, performing his one-man show.[49] By this time, Leno was much in demand and had bookings for the next three years. On 9 May 1889 he starred for George P. Hawtrey in a matinee of Penelope, a musical version of a famous farce The Area Belle, to benefit the Holborn Lodge for Shop Girls. In this benefit, he played the role of Pitcher opposite the seasoned Gilbert and Sullivan performer Rutland Barrington.[49] The Times considered that his performance treated the piece "too much in the manner of pantomime".[50] During

Leno's long association with the Drury Lane pantomimes, he appeared chiefly as the dame.[51] After Harris died in 1896, Arthur Collins became manager of the theatre and oversaw (and often helped to write) the pantomimes.[48]

In their pantomimes, the diminutive Leno and the massive Campbell were a visually comic duo.[52] They would often deviate from the script, improvising freely. This was met with some scepticism by producers, who feared that the scenes would not be funny to audiences and observed that, in any event, they were rarely at their best until a few nights after opening.[1] George Bernard Shaw wrote of one appearance: "I hope I never again have to endure anything more dismally futile",[53] and the English essayist and caricaturist Max Beerbohm stated that "Leno does not do himself justice collaborating with the public". He noted, however, that Leno "was exceptional in giving each of his dames a personality of her own, from extravagant queen to artless gossip".[54] In *Sleeping Beauty*, Leno and Campbell caused the audience to laugh even when they could not see them: they would arrive on stage in closed palanquins and exchange the lines, "Have you anything to do this afternoon, my dear?" "No, I have nothing on", before being carried off again.[1] Leno and Campbell's pantomimes from 1889 were *Jack and the Beanstalk* (1889 and 1899), *Beauty and the Beast* (1890 and 1900), *Humpty Dumpty* (1891 and 1903), *Little Bo-peep* (1892), *Robinson Crusoe* (1893), *Dick Whittington and His Cat* (1894), *Cinderella* (1895), *Aladdin* (1896), *The Babes in the Wood* (1897) and *the Forty Thieves* (1898).[55]

Leno considered the dame roles in two of his last pantomimes, *Bluebeard* (1901) and *Mother Goose* (1902), written by J. Hickory Wood, to be his favourites. He was paid £200 (£16,100 in 2013 adjusted for inflation)[24] for each of the pantomime seasons.[56][57] Leno appeared at Drury Lane as Sister Anne in *Bluebeard*, a character described by Wood as "a sprightly, somewhat below middle aged person who was of a coming on disposition and who had not yet abandoned hope"[58] The *Times* drama critic noted: "It is a quite peculiar and original Sister Anne, who dances breakdowns and sings strange ballads to a still stranger harp and plays ping-pong with a frying-pan and potatoes and burlesques Sherlock Holmes and wears the oddest of garments and dresses her hair like Miss Morleena Kenwigs, and speaks in a piping voice" in short it is none other than Dan Leno whom we all know".[59] *Mother Goose* provided Leno with one of the most challenging roles of his career, in which he was required to portray the same woman in several different guises. Wood's idea, that neither fortune nor beauty would bring happiness, was illustrated by a series of magical character transformations.[60] The poor, unkempt and generally ugly *Mother Goose* eventually became a rich and beautiful but tasteless parvenu, searching for a suitor. The production was one of Drury Lane's most successful pantomimes, running until 28 March 1903.[60]

[edit] Later career

In 1896, the impresario Milton Bode approached Leno with a proposal for a farcical musical comedy vehicle devised for him called *Orlando Dando*, the Volunteer, by Basil Hood with music by Walter Slaughter. Leno's agent declined the offer, as his client was solidly booked for two years. Bode offered Leno £625 (£68,144 in 2013 adjusted for inflation)[24] for a six-week appearance in 1898. Upon hearing this, the comedian overrode his agent and accepted the offer.[61] Leno toured the provinces in the piece and was an immediate success. So popular was his performance that Bode re-engaged him for a further two shows: the musical farce *In Gay Piccadilly!* (1899), by George R. Sims, in which Leno's uncle, Johnny Danvers appeared (The Era said that Leno was "attracting huge houses" and called him "excruciatingly funny");[62] and the musical comedy *Mr. Wix of Wickham* (1902). Both toured after their original runs.[61][63][64] In 1897, Leno went to America and made his debut on 12 April of that year at Hammerstein's Olympia Music Hall on Broadway, where he was billed as "The Funniest Man On Earth". Reviews were mixed: one newspaper reported that the house roared its approval, while another complained that Leno's English humour was out of date.[65] His American engagement came to an end a month later, and Leno said that it was "the crown of my career".[66] Despite his jubilation,

Leno was conscious of the few negative reviews he had received and rejected all later offers to tour the United States and Australia.[66]

The same year, the comedian lent his name and writing talents to Dan Leno's Comic Journal. The paper was primarily aimed at young adults and featured a mythologised version of Leno as the first comic paper to take its name from, and base a central character on, a living person. Published by C. Arthur Pearson, Issue No. 1 appeared on 26 February 1898, and the paper sold 350,000 copies a year.[61] Leno wrote most of the paper's comic stories and jokes, and Tom Browne contributed many of the illustrations.[67] The comedian retained editorial control of the paper, deciding which items to omit.[68] The Journal was known for its slogans, including "One Touch of Leno Makes the Whole World Grin" and "Won't wash clothes but will mangle melancholy". The cover always showed a caricature of Leno and his editorial staff at work and play. Inside, the features included "Daniel's Diary", "Moans from the Martyr", two yarns, a couple of dozen cartoons and "Leno's Latest Fresh Jokes and Wheezes Made on the Premises".[69] After a run of nearly two years the novelty wore off, and Leno lost interest. The paper shut down on 2 December 1899.[67][68]

A journalist wrote, in the late 1890s, that Leno was "probably the highest paid funny man in the world".[70] In 1898, Leno, Herbert Campbell and Johnny Danvers formed a consortium to build the Granville Theatre in Fulham, which was demolished in 1971.[71] Leno published an autobiography, *Dan Leno: Hys Booke*, in 1899, ghostwritten by T. C. Elder.[7] Leno's biographer J. Hickory Wood commented: "I can honestly say that I never saw him absolutely at rest. He was always doing something, and had something else to do afterwards; or he had just been somewhere, was going somewhere else, and had several other appointments to follow." [72]

Between 1901 and 1903, Leno recorded more than twenty-five songs and monologues on the Gramophone and Typewriter Company label.[73] On 26 November 1901, Leno, along with Seymour Hicks and his wife, the actress Ellaline Terriss, was invited to Sandringham House to take part in a Royal Command Performance to entertain King Edward VII, Queen Alexandra, their son George and his wife, Mary, the Prince and Princess of Wales. Leno performed a thirty-five minute solo act that included two of his best-known songs: "How to Buy a House" and "The Huntsman". After the performance, Leno reported, "The King, the Queen and the Prince of Wales all very kindly shook hands with me and told me how much they had enjoyed it. The Princess of Wales was just going to shake hands with me, when she looked at my face, and couldn't do it for some time, because she laughed so much. I wasn't intending to look funny as I was really trying to look dignified and courtly; but I suppose I couldn't help myself." [74][75] As a memento, the king presented Leno with a jewel-encrusted royal tie pin, and thereafter, Leno became known as "the King's Jester". Leno was the first music hall performer to give a Royal Command Performance during the king's reign.[74][76]

#### [edit] Personal life

In 1883, Leno met Sarah Lydia Reynolds (1866–1942), a young dancer and comedy singer from Birmingham, while both were appearing at King Ohmy's Circus of Varieties, Rochdale.[77] The daughter of a stage carpenter,[78] Lydia, as she was known professionally, was already an accomplished actress as a teenager: of her performance in *Sinbad the Sailor* in 1881, one critic wrote that she "played Zorlida very well for a young artiste. She is well known at this theatre and with proper training will prove a very clever actress." [79] She and Leno married in 1884 in a discreet ceremony at St. George's Church, in Hulme, Manchester, soon after the birth of their first daughter, Georgina.[80] A second child died in infancy,[81] and John was born in 1888.[1] Their three youngest children—Ernest (b. 1889), Sidney (b. 1891) and May (b. 1896)—all followed their father onto the stage. Sidney later performed as Dan Leno, Jr.[82] Upon the retirement of his parents, Leno supported them financially until their deaths.[83]

Leno owned 2 acres (8,100 m<sup>2</sup>) of land at the back of his house in Clapham Park, and was self-sufficient, producing cabbages, potatoes, poultry, butter

and eggs. He would also send these as gifts to friends and family at Christmas.[84] In 1898, Leno and his family moved to 56 Akerman Road, Lambeth, where they lived for several years. A blue plaque was erected there in 1962 by the London County Council.[85]

[edit] Charity and fundraising

The Terriers Association was established in 1890 to help retired artists in need of financial help. Leno was an active fundraiser in this and in the Music Hall Benevolent Fund, of which he became President.[1] He was an early member of the entertainment charity Grand Order of Water Rats, which helps performers who are in financial need, and served as its leader, the King Rat, in 1891, 1892 and 1897.[33] Near the end of his life, Leno co-founded The Music Hall Artistes Railway Association, which entered a partnership with the Water Rats to form music hall's first trade union.[86] Some of Leno's charity was discreet and unpublicised.[87]

In the late 1890s, Leno formed a cricket team called the "Dainties", for which he recruited many of the day's leading comedians and music hall stars.[88] They played for charity against a variety of amateur teams willing to put up with their comedic mayhem, such as London's Metropolitan Police Force; Leno's and his teammates' tomfoolery on the green amused the large crowds that they drew.[89][90] From 1898 to 1903, the Dainties continued to play matches across London. Two films of action from the matches were produced in 1900 for audiences of the new medium of cinema. In September 1901, at a major charity match, the press noted the carnival atmosphere. The comedians wore silly costumes—Leno was dressed as an undertaker and later as a schoolgirl riding a camel. Bands played, and clowns circulated through the crowd. The rival team of professional Surrey cricketers were persuaded to wear tall hats during the match. 18,000 spectators attended, contributing funds for music hall and cricketers' charities, among others.[90][91]

[edit] Decline and mental breakdown

Leno began to drink heavily after performances, and, by 1901, like his father and stepfather before him, he had become an alcoholic.[1] He gradually declined physically and mentally and displayed frequent bouts of erratic behaviour that began to affect his work.[92] By 1902, Leno's angry and violent behaviour directed at fellow cast members, friends and family had become frequent. Once composed, he would become remorseful and apologetic.[92] His erratic behaviour was often a result of his diminishing ability to remember his lines and inaudibility in performance.[1] Leno also suffered increasing deafness, which eventually caused problems on and off stage. In 1901, during a production of *Bluebeard*, Leno missed his verbal cue and, as a result, was left stuck up a tower for more than twenty minutes. At the end of the run of *Mother Goose* in 1903, producer Arthur Collins gave a tribute to Leno and presented him, on behalf of the Drury Lane Theatre's management, with an expensive silver dinner service. Leno rose to his feet and said: "Governor, it's a magnificent present! I congratulate you and you deserve it!"[92]

Frustrated at not being accepted as a serious actor, Leno became obsessed with the idea of playing Richard III and other great Shakespearean roles, inundating the actor-manager Herbert Beerbohm Tree with his proposals.[1] After his final run of *Mother Goose* at the Drury Lane Theatre in early 1903, Leno's delusions overwhelmed him. On the closing evening, and again soon afterwards, he travelled to the home of Constance Collier, who was Beerbohm Tree's leading lady at His Majesty's Theatre, and also followed her to rehearsal there.[93] He attempted to persuade her to act alongside him in a Shakespearean season that Leno was willing to fund. On the second visit to her home, Leno brought Collier a jewellery box holding a diamond-encrusted plaque. Recognising that Leno was having a mental breakdown, she sadly and gently refused his offer, and Leno left distraught.[93]

Two days later, he was admitted into an asylum for the insane.[94] Leno spent several months in Camberwell House Asylum, London, under the care of Dr. Savage, who treated Leno with "peace and quiet and a little water colouring".[95] On his second day, Leno told a nurse that the clock was wrong.

When she stated that it was right, Leno remarked, "Well if it's right, then what's it doing here?" Leno made several attempts to leave the asylum, twice being successful. He was found each time and promptly returned.[96]

[edit] Last year and death

Upon Leno's release from the institution in October 1903, the press offered much welcoming commentary and speculated as to whether he would appear that year in the Drury Lane's pantomime, scheduled to be Humpty Dumpty. Concerned that Leno might suffer a relapse, Arthur Collins employed Marie Lloyd to take his place.[97] By the time of rehearsals, however, Leno persuaded Collins that he was well enough to take part, and the cast was reshuffled to accommodate him. Leno appeared with success. Upon hearing his signature song, the audience reportedly gave him a standing ovation that lasted five minutes.[98] He received a telegram from the King congratulating him on his performance.[99] Leno's stage partner Herbert Campbell died in July 1904, shortly after the pantomime, following an accident at the age of fifty-seven. The death affected Leno deeply, and he went into a decline. At that time, he was appearing at the London Pavilion, but the show had to be cancelled owing to his inability to remember his lines.[92] So harsh were the critics that Leno wrote a statement, published in *The Era*, to defend the show's originality.[100] On 20 October 1904, Leno gave his last performance in the show. Afterwards, he stopped at the Belgrave Hospital for Children in Kennington to leave a donation of £625 (£49,765 in 2013 adjusted for inflation).[24][101]

Leno died at his home in London on 31 October 1904, aged 43, and was buried at Lambeth cemetery, Tooting.[102][103] The cause of death is not known.[n 6] His death and funeral were national news. The *Daily Telegraph* wrote in its obituary: "There was only one Dan. His methods were inimitable; his face was indeed his fortune... Who has seen him in any of his disguises and has failed to laugh?"[104] Max Beerbohm later said of Leno's death: "So little and frail a lantern could not long harbour so big a flame".[105] His memorial is maintained by the Grand Order of Water Rats, which commissioned the restoration of his grave in 2004.[106][n 7]

[edit] Notes and references

Notes

<sup>^</sup> Louisa and John married at St. John's Church, Waterloo, London, on 2 January 1850 and lived in Ann Street, near Waterloo. John was born in Middlesex, and Louisa was born in Worthing in Sussex. John's father was Maurice Galvin, an Irish bricklayer. Louisa's father, Richard Dutton, was an artist, who ended up as a patient in the Middlesex Pauper Lunatic Asylum.[4]

<sup>^</sup> The dance school was advertised as: "Clog dancing taught by H. Wild, Brother and Tutor of Dan Leno, J. H. Haslam, etc."[13]

<sup>^</sup> Born in Sheffield, Danvers moved to Glasgow as a boy and later became a "silver plater".[14]

<sup>^</sup> Comedian, here, refers to a performer of comic songs.[10]

<sup>^</sup> Chevalier wrote all his own songs, while Leno bought songs from established song writers and composers.[32][34]

<sup>^</sup> No medical records survive. At least three theories for the cause of death have been given by various sources: The *New York Times* stated he had died of heart disease "Dan Leno Dead", 1 November 1904. The *Oxford Dictionary National Biography*, on the other hand, states that he died of tertiary syphilis.[1] Finally, his biographer Gyles Brandreth claimed that Leno had succumbed to a brain tumour, which Brandreth thought would help explain his erratic behaviour. Leno stated in 1904: "the cause of my brain trouble was attributed to a fall off my bicycle".[75]

<sup>^</sup> Arthur Roberts, a close friend, commented after Leno's death: "It seems an extraordinary thing to say, but I really believe that King Edward's kindness was the unconscious means of hastening Dan Leno's mind over the borderline of insanity... Poor Dan had been fluttering outside the cage of the madhouse for some years, and the great honour and dignity which he received at the hands of the King just tilted the scales of divine injustice. He went inside".[76]

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[edit] External links

Persondata

Name

Leno, Dan

Alternative names

Galvin, George Wild

Short description

English music hall singer; comedian

Date of birth

20 December 1860

Place of birth

Somers Town, London, England, U.K.

Date of death

31 October 1904

Place of death

London, England, UK

*Eremoryzomys polius*, also known as the Gray Rice Rat[1] or the Marañon Oryzomys,[5] is a rodent in the tribe Oryzomyini of the family Cricetidae. Discovered in 1912 and first described in 1913 by Wilfred Osgood, it was originally placed in *Oryzomys* and named *Oryzomys polius*. In 2006, a cladistic analysis found that it was not closely related to *Oryzomys* in the strict sense or to any other oryzomyine then known, so that it is now placed in its own genus, *Eremoryzomys*. The Brazilian genus *Drymoreomys*, named in 2011, is likely the closest relative of *Eremoryzomys*. *Eremoryzomys* has a limited distribution in the dry upper valley of the Marañón River in central Peru, but may yet contain more than one species.

A large, long-tailed rice rat, with head and body length of 138 to 164 mm (5.4 to 6.5 in), *Eremoryzomys polius* has gray fur and short ears. There are well-developed ungual tufts of hair on the hindfeet. Females have eight mammae. The rostrum (front part of the skull) is long and robust and the braincase is rounded. The bony palate is relatively short. The IUCN assesses the conservation status of the species as "Data Deficient"; it is poorly known but may be threatened by habitat destruction.

[edit] Taxonomy

The first two specimens of *Eremoryzomys polius* were collected by Wilfred Osgood and M.P. Anderson in 1912. The next year, Osgood described these animals as a new species in the genus *Oryzomys*, *Oryzomys polius*. [3] Osgood wrote that he was unable to find any species closely related to *O. polius* and compared it with *O. xanthaеolus* (currently *Aegialomys xanthaеolus*) "for convenience". [6] Its relationships remained obscure ever afterward and it was never assigned to any of the several groups of species recognized within *Oryzomys*. [7]

In 2006, Marcelo Weksler published a large-scale cladistic analysis of *Oryzomyini* ("rice rats"), the tribe to which *O. polius* belongs. He used both morphological data and molecular characters from the IRBP gene. In all of his analyses, *O. polius* was found to be part of clade D, one of four large groups within *Oryzomyini*, as the sister group to a clade containing all the other species of clade D. [8] Clade D was supported by two shared derived (synapomorphic) molecular characters and by seven morphological synapomorphies: the tail has a different color above and below; the parietal bone extends to the side of the skull; the incisive foramina (openings in the palate) extend back between the first molars; the posterolateral palatal pits (perforations of the palate near the third molars) are complex; the sphenopalatine vacuities (openings in the mesopterygoid fossa, the gap behind the end of the palate) are large; the pattern of the arterial circulation in the head is derived; and the posteroloph (a crest at the back) is present on the third upper molar. Two other molecular synapomorphies supported the clade of all members of clade D except *O. polius*, coupled with three morphological traits: in these species, but not in *O. polius*, the first upper molar has an additional small root at the outer (labial) side; the first lower molar has additional small roots; and the second upper molar has the mesoflexus (one of the valleys between the cusps and crests) divided in two. [9]

In Weksler's analysis, species placed in *Oryzomys* did not form a coherent (monophyletic) group, but instead were found at various positions across the *oryzomyine* tree, and he suggested that most of these species, including *O. polius*, should be placed in new genera. [10] Later in 2006, Weksler and others described ten new genera for species formerly placed in *Oryzomys*, [11] including *Eremoryzomys* for *polius*; thus, the species is now known as *Eremoryzomys polius*. [4] In reference to its "isolated distribution", they incorporated the Greek word *eremia* "lonely place" into the generic name. [12] The 2008 IUCN Red List, citing Pacheco, commented that *Eremoryzomys* may in fact include more than one species. [1] In 2011, a new *oryzomyine*, *Drymoreomys albimaculatus*, was described from southeastern Brazil, and phylogenetic analysis of morphological and molecular data suggested that this animal is the closest known relative of *Eremoryzomys*. [13]

*Eremoryzomys* is now one of about 28 genera [11] in the tribe *Oryzomyini*, which includes well over a hundred species distributed mainly in South America, including nearby islands such as the Galápagos Islands and some of the Antilles. *Oryzomyini* is one of several tribes recognized within the subfamily *Sigmodontinae*, which encompasses hundreds of species found across South America and into southern North America. *Sigmodontinae* itself is the largest subfamily of the family *Cricetidae*, other members of which include voles, lemmings, hamsters, and deermice, all mainly from Eurasia and North America. [14]

[edit] Description

*Eremoryzomys polius* is a large, long-tailed rice rat that in color resembles some North American woodrats (*Neotoma*). [3] The fur is grayish above and lighter below, where the hairs are gray at the bases but white at the tips. The external ears (pinnae) are short and the tail is dark above and light below. [12] The hindfeet have well-developed ungual tufts (patches of hair) along the plantar margins and between all of the digits, a character shared only with *Sooretamys angouya* among *oryzomyines*. [15] The squamae, small structures resembling scales that cover the soles of the hindfeet in many *oryzomyines*, are well developed. The claw of the first digit extends nearly to the end of the first phalanx of the second toe and the claw of the fifth toe

extends slightly beyond the first phalanx of the fourth toe.[4] As in most oryzomyines, the female has eight mammae.[16] Head and body length is 138 to 164 mm (5.4 to 6.5 in).[17] In Osgood's original two specimens, an old female and an adult female, tail length is 188 and 180 mm (7.4 and 7.1 in), respectively; hindfoot length is 30 and 30 mm (1.2 and 1.2 in); and greatest skull length is 37 and 34.7 mm (1.5 and 1.37 in).[3] *Eremoryzomys polius* has 12 thoracic, 7 or 8 lumbar, and 35 or 36 caudal vertebrae;[18] the presence of 12 thoracic vertebrae is a putative synapomorphy of Oryzomyini.[19]

In the skull, the rostrum (front part) is long and robust. The nasal bones are short, not extending further back than the lacrimals,[4] and the premaxillaries extend about as far back as the nasals.[20] The zygomatic notch, an extension at the front of the zygomatic plate, is present. The plate's back margin is level with the front of the first upper molar.[4] A strong jugal bone is present in the zygomatic arch (cheekbone), so that the maxillary and squamosal bones, which form the front and back parts of the arch, respectively, do not overlap when seen from the side.[fn 1] The narrowest part of the interorbital region (located between the eyes) is to the front and the region's margins exhibit strong beading. Various crests develop on the rounded braincase, especially in old animals.[4] The parietal bones form part of the roof of the braincase and, unlike in some other rice rats, also extend to the sides of the braincase.[21] The interparietal bone at the back of the braincase is narrow and wedge-shaped, so that the parietal and occipital bones meet extensively.[22]

The incisive foramina are very long, extending well between the molars. The posterolateral palatal pits are well-developed and recessed into a fossa (depression).[4] The bony palate is relatively short, with the mesopterygoid fossa extending forward to the end of the molar row or even between the third molars.[fn 2] The roof of the fossa is perforated by large sphenopalatine vacuities. Usually, an alisphenoid strut is present; this extension of the alisphenoid bone separates two foramina (openings) in the skull, the masticatory ^buccinator foramen and the foramen ovale accessorius. The condition of various grooves and foramina of the skull indicates that the pattern of the arterial circulation of the head is derived.[4] The subsquamosal fenestra, an opening at the back of the skull determined by the shape of the squamosal bone, is large and the mastoid bone is perforated by a fenestra (opening).[23] The squamosal lacks a suspensory process that contacts the tegmen tympani, the roof of the tympanic cavity, a defining character of oryzomyines.[24]

In the mandible, the mental foramen, an opening in the mandible just before the first molar, opens to the outside, not upwards as in a few other oryzomyines.[25] The upper and lower masseteric ridges, which anchor some of the chewing muscles, usually join into a single crest at a point below the first molar and do not extend forward beyond the molar.[26] There is no distinct capsular process of the lower incisor, a trait *Eremoryzomys* shares with only a few other oryzomyines.[27]

[edit] Molars

The molars are bunodont (with the cusps higher than the connecting crests) and brachydont (low-crowned).[28] On the upper first and second molar, the outer and inner valleys between the cusps and crests do not interpenetrate. Many accessory crests are present, including the mesolophs and mesolophids. The anterocone and anteroconid, the front cusps on the upper and lower first molar, are not divided into smaller outer and inner cusps.[12] Small accessory roots are absent from the molars, so that each of the three upper molars has two roots on the outer side and one on the inner side and each of the lower molars has one root at the front and one at the back.[29]

[edit] Distribution and status

As far as now known, *Eremoryzomys polius* is confined to a small area in central Peru, at an altitude of 760 to 2100 m (2490 to 6890 ft),[30] but the species may range more widely. It occurs in forest in the dry lowlands of the upper parts of the basin of the Marañón River, east of the main mountain range of the Andes.[31] The biogeographical pattern indicated by the relationship

between *Eremoryzomys* and the Brazilian *Drymoreomys* is unusual. While there are some similar cases of relationships between Andean and Atlantic Forest animals, these involve inhabitants of humid forests in the Andes; *Eremoryzomys*, in contrast, lives in an arid area.[32] Because *E. polius* is so poorly known, the 2008 IUCN Red List assesses it as "Data Deficient". It is threatened by habitat destruction for cattle pasture and is not known from any protected areas.[1]

^ Weksler et al., 2006, p. 10; Percequillo et al., 2011, p. 388. Weksler, 2006, table 5, scores *Eremoryzomys* (as *Oryzomys polius*) as having overlapping squamosals and maxillaries (see character state definitions for character 30, p. 32).  
 ^ Weksler et al., 2006, p. 10. Percequillo et al., 2011, p. 367, write that the fossa does not reach between the molars in *Eremoryzomys*.

#### [edit] References

^ a b c d Pacheco et al., 2008  
 ^ Pacheco et al., 2008; Musser and Carleton, 2005, p. 1153  
 ^ a b c d Osgood, 1913, p. 97  
 ^ a b c d e f g h Weksler et al., 2006, p. 10  
 ^ a b Musser and Carleton, 2005, p. 1153  
 ^ Osgood, 1913, pp. 97–98  
 ^ Weksler, 2006, table 2, p. 130; Musser and Carleton, 2005, pp. 1144, 1158  
 ^ Weksler, 2006, figs. 34–40  
 ^ Weksler, 2006, p. 130  
 ^ Weksler, 2006, pp. 75, 77, fig. 42  
 ^ a b Weksler et al., 2006, p. 1  
 ^ a b c Weksler et al., 2006, p. 11  
 ^ Percequillo et al., 2011, p. 372  
 ^ Musser and Carleton, 2005  
 ^ Weksler, 2006, p. 24  
 ^ Weksler, 2006, p. 17, table 5  
 ^ Weksler, 2006, table 8  
 ^ Steppan, 1995, table 5  
 ^ Weksler, 2006, p. 52  
 ^ Weksler, 2006, pp. 27–28, table 5  
 ^ Weksler, 2006, p. 30  
 ^ Weksler, 2006, p. 31  
 ^ Weksler, 2006, pp. 38–39; Weksler et al., 2006, p. 10  
 ^ Weksler, 2006, p. 40  
 ^ Weksler, 2006, p. 41, table 5  
 ^ Weksler, 2006, p. 44; Weksler et al., 2006, p. 11  
 ^ Weksler, 2006, pp. 41–42; Weksler et al., 2006, p. 11  
 ^ Weksler, 2006, pp. 43–44  
 ^ Weksler, 2006, p. 43; Weksler et al., 2006, p. 11  
 ^ Percequillo et al., 2011, p. 378  
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The history of Sheffield, a city in South Yorkshire, England, can be traced back to the founding of a settlement in a clearing beside the River Sheaf in the second half of the 1st millennium AD. The area now known as Sheffield had seen human occupation since at least the last ice age, but significant growth in the settlements that are now incorporated into the city did not occur until the Industrial Revolution.

Following the Norman conquest of England, Sheffield Castle was built to control the Saxon settlements and Sheffield developed into a small town, no larger than Sheffield City Centre. By the 14th century Sheffield was noted for the production of knives, and by 1600 it had become the main centre of cutlery production in England, overseen by the Company of Cutlers in Hallamshire. In the 1740s the crucible steel process was improved by Sheffield resident Benjamin Huntsman, allowing a much better production quality. At about the same time, the silver plating process which produced Sheffield Plate was discovered. The associated industries led to the rapid growth of Sheffield; the town was incorporated as a borough in 1843 and granted a city charter in 1893.

Sheffield remained a major industrial city throughout the first half of the 20th century, but the downturn in world trade following the 1973 oil crisis, technological improvements and economies of scale, and a wide-reaching rationalisation in steel production throughout the European Economic Community led to the closure of many of the steelworks from the early 1970s onward. Urban and economic regeneration schemes, initiated in the late 1980s, have since transformed the city.

[edit] Early history

The earliest evidence of human occupation in the Sheffield area was found at Creswell Crags to the east of the city. Artefacts and rock art found in caves at this site have been dated by archaeologists to the late Upper Palaeolithic period, at least 12,800 years ago.[1][2] Other prehistoric remains found in Sheffield include a Mesolithic "house"-a circle of stones in the shape of a hut-base dating to around 8000 BC, found at Deepcar, in the northern part of the city.[3]

During the Bronze Age (about 1500 BC) tribes sometimes called the Urn people started to settle in the area. They built numerous stone circles, examples of which can be found on Moscar Moor, Froggatt Edge and Hordron Edge (Hordron Edge stone circle). Two Early Bronze Age urns were found at Crookes in 1887,[4][5] and three Middle Bronze Age barrows found at Lodge Moor[6] (both suburbs of the modern city).

In the Iron Age the area became the southernmost territory of the Pennine tribe called the Brigantes. It is this tribe who in around 500 BC are thought to have constructed the hill fort that stands on the summit of a steep hill above the River Don at Wincobank, in what is now northeastern Sheffield.[5] Other Iron Age hill forts in the area are Carl Wark on Hathersage Moor to the southwest of Sheffield,[7] and one at Scholes Wood, near Rotherham. The rivers Sheaf and Don may have formed the boundary between the territory of the Brigantes and that of a rival tribe called the Corieltauvi who inhabited a large area of the northeastern Midlands.[8]

The Roman invasion of Britain began in AD 43, and by 51 the Brigantes had submitted to the clientship of Rome,[9] eventually being placed under direct

rule in the early 70s.[10] Few Roman remains have been found in the Sheffield area. A minor Roman road linking the Roman forts at Templeborough and Brough-on-Noe possibly ran through the centre of the area covered by the modern city,[11] and Icknield Street is thought to have skirted its boundaries.[12][13] The routes of these roads within this area are mostly unknown, although sections of the former can still be seen between Redmires and Stanage,[12][14] and remains possibly linked to the latter were discovered in Brinsworth in 1949.[15][16] In April 1761, tablets dating from the Roman period were found in the Rivelin Valley south of Stannington, close to the likely course of the Templeborough to Brough-on-Noe road. In addition there have been finds dating from the Roman period on Walkley Bank Road, which leads onto the valley bottom.[n 1] There have been small finds of Roman coins throughout the Sheffield area, for example 19 coins were found near Meadowhall in 1891,[18] 13 in Pitsmoor in 1906,[19] and ten coins were found at a site alongside Eckington cemetery in December 2008.[20] Roman burial urns were also found at Bank Street near Sheffield Cathedral, which, along with the name of the old lane behind the church (Campo Lane[n 2]), has led to speculation that there may have been a Roman camp at this site.[n 3] However, it is unlikely that the settlement that grew into Sheffield existed at this time.

Following the departure of the Romans, the Sheffield area may have been the southern part of the Celtic kingdom of Elmet,[21] with the rivers Sheaf and Don forming part of the boundary between this kingdom and the kingdom of Mercia.[22] Gradually, Anglian settlers pushed west from the kingdom of Deira. The Britons of Elmet delayed this English expansion into the early part of the 7th century,[21] however, an enduring Celtic presence within this area is evidenced by the settlements called Wales and Waleswood close to Sheffieldâ ~the word Wales derives from the Germanic word Walha, and was originally used by the Anglo-Saxons to refer to the native Britons.[n 4]

[edit] The origins of Sheffield

The name Sheffield is Old English in origin.[23] It derives from the River Sheaf, whose name is a corruption of shed or sheth, meaning to divide or separate.[24]Field is a generic suffix deriving from the Old English feld, meaning a forest clearing.[25] It is likely then that the origin of the present-day city of Sheffield is an Anglo-Saxon settlement in a clearing beside the confluence of the rivers Sheaf and Don founded sometime between the arrival of the Anglo-Saxons in this region (roughly the 6th century) and the early 9th century.[26] The names of many of the other areas of Sheffield likely to have been established as settlements during this period end in ley, which signifies a clearing in the forest, or ton, which means an enclosed farmstead.[27] These settlements include Heeley, Longley, Norton, Owlerton, Southey, Tinsley, Totley, Wadsley, and Walkley.

The earliest evidence of this settlement is thought to be the shaft of a stone cross dating from the early 9th century[28] that was found in Sheffield in the early 19th century. This shaft may be part of a cross removed from the church yard of the Sheffield parish church (now Sheffield Cathedral) in 1570.[29] It is now kept in the British Museum.[30] A document from around the same time, an entry for the year 829 in the Anglo-Saxon Chronicle, refers to the submission of King Eanred of Northumbria to King Egbert of Wessex at the hamlet of Dore (now a suburb of Sheffield): "Egbert led an army against the Northumbrians as far as Dore, where they met him, and offered terms of obedience and subjection, on the acceptance of which they returned home". This event made Egbert the first Saxon to claim to be king of all of England.[31]

The latter part of the 9th century saw a wave of Norse (Viking) settlers and the subsequent establishment of the Danelaw. The names of hamlets established by these settlers often end in thorpe, which means a farmstead.[32] Examples of such settlements in the Sheffield area are Grimesthorpe, Hackenthorpe, Jordanthorpe, Netherthorpe, Upperthorpe, Waterthorpe, and Woodthorpe.[33] By 918 the Danes south of the Humber had submitted to Edward the Elder, and by 926 Northumbria was under the control of King Athelstan.

In 937 the combined armies of Olaf III Guthfrithson, Viking king of Dublin,

Constantine, king of Scotland and King Owain of Strathclyde invaded England. The invading force was met and defeated by an army from Wessex and Mercia led by King Athelstan at the Battle of Brunanburh. The location of Brunanburh is unknown, but some historians[34][35] have suggested a location between Tinsley in Sheffield and Brinsworth in Rotherham, on the slopes of White Hill.[15] After the death of King Athelstan in 939 Olaf III Guthfrithson invaded again and took control of Northumbria and part of Mercia. Subsequently, the Anglo-Saxons, under Edmund, re-conquered the Midlands, as far as Dore, in 942, and captured Northumbria in 944.

The Domesday Book of 1086, which was compiled following the Norman Conquest of 1066, contains the earliest known reference to the districts around Sheffield as the manor of "Hallun" (or Hallam). This manor retained its Saxon lord, Waltheof, for some years after the conquest. The Domesday Book was ordered written by William the Conqueror so that the value of the townships and manors of England could be assessed. The entries in the Domesday Book are written in a Latin shorthand; the extract for this area begins:

TERRA ROGERII DE BVSLI

M. hi Hallvn, cu XVI bereuvitis sunt. XXIX. carucate trae  
Ad gld. Ibi hb Walleff com aula...

Translated it reads:

LANDS OF ROGER DE BUSLI

In Hallam, one manor with its sixteen hamlets, there are twenty-nine carucates [~14 km<sup>2</sup>] to be taxed. There Earl Waltheof had an "Aula" [hall or court]. There may have been about twenty ploughs. This land Roger de Busli holds of the Countess Judith. He has himself there two carucates [~1 km<sup>2</sup>] and thirty-three villeins hold twelve carucates and a half [~6 km<sup>2</sup>]. There are eight acres [32,000 m<sup>2</sup>] of meadow, and a pasturable wood, four leuvae in length and four in breadth [~10 km<sup>2</sup>]. The whole manor is ten leuvae in length and eight broad [207 km<sup>2</sup>]. In the time of Edward the Confessor it was valued at eight marks of silver [£5.33]; now at forty shillings [£2.00].

In Attercliffe and Sheffield, two manors, Sweyn had five carucates of land [~2.4 km<sup>2</sup>] to be taxed. There may have been about three ploughs. This land is said to have been inland, demesne [domain] land of the manor of Hallam.

The reference is to Roger de Busli, tenant-in-chief in Domesday and one of the greatest of the new wave of Norman magnates. Waltheof, Earl of Northumbria had been executed in 1076 for his part in an uprising against William I. He was the last of the Anglo-Saxon earls still remaining in England a full decade after the Norman conquest. His lands had passed to his wife, Judith of Normandy, niece to William the Conqueror. The lands were held on her behalf by Roger de Busli.

The Domesday Book refers to Sheffield twice, first as Escafeld, then later as Scafeld. Sheffield historian S. O. Addy suggests that the second form, pronounced Shaffeld, is the truer form,[24] as the spelling Sefeld is found in a deed issued less than one hundred years after the completion of the survey.[n 5] Addy comments that the E in the first form may have been mistakenly added by the Norman scribe.

Roger de Busli died around the end of the 11th century, and was succeeded by a son, who died without an heir. The manor of Hallamshire passed to William de Lovetot, the grandson of a Norman baron who had come over to England with the Conqueror.[36] William de Lovetot founded the parish churches of St Mary at Handsworth, St Nicholas at High Bradfield and St. Mary's at Ecclesfield at the start of the 12th century in addition to Sheffield's own parish church. He also built the original wooden Sheffield Castle, which stimulated the growth of the town.[12][26]

Also dating from this time is Beauchief Abbey, which was founded by Robert FitzRanulf de Alferton. The abbey was dedicated to Saint Mary and Saint Thomas Becket, who had been canonised in 1172. Thomas Tanner, writing in 1695, stated that it was founded in 1183.[37] However, Samuel Pegge in his History of Beauchief Abbey notes that Albinas, the abbot of Derby, who was one of the

witnesses to the charter of foundation, died in 1176, placing foundation before that date.[38]

#### [edit] Mediaeval Sheffield

Following the death of William de Lovetot, the manor of Hallamshire passed to his son Richard de Lovetot and then his son William de Lovetot before being passed by marriage to Gerard de Furnival in about 1204.[39] The de Furnivals held the manor for the next 180 years.[40] The fourth Furnival lord, Thomas de Furnival, supported Simon de Montfort in the Second Barons' War. As a result of this, in 1266 a party of barons, led by John de Eyvill, marching from north Lincolnshire to Derbyshire passed through Sheffield and destroyed the town, burning the church and castle.[26] A new stone castle was constructed over the next four years and a new church was consecrated by William II Wickwane the Archbishop of York around 1280. In 1295 Thomas de Furnival's son (also Thomas) was the first lord of Hallamshire to be called to Parliament, thus taking the title Lord Furnivall.[41] On 12 November 1296 Edward I granted a charter for a market to be held in Sheffield on Tuesday each week. This was followed on 10 August 1297 by a charter from Lord Furnival establishing Sheffield as a free borough.[42][43] The Sheffield Town Trust was established in the Charter to the Town of Sheffield, granted in 1297. De Furnival, granted land to the freeholders of Sheffield in return for an annual payment, and a Common Burgery administrated them. The Burgery originally consisted of public meetings of all the freeholders,[44] who elected a Town Collector.[45] Two more generations of Furnivals held Sheffield before it passed by marriage to Sir Thomas Nevil and then, in 1406, to John Talbot, the first Earl of Shrewsbury.[40]

In 1430 the 1280 Sheffield parish church building was pulled down and replaced. Parts of this new church still stand today and it is now Sheffield city centre's oldest surviving building, forming the core of Sheffield Cathedral.[46] Other notable surviving buildings from this period include the Old Queen's Head pub in Pond Hill, which dates from around 1480, with its timber frame still intact, and Bishops' House and Broom Hall, both built around 1500.[47]

The fourth Earl of Shrewsbury, George Talbot took up residence in Sheffield, building the Manor Lodge outside the town in about 1510 and adding a chapel to the Parish Church c1520 to hold the family vault. Memorials to the fourth and sixth Earls of Shrewsbury can still be seen in the church.[48] In 1569 George Talbot, the sixth Earl of Shrewsbury, was given charge of Mary, Queen of Scots. Mary was regarded as a threat by Elizabeth I, and had been held captive since her arrival in England in 1568.[49] Talbot brought Mary to Sheffield in 1570, and she spent most of the next 14 years imprisoned in Sheffield Castle and its dependent buildings. The castle park extended beyond the present Manor Lane, where the remains of Manor Lodge are to be found. Beside them is the Turret House, an Elizabethan building, which may have been built to accommodate the captive queen. A room, believed to have been the queen's, has an elaborate plaster ceiling and overmantle, with heraldic decorations.[50] During the English Civil War, Sheffield changed hands several times, finally falling to the Parliamentarians, who demolished the Castle in 1648.

The Industrial Revolution brought large-scale steel making to Sheffield in the 18th century. Much of the mediaeval town was gradually replaced by a mix of Georgian and Victorian buildings. Large areas of Sheffield's city centre have been rebuilt in recent years, but among the modern buildings, some old buildings have been retained.

#### [edit] Industrial Sheffield

Sheffield's situationâ ~amongst a number of fast-flowing rivers and streams surrounded by hills containing raw materials such as coal, iron ore, ganister, and millstone grit for grindstonesâ ~made it an ideal place for water-powered industries to develop.[51] Water wheels were often built for the milling of corn, but many were converted to the manufacture of blades. As early as the 14th century Sheffield was noted for the production of knives:

Ay by his belt he baar a long panade, And of a swerd ful trenchant was the blade.



A joly poppere baar he in his pouche;  
Ther was no man, for peril, dorste hym touche.  
A Sheffield thwitel baar he in his hose.  
Round was his face, and camus was his nose;

By 1600 Sheffield was the main centre of cutlery production in England outside of London, and in 1624 The Company of Cutlers in Hallamshire was formed to oversee the trade.[52] Examples of water-powered blade and cutlery workshops surviving from around this time can be seen at the Abbeydale Industrial Hamlet and Shepherd Wheel museums in Sheffield.

Around a century later, Daniel Defoe in his book *A tour thro' the Whole Island of Great Britain*, wrote:

This town of Sheffield is very populous and large, the streets narrow, and the houses dark and black, occasioned by the continued smoke of the forges, which are always at work: Here they make all sorts of cutlery-ware, but especially that of edged-tools, knives, razors, axes, & . and nails; and here the only mili of the sort, which was in use in England for some time was set up, (viz.) for turning their grindstones, though now 'tis grown more common. Here is a very spacious church, with a very handsome and high spire; and the town is said to have at least as many, if not more people in it than the city of York.[53]

In the 1740s Benjamin Huntsman, a clock maker in Handsworth, invented a form of the crucible steel process for making a better quality of steel than had previously been available.[54] At around the same time Thomas Boulsover invented a technique for fusing a thin sheet of silver onto a copper ingot producing a form of silver plating that became known as Sheffield plate.[55] In 1773 Sheffield was given a silver assay office.[56] In the late 18th century, Britannia metal, a pewter-based alloy similar in appearance to silver, was invented in the town.[57]

Huntsman's process was only made obsolete in 1856 by Henry Bessemer's invention of the Bessemer converter. Bessemer had tried to induce steelmakers to take up his improved system, but met with general rebuffs, and finally was driven to undertake the exploitation of the process himself. To this end he erected steelworks in Sheffield.[58] Gradually the scale of production was enlarged until the competition became effective, and steel traders generally became aware that the firm of Henry Bessemer & Co. was underselling them to the extent of £20 a ton. One of Bessemer's converters can still be seen at Sheffield's Kelham Island Museum.

In 1857 Sheffield Football Club was formed, As of 2012[update] the world's oldest association football club. This saw a rapid growth of football teams in the area.

Stainless steel was discovered by Harry Brearley in 1912, at the Brown Firth Laboratories in Sheffield.[59] His successor as manager at Brown Firth, Dr William Hatfield, continued Brearley's work. In 1924 he patented '18-8 stainless steel',[60] which to this day is probably the widest-used alloy of this type.[61]

These innovations helped Sheffield to gain a worldwide recognition for the production of cutlery; utensils such as the bowie knife were mass produced and shipped to the United States. The population of the town increased rapidly. In 1736 Sheffield and its surrounding hamlets held about 7000 people,[62] in 1801 there were around 60,000 inhabitants, and by 1901, the population had grown to 451,195.[63]

This growth spurred the reorganisation of the governance of the town. Prior to 1818, the town was run by a mixture of bodies. The Sheffield Town Trust and the Church Burgesses, for example, divided responsibility for the improvement of streets and bridges. By the 19th century, however, both organisations lacked funds and struggled even to maintain existing infrastructure.[44] The Church Burgesses organised a public meeting on 27 May 1805 and proposed to apply to Parliament for an act to pave, light and clean the city's streets. The proposal

was defeated.[44] but the idea of a Commission was revived in 1810, and later in the decade Sheffield finally followed the model adopted by several other towns in petitioning for an Act to establish an Improvement Commission. This eventually led to the Sheffield Improvement Act 1818, which established the Commission and included a number of other provisions.[44] In 1832 the town gained political representation with the formation of a Parliamentary borough. A municipal borough was formed by an Act of Incorporation in 1843, and this borough was granted the style and title of "City" by Royal Charter in 1893.[64]

From the mid-18th century, a succession of public buildings were erected in the town. St Paul's Church, now demolished, was among the first, while the old Town Hall and the present Cutlers' Hall were among the major works of the 19th century. The town's water supply was improved by the Sheffield Waterworks Company, who built a number of reservoirs around the town. Parts of Sheffield were devastated when, following a five year construction project, the Dale Dyke dam collapsed on Friday 11 March 1864, resulting in the Great Sheffield Flood.

Sheffield's transport infrastructure was also improved.[n 6] In the 18th century turnpike roads were built connecting Sheffield with Barnsley, Buxton, Chesterfield, Glossop, Intake, Penistone, Tickhill, and Worksop.[n 7] In 1774 a 2-mile (3.2 km) wooden tramway was laid at the Duke of Norfolk's Nunnery Colliery. The tramway was destroyed by rioters, who saw it as part of a plan to raise the price of coal.[65] A replacement tramway, laid by John Curr in 1776, that used L-shaped rails was one of the earliest cast-iron railways.[66] The Sheffield Canal opened in 1819 allowing the large-scale transportation of freight.[67] This was followed by the Sheffield and Rotherham Railway in 1838, the Sheffield, Ashton-under-Lyne and Manchester Railway in 1845, and the Midland Railway in 1870.[68] The Sheffield Tramway was started in 1873 with the construction of a horse tram route from Lady's Bridge to Attercliffe. This route was later extended to Brightside and Tinsley, and further routes were constructed to Hillsborough, Heeley, and Nether Edge.[69] Due to the narrow medieval roads the tramways were initially banned from the town centre. An improvement scheme was passed in 1875; Pinstone Street and Leopold Street were constructed by 1879, and Fargate was widened in the 1880s. The 1875 plan also called for the widening of High Street, but disputes with property owners delayed this until 1895.[70]

Steel production in the 19th century involved long working hours, in unpleasant conditions that offered little or no safety protection. Friedrich Engels in his *The Condition of the Working Class in England* in 1844 described the conditions prevalent in the city at that time:

In Sheffield wages are better, and the external state of the workers also. On the other hand, certain branches of work are to be noticed here, because of their extraordinarily injurious influence upon health. Certain operations require the constant pressure of tools against the chest, and engender consumption in many cases; others, file-cutting among them, retard the general development of the body and produce digestive disorders; bone-cutting for knife handles brings with it headache, biliousness, and among girls, of whom many are employed, anÃmia. By far the most unwholesome work is the grinding of knife-blades and forks, which, especially when done with a dry stone, entails certain early death. The unwholesomeness of this work lies in part in the bent posture, in which chest and stomach are cramped; but especially in the quantity of sharp-edged metal dust particles freed in the cutting, which fill the atmosphere, and are necessarily inhaled. The dry grinders' average life is hardly thirty-five years, the wet grinders' rarely exceeds forty-five.[71]

Sheffield became one of the main centres for trade union organisation and agitation in the UK. By the 1860s, the growing conflict between capital and labour provoked the so-called 'Sheffield Outrages', which culminated in a series of explosions and murders carried out by union militants. The Sheffield Trades Council organised a meeting in Sheffield in 1866 at which the United Kingdom Alliance of Organised Tradesâ ~a forerunner of the Trades Union Congress

(TUC)â ~was founded.[72]

[edit] The 20th century to the present

In 1914 Sheffield became a diocese of the Church of England,[73] and the parish church became a cathedral.[74] During World War I the Sheffield City Battalion suffered heavy losses at the Somme[75] and Sheffield itself was bombed by a German zeppelin.[76] The recession of the 1930s was only halted by the increasing tension as World War II loomed. The steel factories of Sheffield were set to work making weapons and ammunition for the war. As a result, once war was declared, the city once again became a target for bombing raids. In total there were 16 raids over Sheffield, however it was the heavy bombing over the nights of 12 December and 15 December 1940 (now known as the Sheffield Blitz) when the most substantial damage occurred. More than 660 lives were lost and numerous buildings were destroyed.[77]

Following the war, the 1950s and 1960s saw many large scale developments in the city. The Sheffield Tramway was closed, and a new system of roads, including the Inner Ring Road, were laid out. Also at this time many of the old slums were cleared and replaced with housing schemes such as the Park Hill flats,[78] and the Gleadless Valley estate.

Sheffield's traditional manufacturing industries (along with those of many other areas in the UK), declined during the 20th century.[79]

The building of the Meadowhall shopping centre on the site of a former steelworks in 1990 was a mixed blessing, creating much needed jobs but speeding the decline of the city centre.[80] Attempts to regenerate the city were kick-started by the hosting of the 1991 World Student Games[81] and the associated building of new sporting facilities such as the Sheffield Arena, Don Valley Stadium and the Ponds Forge complex. Sheffield began construction of a tram system in 1992, with the first section opening in 1994. Starting in 1995, the Heart of the City Project has seen a number of public works in the city centre: the Peace Gardens were renovated in 1998, the Millennium Galleries opened in April 2001, and a 1970s town hall extension was demolished in 2002 to make way for the Winter Gardens, which opened on 22 May 2003. A number of other projects grouped under the title Sheffield One aim to regenerate the whole of the city centre.

On 25 June 2007, flooding caused millions of pounds worth of damage to buildings in the city and led to the loss of two lives.[82]

[edit] See also

[edit] References

Notes

^ For example, an early Roman lamp was found at 354 Walkley Bank Road in 1929.[17]

^ Addy 1888, pp.Â 36â ^37 suggests two alternative derivations for the name Campo Lane: that it may refer to a field in which football was played, or that it is derived from the Norse *kambr* meaning a ridge.

^ The Roman finds near Stannington and at Bank Street are discussed in Hunter 1819, pp.Â 15â ^18.

^ In reference to the villages of Wales and Waleswood, Addy 1888, p.Â 274 states "The Anglo-Saxon invaders or settlers called the old inhabitants or aborigines of this country *wealas*, or foreigners." Goodall 1913, pp.Â 292â ^293 states "these names possess peculiar interest; they refer to the presence of Britons living side by side with the Anglian settlers." See also, "Welsh" in Simpson, J.A.; Weiner, E.S.C. (eds) (1989). *Oxford English Dictionary*. Oxford: Clarendon Press. ISBNÂ 0-19-210019-X.

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^ See *Transport in Sheffield* for a more detailed history of Sheffield's transport infrastructure.

^ Descriptions of the routes that the turnpike roads followed can be found in Leader, R.E. (1906). *The Highways and Byways of Old Sheffield*. A lecture delivered before the Sheffield Literary and Philosophical Society.

(transcription)

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Pieter Kenyon Fleming-Voltelyn van der Byl, ID (11 November 1923 â ^ 15 November 1999) was a South African-born Rhodesian politician who served as the country's Foreign Minister from 1974 to 1979 as a member of the Rhodesian Front. A close associate of Prime Minister Ian Smith, van der Byl opposed attempts to compromise with the British authorities and domestic opposition on the issue of majority rule throughout most his time in government. However, in the late 1970s he supported the moves which led to majority rule and internationally recognised independence for Zimbabwe.

After a high-flying international education, van der Byl moved to the colony of Southern Rhodesia in 1950 to manage family farms. He went into politics in the early 1960s through his involvement with farming trade bodies, and became a government minister responsible for propaganda. One of the leading agitators for the Unilateral Declaration of Independence, van der Byl was afterwards responsible for introducing press censorship. He was unsuccessful in his attempt to persuade international opinion to recognise Rhodesia as a new nation, but was popular among the members of his own party.

Promoted to the cabinet in 1968, van der Byl became a spokesman for the Rhodesian government and crafted a public image as a die-hard supporter of continued white minority rule. In 1974 he was made Minister of Foreign Affairs and Defence at a time when Rhodesia's one ally, South Africa, was supplying military aid. His extreme views and brusque manner made him a surprising choice for a diplomat (a Times profile in November 1976 described him as "a man calculated to give offence"[1]). After offending the South African government, van der Byl was removed from the Defence Ministry.

In the late 1970s van der Byl was willing to endorse the Smith government's negotiations with moderate African nationalist leaders and rejected attempts by international missions to broker an agreement. He served in the internal settlement government in 1979. After the creation of Zimbabwe, van der Byl remained involved in politics and close to Ian Smith, and he loudly attacked former Smith supporters who had gone over to support Robert Mugabe. He retired to South Africa when the Mugabe government abolished seats reserved for whites in Parliament.

[edit] Family and early life

Van der Byl was born in Cape Town, Western Cape, South Africa, the son of Major Pieter Voltelyn Graeme van der Byl, a member of Jan Smuts' South African cabinet during the Second World War, and wife Joy Fleming. Like his father, van der Byl was educated at the Diocesan College in Rondebosch[2] but his studies

were interrupted by war in 1941.[3] He served with the South African Army during the Second World War[2] and was briefly attached to the British 7th Queen's Own Hussars;[1] he saw active service in the Middle East, Italy and Austria.

After being demobilised, van der Byl studied law at Pembroke College, Cambridge[4] where his aristocratic manner stood out. "P. K." was always elegantly dressed and coiffured, and acquired the nickname "the Piccadilly Dutchman". He obtained a Third-class degree in his Part II Law examinations in 1947,[5] and went on from Cambridge to study at the Harvard University Graduate School of Business Administration from 1947 to 1948 (although he did not obtain a degree at the latter).[6] He also studied at the University of Witwatersrand in South Africa.[7]

One of the most conspicuous features of van der Byl was his manner of speech: although his ancestry was Cape Dutch and his early life was in Cape Town, South Africa, he had what were described (by the pro-Rhodesian Chris Whitehead) as "what he thought was an aristocratic English nasal drawl and imperial English mannerisms".[8] Whitehead was of the opinion that van der Byl had "adopted" this accent, in common with others who heard him.[9] This personal characteristic was intensely irritating to many people including South African government ministers, but van der Byl's aristocratic mannerisms appeared uncontentious to many Rhodesian whites. They believed that his "nasal drawl" was the product of his time as an officer in the Hussars and his Cambridge education: William Higham described him as "a popular Minister of Defence who, despite his British upper crust accent â ^ undoubtedly honed during his swashbuckling career as an officer in the hussars â ^ hailed from a noble Cape family." [10]

[edit] Move to Rhodesia

Van der Byl moved to Southern Rhodesia in 1950 in order to manage some of his family's tobacco farming interests, hoping to make his own fortune.[3] He welcomed the move as it allowed him to indulge his hobby of big game hunting: in that year in Angola he set a world record for the biggest elephant shot which stood until 1955.[11]

In 1957 van der Byl was made a Director of the United Dominions Corporation (Rhodesia) Ltd, having already become an active member of the Rhodesia Tobacco Association. In 1956, he was elected by the members of the Selousâ ^Gadzema district to represent them on the Tobacco Association council. He was also Deputy Chair of the Selous Farmers' Association in 1957. His first involvement in government was in 1960 when the Rhodesia Tobacco Association made him one of their representatives on the National Native Labour Commission, on which he served for two years. In 1961, he also represented the Rhodesia Tobacco Association on the council of the Rhodesian National Farmers Union.[12] He was recognised as a leading spokesman for Rhodesian tobacco farmers.[2]

Dominion Party politician Winston Field had also led the Rhodesia Tobacco Association, and van der Byl agreed with him on politics in general. He joined the Rhodesian Front when it was set up under Field's leadership. At the 1962 general election, van der Byl was elected comfortably to the Rhodesia House of Assembly for the Hartley constituency, a rural area to the south-west of Salisbury.[13]

[edit] Political career

[edit] Ministerial office

In 1963, Winston Field appointed van der Byl as a junior government whip,[12] and on 16 March 1964 he was made Parliamentary Secretary to the Ministry of Justice with responsibility for the Information Service.[14] Although the van der Byl family were identified as strongly Liberal in South African politics, he became identified with the right wing of the party and helped to depose Field from the premiership in early April 1964, when Field failed to persuade the British government to grant Southern Rhodesia its independence. The new Prime Minister, Ian Smith, appointed him Deputy Minister for Information.[14] At this time, van der Byl's chief adviser was a South African called Ivor Benson, who strongly believed in an international communist conspiracy which



was plotting to overthrow white rule in Rhodesia.[15]

Speaking in the Legislative Assembly on 12 August 1964 he attacked proposals for greater independence for broadcasters by referring to what he perceived to be the social effect in Britain:

To suggest that the BBC, forming opinion in the minds of the people of England, has been an influence for good in any way, when you consider the criminality of large areas of London; when you consider the Mods and Rockers, and all those other things; when you consider the total moral underminings which have been taking place in England, much to all our distress, in the last fifteen to twenty years, the Hon. Member can hardly bring that up as an argument in favour of the freedom of broadcasting.[16]

By the end of 1964, van der Byl and his Ministry had control of broadcasting in Rhodesia.[15] Speaking in Parliament he described the aims of his Department as "not merely to disseminate information from an interesting point of view but to play its part in fighting the propaganda battle on behalf of the country". He defined propaganda as "simply the propagation of the faith and the belief in any particular ideology or thing", and also stated that the Department would seek the "resuscitation of the determination of the European to survive and fight for his rights".[17]

[edit] 1965 election

In May 1965 the Rhodesian Front government went to the country in a general election with van der Byl one of the leading campaigners. Discussion of unilaterally declaring independence had already begun. Van der Byl argued that only a small fraction of Rhodesian business opposed it; however, his campaign speeches typically included an argument against business involvement in politics. He cited Johannesburg mining interests' support for the Progressive Party in South Africa, big business support for the Nazi Party in Germany, and the Bolshevik revolution in Russia being financed by United States big business.[18]

The Rhodesian Front won a landslide victory, winning every single one of the 50 constituencies which had predominantly European voters. At the Rhodesian Front Congress of August 1965, party members strongly attacked the press for failing to support the government. A demand for it to be made compulsory for all political articles to be signed by the author met with van der Byl's approval.[19]

Within the government, van der Byl was one of the loudest voices urging Ian Smith to proceed to a Unilateral Declaration of Independence. He angrily denounced the threat of sanctions from Britain, saying on 4 May 1965 that economic destruction of Rhodesia would mean total economic destruction of Zambia, formerly Northern Rhodesia. This statement was interpreted as a military threat by David Butler, the Leader of the Opposition.[20] Van der Byl was given the task of selling the UDI to Rhodesian whites and to world opinion. In September 1965, it was announced that he would tour the United Kingdom to promote Rhodesian independence. According to David Steel, he claimed then that France and the United States would lead the international recognition of the UDI government.[21] He was appointed Deputy Minister of Information on 22 October[22] and so was present at, but did not sign, the Unilateral Declaration of Independence Document on 11 November 1965.

Van der Byl was greeted by a speech strongly critical of the Rhodesian government from the Archbishop of Canterbury, Michael Ramsey, who supported the use of armed force to bring the Rhodesians in line with United Kingdom policy on decolonization. He responded by comparing the speech to "the tragic connivance at the destruction of Czechoslovakia in exchange for the useless appeasement at Munich in 1938".[23] Van der Byl's response used the phrase "kith and kin" to refer to the ethnic links between the white Rhodesians and the people of the United Kingdom. He saw no contradiction between signing a letter declaring "constant loyalty" to the Queen and declaring independence a few days later;[11] the Rhodesian Government was careful at the time of UDI to state its continued loyalty to the British Crown, though it later declared a Republic.

Despite his enthusiasm for propaganda, van der Byl was outraged when the BBC subsequently set up a radio station at Francistown in Botswana which broadcast for 27 months, criticising UDI and urging Rhodesians to revoke it. He was later to claim the station was inciting violence,[24] although this was denied by those who had been regular listeners.[25] On 26 January 1966, two months after the UDI, van der Byl was willing to be quoted as saying that Rhodesian Army troops would follow a "scorched earth" policy should the United Kingdom send in troops, comparing their position to that of the Red Army when Nazi forces invaded the Soviet Union in 1941. He was highly critical of Harold Wilson, describing him as a "highly dangerous, uninformed and conceited little man." [26]

#### [edit] Censorship

Internally, his policy was enforced through Ministry control of TV and radio and through censorship of newspapers. From 31 December 1965, the Ministry of Information expanded its brief and was renamed the Ministry of Information, Immigration and Tourism, which meant that it was also responsible for deciding whether to grant or revoke permits to visit Rhodesia. Several foreign journalists were expelled: John Worrall, correspondent for The Guardian, went in January 1969. The Rhodesia Herald, then in opposition to both the Rhodesian Front and UDI, frequently appeared with large white spaces on its news pages where censored stories had been placed. Stories and editorials personally critical of van der Byl were immediately removed.

Censorship was tightened still further on 8 February 1966 when it was made illegal to indicate where material had been removed. The censor was also given the power to alter existing material or to move it around the newspaper. Dr Ahrn Palley, the lone white opposition MP, described the powers as "censorship gone mad", and insisted that there would no longer be any guarantee that anything published in the newspapers was authentic. Van der Byl responded by saying that the new measures were a reflection on the newspapers which had made such powers necessary.[27] In 1967 van der Byl was reported by Malcolm Smith, the former editor of the Herald, as remarking that a high degree of self-censorship was required, and support for the government was essential.[28]

The Herald (and the Bulawayo Chronicle) defied the restrictions, boldly printing blank spaces which identified removed material. Van der Byl personally visited the newspaper offices on the day the new regulations came in to warn the staff that if the paper was printed as proposed, they would "publish at your peril." However the papers continued to appear with identifiable censorship in defiance of the government, and in 1968 the regulations were scrapped.

#### [edit] Deportation

Shortly after UDI, 46 academics working at University College, a racially non-segregated institution, in Rhodesia wrote to The Times in London, denouncing the move. Officers of the British South Africa Police visited many of those who had signed to search their houses. Shortly afterwards, the residence permit of one of the academics came up for renewal, which would normally be automatic. In fact, it was revoked and the academic was deported. Van der Byl was the responsible minister and all but admitted that the reason was his opposition to UDI.[29]

Van der Byl's strategy seemed to work at home, with many Rhodesians remaining unaware until the end just how much was their country's vulnerability and isolation. The Times was later to describe him as a "skilled propagandist who believed his own propaganda." [11] When sanctions on Rhodesia were confirmed in January 1967, van der Byl compared their situation with Spain following World War II, saying that the isolation of Spain had not stopped it from becoming one of the most advanced and economically successful countries in Europe. However, the reality of the situation must have been brought home to van der Byl in April 1966 when he made informal approaches to see if he might visit Britain "for social reasons" during a tour of Europe. The Commonwealth Relations Office replied that he would not be recognised as enjoying any form of recognition or immunity.[30] Other European governments refused to recognise his passport and

expelled him from the country.[31]

[edit] Wider role in politics

On 13 September 1968 he was promoted to be the full Minister of Information, Immigration and Tourism. Van der Byl's aristocratic background, military experience and academic credentials combined to give him an almost iconic status within the Rhodesian Front. Many were impressed by his exploits as a big-game hunter, which began when he shot his first lion in a garden in Northern Rhodesia at the age of 15.[11] He was also known to be a patron of the arts in public and a womaniser in private.[citation needed] Many in the Rhodesian Front believed him to be "a 19th century-style connoisseur, a man of culture and an aristocrat-statesman" in the words of Michael Hartnack, a South African journalist.[32] Hartnack went on to observe "Poseurs are an incipient hazard in any unsophisticated society." Within the somewhat claustrophobic confines of white Rhodesian society outside the RF, van der Byl was achieving some degree of respect.

In politics he assumed the position of hard-line opponent of any form of compromise with domestic opponents or the international community. He made little secret of his willingness to succeed Ian Smith as Prime Minister if Smith showed even "the least whiff of surrender," and did his best to discourage attempts to get the Rhodesians to compromise. When Abel Muzorewa had his passport withdrawn in September 1972 after returning from a successful visit to London, the government did not attempt to counter the rumour that it action was taken following van der Byl's personal order.[33]

In April 1972 van der Byl sparked a row over the agreement which Rhodesia and the United Kingdom had made in November 1971. Under this agreement, Rhodesia had agreed to certain concessions to African nationalism in return for the prospect of recognition of its independence; however, implementation of the agreement was to be delayed until the Pearce Commission reported on whether the settlement proposals would be approved by the people of Rhodesia. Van der Byl insisted that Rhodesia would not implement any part of the agreement unless Rhodesia's independence was first acknowledged, regardless of the answer from the Pearce Commission. When the Pearce Commission reported that the European population of Rhodesia were in support but the African population were opposed, the agreement was ditched. Many outside and inside Rhodesia had hoped that the government would implement some of the agreement even if Pearce reported against it.[34]

His derision of working class British Labour politicians also caused problems. When, in January 1966, three visiting Labour MPs were manhandled, kicked and punched while attempting to address 400 supporters of the Rhodesian Front, van der Byl blamed the three for refusing an offer from his Ministry to coordinate the visit, and pointed out that they were breaking the law which required government permission for any political meeting of more than 12 people.[35]

... the most ignorant and offensive person in authority whom I have ever met. A false Englishman in the manner of von Richthofen. Against elections, against everything except intrigue and condescension.

The propaganda circulated by his Ministry (typically including references to "happy, smiling natives") was considered laughable. Visiting British journalist Peregrine Worsthorne, who knew van der Byl socially, reported seeing a copy of Mein Kampf on his coffee table.[37] His propaganda strategy became increasingly unsuccessful abroad, where van der Byl alienated many of the foreign journalists and politicians that he came into contact with. Max Hastings, then reporting for the Evening Standard, described him as "appalling" and said that he and Smith "would have seemed ludicrous figures, had they not possessed the power of life and death over millions of people"; van der Byl had him

deported.[38]

While still popular with the Rhodesian Front members, he was criticised at the 1972 Party Congress for his lack of success in improving Rhodesia's image around the world; however, he retained the confidence of Ian Smith and was kept on in a government reshuffle on 24 May 1973. That winter saw him promote a new Broadcasting Bill to transfer control of the monopoly Rhodesian Broadcasting Corporation. Allan Savory, then the lone white opposition MP, criticised the Bill for the composition of the proposed board, which was dominated by strong supporters of the Rhodesian Front. Van der Byl insisted, somewhat unsuccessfully to foreign observers, that the government was not trying to take over broadcasting.[39]

[edit] Minister of Defence

Van der Byl was appointed Minister of Foreign Affairs and Defence on 2 August 1974. These were two distinct portfolios, the first of which (Foreign Affairs) did not amount to much in a state which lacked any form of international recognition. The Defence portfolio, at a time when Rhodesia was drifting into civil war, was an important post; although his previous political experience had been largely in the area of public relations, he was now charged with responsibilities which were central to the survival of Rhodesia.

If the battle should wax fiercer, there can be no question of surrender. We shall contest every river, every crossroads, every village, every town and every kopje.

Van der Byl attempts to inspire the Rhodesian troops[40]

He promoted aggressive measures against the insurgents, and in so doing, he also sought to raise his own political profile. Clad in immaculately tailored battledress, he would fly by helicopter to a beleaguered army outpost; wearing dark glasses and sporting a swagger stick, deliver a rousing speech for the benefit of the troops and the TV cameras â ^ then return to Salisbury in time for dinner. He drew heavily on Winston Churchill's oratory style for some of his inspiring speeches.[7][41] As Minister of Defence, van der Byl was known to join army counter-insurgency operations while armed with a hunting rifle (with the words "I'd like to bag one of these chaps ..."), and would regularly visit army positions and entertain the troops with his own generous supply of "scotch whisky and fine wines." Such behaviour endeared him to many in Rhodesia: he was far more popular with the troops than his predecessor as Minister of Defence, Jack Howman. However, this popularity did not extend to senior members of the South African and Rhodesian governments.

Rhodesia's strategic position underwent a fundamental change in June 1975 when the Portuguese government suddenly withdrew from Mozambique which bordered Rhodesia on the east. Mozambique now came under the control of a Soviet-allied government which was supportive of black nationalist forces in both South Africa and Rhodesia. This created a delicate situation since Rhodesia's main road and rail links to the outside world were via the Mozambican ports of Beira and Maputo. Initially, the new Mozambican government allowed the Rhodesians continued use of these links. This was so even while ZANU guerrillas were allowed to base themselves in Tete province adjoining north eastern Rhodesia.

There were rumours in February 1976 that Soviet tanks were being unloaded in Mozambique to help in the war. Unluckily for van der Byl, the British Foreign Office minister was David Ennals, one of those who had received rough treatment in 1966. Ennals announced that in the event of a racial war breaking out in Rhodesia, there would be no British help. Van der Byl responded by claiming this indicated Britain accepting Rhodesia's independence.[42] He attacked Abel Muzorewa for supporting President Machel, saying that "being a good churchman and a Bishop there is a very strong possibility he might be a communist".[43]

Following the example of Mozambique, the Zambian and Botswana governments permitted guerrillas to establish bases from which they could threaten and infiltrate Rhodesia. Van der Byl told a newspaper reporter that this had to be expected.[44] As infiltration grew, he declared at the beginning of July that the Rhodesian Army would not hesitate to bomb and destroy villages that harboured guerrillas.[45]

In 1975 and 1976, the South African government conducted delicate negotiations with neighbouring states: the South Africans wanted to encourage those states to maintain economic relations with South Africa and Rhodesia while limiting the activities of the ANC, ZANU and ZAPU. However, increasingly aggressive actions by the Rhodesian army outside its own borders resulted in the failure of this conciliatory approach.

A cross-border Selous Scouts raid into Mozambique on 9 August 1976 (dubbed "the Nyadzonya Raid") killed over 1,000 people without Rhodesian fatalities, with van der Byl insisting that the government had irrefutable proof that the raid had targeted a guerrilla training camp. He was unwilling to disclose the nature of the proof, though he invited the UN to conduct its own investigation into the raid.[46] The raid produced a high body count and a major haul of intelligence and captured arms; according to ZANLA's own figures, which were not publicly circulated, most of those present in the camp had been armed guerrillas, though there were some civilians present.[n 1] In a successful attempt to win global sympathy, ZANU clamoured that Nyadzonya had been full of unarmed refugees, leading most international opinion to condemn the Rhodesian raid as a massacre.[47] Although cross-border raids into Mozambique had been approved by the Rhodesian cabinet, the depth and severity of the August incursion was greater than had been intended. Van der Byl had sanctioned the incursion largely on his own initiative. Although a tactical success, the incursion caused a final break with Zambia and Mozambique. The South African government was greatly displeased that its earlier diplomatic efforts were compromised and made this clear to Ian Smith. Smith appeared to consider this "the final straw" as far as van der Byl's defence portfolio was concerned.[48]

[edit] Foreign affairs

Van der Byl took over at a time when South Africa was putting increasing pressure on the Rhodesians to make an agreement on majority rule. In March 1975, he had to fly urgently to Cape Town to explain why the Rhodesian government had detained Rev. Ndabaningi Sithole of the Zimbabwe African National Union, who was improbably accused of plotting to murder his colleagues. The South Africans were extremely displeased with this action and suspected that the real reason was that the Rhodesians objected to Sithole and preferred to negotiate with Joshua Nkomo.[49] Van der Byl was unsuccessful in reassuring the South Africans and Ian Smith was forced to follow him.

Gradually the South Africans grew unwilling to help Rhodesia. The remaining 200 South African policemen transferred to help in the guerilla war were removed suddenly in August 1975, a move which appeared to precede even more disengagement. Van der Byl responded in a speech on 8 August which asserted that "The terrorists who are trained and equipped outside our border and who invade our country with the willing help of other governments are here for a much wider purpose than the overthrow of Rhodesia. They are here to represent a force which sees Rhodesia as just one more stepping stone to victory over South Africa because they see South Africa as a vital key to the security of America, Europe and the rest of the western world." [50]

When the Rhodesian government held talks with the African National Council on the railway bridge across the Victoria Falls in August 1975 (the train in which the talks took place was strategically in the middle of the bridge so that the ANC were in Zambia while the Rhodesians remained in Rhodesia), van der Byl was not a member of the Rhodesian delegation. This was a curious omission given his position. He did however participate in talks with Joshua Nkomo that December.

Van der Byl's habit of referring to the African population as "munts" (he asserted that "Rhodesia is able to handle the munts"[51]) led to extreme unpopularity with the South African government, and he did not attend talks

with South African Prime Minister John Vorster in October 1975. This was interpreted as being connected to a personal dislike. When, on 26 August 1976, the South African government announced the withdrawal of all its military helicopter crews from Rhodesia, van der Byl was outspoken in his criticism and Vorster was reported to have refused to have anything to do with "that dreadful man van der Byl." [2] Smith decided that he "clearly ... had no option" [52] and on 9 September 1976 executed a sudden cabinet reshuffle that ended van der Byl's tenure as Defence Minister. Smith claimed the South African dislike of van der Byl was partly motivated by the memory of his father, who had been in opposition to the National Party. [52]

[edit] Contribution to diplomacy

As the prominence of the issue of Rhodesia increased in the late 1970s, attention on van der Byl increased. Reporters noted his impressively quotable lines at press conferences (such as his explanation for why the Rhodesian government did not usually give the names of guerrillas which it had hanged: "It's an academic question, because they are normally dead" [1]). While negotiating with the Patriotic Front put together by ZANU and ZAPU at the Geneva Conference in November 1976, he described ZANU leader Robert Mugabe as "this bloodthirsty Marxist puppet" and the Patriotic Front proposals as "almost a parody, a music hall caricature of communist invective". [53] Mugabe repeatedly arrived late to the meetings held during the conference, and on one occasion van der Byl tersely reprimanded the ZANU leader for his tardiness. Mugabe flew into a rage and shouted across the table at van der Byl, calling the Rhodesian minister a "foul-mouthed bloody fool!" [54]

... it is better to fight to the last man and the last cartridge and die with some honour. Because, what is being presented to us here is a degree of humiliation ...

Van der Byl comments on a British peace plan in 1977 [55]

At this conference, which was organised by Britain with American support, van der Byl rejected the idea of an interim British presence in Rhodesia during a transition to majority rule, which was identified as one of the few ways of persuading the Patriotic Front to endorse a settlement. [56] The conference was adjourned by the British foreign minister, Anthony Crosland, on 14 December 1976, [57] and ultimately never reconvened. The nationalist leaders said they would not return to Geneva or take part in any further talks unless immediate black rule were made the only topic for discussion. [58] Soon after, on 7 January 1977, van der Byl announced the Rhodesian government's rejection of every proposal made in Geneva. [59]

Later that month, van der Byl was finding pressure put on him by more moderate voices within Rhodesia and hinted that the government might amend the Land Tenure Act, which effectively split the country into sections reserved for each racial group. He also remarked that Bishop Abel Muzorewa "can be said to represent the African in this country", [60] which indicated the direction in which the Smith government was hoping to travel: an accommodation with moderate voices within Rhodesia was likely to be a better end than a capitulation to the Patriotic Front. Van der Byl was prepared to support this strategy and did not go along with the 12 Rhodesian Front MPs who formed the Rhodesian Action Party in early 1977 claiming that the Front had not adhered to party principles.

Although van der Byl was now prepared to say that he supported the transition to majority rule, he was quick to put restrictions on it when interviewed in April 1977. He insisted that majority rule would only be possible on a "very qualified franchise" that's what the whole thing is about", and also said that any settlement must be endorsed by a two-thirds majority of the existing Legislative Assembly (which was largely elected by white Rhodesians). [61] Over

the summer of 1977 he continued to warn that insistence on capitulation to the Patriotic Front would produce a white backlash and put negotiations back.[62]

However, the Rhodesian government was forced to put its internal settlement negotiations on hold during a joint US-UK initiative in late 1977. Van der Byl's public comments seemed to be aimed at ensuring this mission did not succeed, as he insisted that it had no chance of negotiating a ceasefire, described the Carter administration as "mindless", and the joint mission as being "Anglo-American-Russian".[63] When a plan was published, he described it as "totally outrageous" and involving "the imposition of unconditional surrender on an undefeated people who are not enemies".[64]

[edit] Internal settlement

The mission did fail and the internal settlement talks were resurrected, resulting in a deal on 4 March 1978. A transitional joint Council of Ministers was set up, with van der Byl having to work with Dr Elliott Gabellah as his co-Minister of Foreign Affairs. The Patriotic Front took no notice of this accord and the guerrilla war continued; Lord Richard Cecil, a close family friend working as a photo-journalist, was killed by guerrillas on 20 April 1978[65] after van der Byl had ensured he had full access to military areas denied to other reporters.[66]

In May van der Byl greeted news of massacres in Zaire as "a blessing in disguise" because they might ensure that warnings about Soviet penetration in Africa were heeded.[67] He denounced the British government the following month for refusing to recognise that a massacre of Elim missionaries was perpetrated by the Patriotic Front.[68] As the date for the full implementation of the internal settlement grew nearer, van der Byl's profile decreased, but he remained active in politics: he was elected unopposed for the whites-only Gatooma/Hartley seat to the Zimbabwe-Rhodesia House of Assembly. He handed over power to his African successor on 1 June 1979, and became instead Minister of Transport and Power and Minister of Posts in the new government.

[edit] Lancaster House

When "the wheels came off the wagon" (as he put it)[2] at Lancaster House in 1979, van der Byl greeted the event with amused detachment. He was not a member of any delegation at the conference and did not attend. The weekend after the agreement, he called on the Rhodesian Front to revitalise itself as the only true representative of Europeans in Rhodesia,[69] and he ascribed the result of the conference to "a succession of perfidious British governments".[70]

According to Ian Smith's memoirs, van der Byl organised a meeting between Ian Smith and Lieutenant-General Peter Walls, Commander of the Rhodesian Army, shortly before the first Zimbabwean elections in February 1980, where they agreed a strategy to prevent Robert Mugabe winning.[71] They met again on 26 February the day before polling began in the Common Roll election. The consensus at this meeting was that Abel Muzorewa's interim government would win enough seats, when put together with the 20 seats reserved for whites which were all Rhodesian Front, to deny Mugabe victory. However, the early election results in March dented this confidence.

Smith asked Walls for details of his plan ("Operation Quartz") [72] for using force to prevent ZANU-PF taking power by force if it lost the election. Walls insisted that ZANU-PF would not win the election. When it did happen, both Smith and van der Byl believed that the Army should step in to prevent Mugabe taking over. Walls took the view that it was already too late, and while the others wished for some move, they were forced to concede to this view.[71]

[edit] In Zimbabwe

Van der Byl had been elected unopposed to the new House of Assembly for Gatooma/Hartley and remained a close associate of Smith, becoming Vice President of the 'Republican Front' (later renamed the Conservative Alliance of Zimbabwe). At the 1985 general election the boundaries for the White Roll seats were altered and van der Byl fought in Mount Pleasant, opposing Chris Andersen.[73] Andersen had broken with the Rhodesian Front to sit as an Independent and became Minister of State for the Public Service in Robert Mugabe's government. Van der Byl lost the election heavily,[74] polling only

544 votes to 1,017 for Andersen and 466 for a third candidate. The Conservative Alliance of Zimbabwe still controlled the election of ten white Senators and Smith agreed to elect van der Byl to one of the Senate seats.

Parliamentary seats reserved for whites were abolished in 1987. Van der Byl made his last speech in Parliament on 10 September, in which he praised Robert Mugabe for the "absolute courtesy" he had shown since independence. He noted that he was the last surviving member of the 1965 government remaining in Parliament, and declared he hoped "I would have been cherished .. as a sort of national monument, and not flung into the political wilderness". His speech loudly denounced the former Republican Front and Conservative Alliance of Zimbabwe members who had gone over to the government, describing them as "dreadful souls screaming in agony". The government minister Dr Edson Zvobgo responded with a poorly-written poem referring to the number of rebels killed fighting troops under van der Byl's command.[75]

[edit] Marriage, issue and retirement

On 31 August 1979 van der Byl was married to HSH Princess Charlotte Maria Benedikte Eleonore Adelheid of Liechtenstein (born 1953), a daughter of Archduchess Elisabeth of Austria and Prince Henry of Liechtenstein. Princess Charlotte was thirty years his junior, and the couple had three sons.[citation needed]

In 1983 van der Byl had inherited from his mother a property described as "the magnificent estate .. near Caledon in the Western Cape," and following the end of his political career had no need to keep a home in Zimbabwe. He left as a rich man, with an attractive young wife, and enjoyed his retirement. He frequently visited London, where he was a good friend of Viscount Cranborne, who put him up for membership of the Turf Club.[76] Both were members of White's Club and were often seen there when van der Byl was in town.[77]

Four days after his 76th birthday, van der Byl died at Fairfield, in Caledon, Western Cape. In his obituary,[3] Dan van der Vat wrote "The arrival of majority rule in South Africa made no difference, and he died a very wealthy man." [78]

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Guards officer accent." This Rhodesian newspaper cartoon shows another reaction.

^ William Higham Players

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[edit] External links

Persondata

Name

van der Byl, Pieter Kenyon Fleming-Voltelyn

Alternative names

van der Byl, P. K.

Short description

Rhodesian politician

Date of birth

11 November 1923

Place of birth

Cape Town, South Africa

Date of death

15 November 1999

Place of death

Caledon, Western Cape, South Africa

Rabindranath Thakur

(anglicised as "Tagore")

Tagore c. 1915, the year he was knighted by George V. Tagore repudiated his knighthood, in protest against the Jallianwala Bagh massacre in 1919.[1]

Born

(1861-05-07)May 7, 1861Calcutta, Bengal Presidency, British India

Died

7 August 1941(1941-08-07) (aged 80)

Calcutta, Bengal Presidency, British India

Occupation

Poet, short-story writer, song composer, novelist, playwright, essayist, and painter

Language

Bengali, English

Nationality

India

Ethnicity

Bengali

Notable work(s)

Gitanjali, Gora, Ghare-Baire, Jana Gana Mana, Rabindra Sangeet, Amar Shonar

Bangla (other works)

Notable award(s)

Nobel Prize in Literature

1913

Spouse(s)

Mrinalini Devi (m. 1883 – 1902) «start: (1883) ^end+1: (1903)»"Marriage:

Mrinalini Devi to Rabindranath Tagore" Location:

(linkback://en.wikipedia.org/wiki/Rabindranath\_Tagore)

Children

five children, two of whom died in childhood

Relative(s)

Tagore family

Signature

Rabindranath Thakur [ⓘ], anglicised to Tagore [ⓘ] pronunciation<sup>ⓘ</sup> (help·info)

(Bengali: রাবীন্দ্রনাথ ঠাকুর; 7 May 1861 – 7 August 1941),<sup>ⓘ</sup>

Gurudev,<sup>ⓘ</sup> was a Bengali polymath who reshaped his region's literature and

music. Author of Gitanjali and its "profoundly sensitive, fresh and beautiful verse", he became the first non-European to win the Nobel Prize in Literature in 1913. In translation his poetry was viewed as spiritual and mercurial; his seemingly mesmeric personality, flowing hair, and otherworldly dress earned him a prophet-like reputation in the West. His "elegant prose and magical poetry" remain largely unknown outside Bengal. Tagore introduced new prose and verse forms and the use of colloquial language into Bengali literature, thereby freeing it from traditional models based on classical Sanskrit. He was highly influential in introducing the best of Indian culture to the West and vice versa, and he is generally regarded as the outstanding creative artist of modern India.

A Pirali Brahmin from Calcutta, Tagore wrote poetry as an eight-year-old. At age sixteen, he released his first substantial poems under the pseudonym Bhānusiḥa ("Sun Lion"), which were seized upon by literary authorities as long-lost classics. He graduated to his first short stories and dramas and the aegis of his birth name by 1877. As a humanist, universalist internationalist, and strident anti-nationalist he denounced the Raj and advocated independence from Britain. As an exponent of the Bengal Renaissance, he advanced a vast canon that comprised paintings, sketches and doodles, hundreds of texts, and some two thousand songs; his legacy endures also in the institution he founded, Visva-Bharati University.[12]

Tagore modernised Bengali art by spurning rigid classical forms and resisting linguistic strictures. His novels, stories, songs, dance-dramas, and essays spoke to topics political and personal. Gitanjali (Song Offerings), Gora (Fair-Faced), and Ghare-Baire (The Home and the World) are his best-known works, and his verse, short stories, and novels were acclaimed or panned for their lyricism, colloquialism, naturalism, and unnatural contemplation. His compositions were chosen by two nations as national anthems: India's Jana Gana Mana and Bangladesh's Amar Shonar Bangla.

Early life: 1861–1878

The youngest of thirteen surviving children, Tagore was born in the Jorasanko mansion in Calcutta, India to parents Debendranath Tagore (1817–1905) and Sarada Devi (1830–1875). Tagore family patriarchs were the Brahmo founders of the Adi Dharm faith. The loyalist "Prince" Dwarkanath Tagore, who employed European estate managers and visited with Victoria and other royalty, was his paternal grandfather. Debendranath had formulated the Brahmoist philosophies espoused by his friend Ram Mohan Roy, and became focal in Brahmo society after Roy's death.

The last two days a storm has been raging, similar to the description in my song Jhauro jhauro borishe baridhara [... amidst it] a hapless, homeless man drenched from top to toe standing on the roof of his steamer [...] the last two days I have been singing this song over and over [...] as a result the pelting sound of the intense rain, the wail of the wind, the sound of the heaving Gorai [R]iver, have assumed a fresh life and found a new language and I have felt like a major actor in this new musical drama unfolding before me.

â  
â ~

â ~ Letter to Indira Devi.

"Rabi" was raised mostly by servants; his mother had died in his early childhood and his father travelled widely. His home hosted the publication of literary magazines; theatre and recitals of both Bengali and Western classical music featured there regularly, as the Jorasanko Tagores were the center of a large and art-loving social group. Tagore's oldest brother Dwijendranath was a respected philosopher and poet. Another brother, Satyendranath, was the first

Indian appointed to the elite and formerly all-European Indian Civil Service. Yet another brother, Jyotirindranath, was a musician, composer, and playwright. His sister Swarnakumari became a novelist. Jyotirindranath's wife Kadambari, slightly older than Tagore, was a dear friend and powerful influence. Her abrupt suicide in 1884 left him for years profoundly distraught.

Tagore largely avoided classroom schooling and preferred to roam the manor or nearby Bolpur and Panihati, idylls which the family visited. His brother Hemendranath tutored and physically conditioned himâ ~by having him swim the Ganges or trek through hills, by gymnastics, and by practicing judo and wrestling. He learned drawing, anatomy, geography and history, literature, mathematics, Sanskrit, and Englishâ ~his least favorite subject. Tagore loathed formal educationâ ~his scholarly travails at the local Presidency College spanned a single day. Years later he held that proper teaching does not explain things; proper teaching stokes curiosity:

â

[It] knock[s] at the doors of the mind. If any boy is asked to give an account of what is awakened in him by such knocking, he will probably say something silly. For what happens within is much bigger than what comes out in words. Those who pin their faith on university examinations as the test of education take no account of this.

â "

After he underwent an upanayan initiation at age eleven, he and his father left Calcutta in February 1873 for a months-long tour of the Raj. They visited his father's Santiniketan estate and rested in Amritsar en route to the Himalayan Dhauladhars, their destination being the remote hill station at Dalhousie. Along the way, Tagore read biographies; his father tutored him in history, astronomy, and Sanskrit declensions. He read biographies of Benjamin Franklin among other figures; they discussed Edward Gibbon's *The History of the Decline and Fall of the Roman Empire*; and they examined the poetry of KÃ lidÃ sa. In mid-April they reached the station, and at 2,300 metres (7,546Â ft) they settled into a house that sat atop Bakrota Hill. Tagore was taken aback by the region's deep green gorges, alpine forests, and mossy streams and waterfalls. They stayed there for several months and adopted a regime of study and privation that included daily twilight baths taken in icy water.

He returned to Jorasanko and completed a set of major works by 1877, one of them a long poem in the Maithili style of Vidyapati; they were published pseudonymously. Regional experts accepted them as the lost works of BhÃ nusimha, a newly discovered 17th-century Vaishnava poet. He debuted the short-story genre in Bengali with "Bhikharini" ("The Beggar Woman"), and his *Sandhya Sangit* (1882) includes the famous poem "Nirjharer Swapnabhanga" ("The Rousing of the Waterfall"). Servants subjected him to an almost ludicrous regimentation in a phase he dryly reviled as the "servocracy". His head was water-dunkedâ ~to quiet him. He irked his servants by refusing food; he was confined to chalk circles in parody of Sita's forest trial in the Ramayana; and he was regaled with the heroic criminal exploits of Bengal's outlaw-dacoits. Because the Jorasanko manor was in an area of north Calcutta rife with poverty and prostitution, he was forbidden to leave it for any purpose other than traveling to school. He thus became preoccupied with the world outside and with nature. Of his 1873 visit to Santiniketan, he wrote:

â

What I could not see did not take me long to get overâ ~what I did see was quite enough. There was no servant rule, and the only ring which encircled me was the blue of the horizon, drawn around these solitudes by their presiding goddess. Within this I was free to move about as I chose.

â "

Shelaidaha: 1878â ~1901

Because Debendranath wanted his son to become a barrister, Tagore enrolled at a public school in Brighton, East Sussex, England in 1878. He stayed for several months at a house that the Tagore family owned near Brighton and Hove, in Medina Villas; in 1877 his nephew and nieceâ ~Suren and Indira Devi, the

children of Tagore's brother Satyendranathâ were sent together with their mother, Tagore's sister-in-law, to live with him. He briefly read law at University College London, but again left school. He opted instead for independent study of Shakespeare, Religio Medici, Coriolanus, and Antony and Cleopatra. Lively English, Irish, and Scottish folk tunes impressed Tagore, whose own tradition of Nidhubabu-authored kirtans and tappas and Brahmo hymnody was subdued. In 1880 he returned to Bengal degree-less, resolving to reconcile European novelty with Brahmo traditions, taking the best from each. In 1883 he married Mrinalini Devi, born Bhabatarini, 1873â ~1902; they had five children, two of whom died in childhood.

In 1890 Tagore began managing his vast ancestral estates in Shelaidaha (today a region of Bangladesh); he was joined by his wife and children in 1898. Tagore released his Manasi poems (1890), among his best-known work. As Zamindar Babu, Tagore criss-crossed the riverine holdings in command of the Padma, the luxurious family barge. He collected mostly token rents and blessed villagers who in turn honoured him with banquetsâ ~occasionally of dried rice and sour milk. He met Gagan Harkara, through whom he became familiar with Baul Lalon Shah, whose folk songs greatly influenced Tagore.[42] Tagore worked to popularise Lalon's songs. The period 1891â ~1895, Tagore's Sadhana period, named after one of Tagore's magazines, was his most productive; in these years he wrote more than half the stories of the three-volume, 84-story Galpaguchchha. Its ironic and grave tales examined the voluptuous poverty of an idealised rural Bengal.

Santiniketan: 1901â ~1932

In 1901 Tagore moved to Santiniketan to found an ashram with a marble-floored prayer hallâ ~The Mandirâ ~an experimental school, groves of trees, gardens, a library. There his wife and two of his children died. His father died in 1905. He received monthly payments as part of his inheritance and income from the Maharaja of Tripura, sales of his family's jewelry, his seaside bungalow in Puri, and a derisory 2,000 rupees in book royalties. He gained Bengali and foreign readers alike; he published Naivedya (1901) and Kheya (1906) and translated poems into free verse. In November 1913, Tagore learned he had won that year's Nobel Prize in Literature: the Swedish Academy appreciated the idealisticâ ~and for Westernersâ ~accessible nature of a small body of his translated material focussed on the 1912 Gitanjali: Song Offerings. In 1915, the British Crown granted Tagore a knighthood. He renounced it after the 1919 Jallianwala Bagh massacre.

In 1921, Tagore and agricultural economist Leonard Elmhirst set up the "Institute for Rural Reconstruction", later renamed Shriniketan or "Abode of Welfare", in Surul, a village near the ashram. With it, Tagore sought to moderate Gandhi's Swaraj protests, which he occasionally blamed for British India's perceived mentalâ ~and thus ultimately colonialâ ~decline. He sought aid from donors, officials, and scholars worldwide to "free village[s] from the shackles of helplessness and ignorance" by "vitalis[ing] knowledge". In the early 1930s he targeted ambient "abnormal caste consciousness" and untouchability. He lectured against these, he penned Dalit heroes for his poems and his dramas, and he campaignedâ ~successfullyâ ~to open Guruvayoor Temple to Dalits.

Twilight years: 1932â ~1941

Tagore's life as a "peripatetic litterateur" affirmed his opinion that human divisions were shallow. During a May 1932 visit to a Bedouin encampment in the Iraqi desert, the tribal chief told him that "Our prophet has said that a true Muslim is he by whose words and deeds not the least of his brother-men may ever come to any harm ..." Tagore confided in his diary: "I was startled into recognizing in his words the voice of essential humanity." To the end Tagore scrutinised orthodoxyâ ~and in 1934, he struck. That year, an earthquake hit Bihar and killed thousands. Gandhi hailed it as seismic karma, as divine retribution avenging the oppression of Dalits. Tagore rebuked him for his seemingly ignominious inferences. He mourned the perennial poverty of Calcutta and the socioeconomic decline of Bengal. He detailed these newly plebeian

aesthetics in an unrhymed hundred-line poem whose technique of searing double-vision foreshadowed Satyajit Ray's film *Apur Sansar*. Fifteen new volumes appeared, among them prose-poem works *Punashcha* (1932), *Shes Saptak* (1935), and *Patraput* (1936). Experimentation continued in his prose-songs and dance-dramas: *Chitra* (1914), *Shyama* (1939), and *Chandalika* (1938); and in his novels: *Dui Bon* (1933), *Malancha* (1934), and *Char Adhyay* (1934).

Clouds come floating into my life, no longer to carry rain or usher storm, but to add color to my sunset sky.

â  
â "

â ~Verse 292, *Stray Birds*, 1916.

Tagore's remit expanded to science in his last years, as hinted in *Visva-Parichay*, 1937 collection of essays. His respect for scientific laws and his exploration of biology, physics, and astronomy informed his poetry, which exhibited extensive naturalism and verisimilitude. He wove the process of science, the narratives of scientists, into stories in *Se* (1937), *Tin Sangi* (1940), and *Galpasalpa* (1941). His last five years were marked by chronic pain and two long periods of illness. These began when Tagore lost consciousness in late 1937; he remained comatose and near death for a time. This was followed in late 1940 by a similar spell. He never recovered. Poetry from these valetudinary years is among his finest. A period of prolonged agony ended with Tagore's death on 7 August 1941, aged eighty; he was in an upstairs room of the Jorasanko mansion he was raised in. The date is still mourned. A. K. Sen, brother of the first chief election commissioner, received dictation from Tagore on 30 July 1941, a day prior to a scheduled operation: his last poem.

â  
I'm lost in the middle of my birthday. I want my friends, their touch, with the earth's last love. I will take life's final offering, I will take the human's last blessing. Today my sack is empty. I have given completely whatever I had to give. In return if I receive anythingâ ~some love, some forgivenessâ ~then I will take it with me when I step on the boat that crosses to the festival of the wordless end.

â "

#### Travels

Between 1878 and 1932, Tagore set foot in more than thirty countries on five continents. In 1912, he took a sheaf of his translated works to England, where they gained attention from missionary and Gandhi protÃ©gÃ© Charles F. Andrews, Irish poet William Butler Yeats, Ezra Pound, Robert Bridges, Ernest Rhys, Thomas Sturge Moore, and others. Yeats wrote the preface to the English translation of *Gitanjali*; Andrews joined Tagore at Santiniketan. In November 1912 Tagore began touring the United States and the United Kingdom, staying in Butterton, Staffordshire with Andrews's clergymen friends. From May 1916 until April 1917, he lectured in Japan and the United States. He denounced nationalism.[69] His essay "Nationalism in India" was scorned and praised; it was admired by Romain Rolland and other pacifists.

Our passions and desires are unruly, but our character subdues these elements into a harmonious whole. Does something similar to this happen in the physical world? Are the elements rebellious, dynamic with individual impulse? And is there a principle in the physical world which dominates them and puts them into an orderly organization?

â  
â ~

â ~ Interviewed by Einstein, 14 April 1930.

Shortly after returning home the 63-year-old Tagore accepted an invitation from the Peruvian government. He travelled to Mexico. Each government pledged US\$100,000 to his school to commemorate the visits. A week after his 6 November 1924 arrival in Buenos Aires, an ill Tagore shifted to the Villa MiralrÃ-o at the behest of Victoria Ocampo. He left for home in January 1925. In May 1926 Tagore reached Naples; the next day he met Mussolini in Rome. Their warm rapport ended when Tagore pronounced upon Il Duce's fascist finesse. He had earlier enthused: "[w]ithout any doubt he is a great personality. There is such a massive vigour in that head that it reminds one of Michael Angelo's chisel." A "fire-bath" of fascism was to have educed "the immortal soul of Italy ... clothed in quenchless light".

On 14 July 1927 Tagore and two companions began a four-month tour of Southeast Asia. They visited Bali, Java, Kuala Lumpur, Malacca, Penang, Siam, and Singapore. The resultant travelogues compose Jatri (1929). In early 1930 he left Bengal for a nearly year-long tour of Europe and the United States. Upon returning to Britainâ ~and as his paintings exhibited in Paris and Londonâ ~he lodged at a Birmingham Quaker settlement. He wrote his Oxford Hibbert Lectures<sup>1</sup>[â °] and spoke at the annual London Quaker meet. There, addressing relations between the British and the Indiansâ ~a topic he would tackle repeatedly over the next two yearsâ ~Tagore spoke of a "dark chasm of aloofness". He visited Aga Khan III, stayed at Dartington Hall, toured Denmark, Switzerland, and Germany from June to mid-September 1930, then went on into the Soviet Union. In April 1932 Tagore, intrigued by the Persian mystic Hafez, was hosted by Reza Shah Pahlavi. In his other travels, Tagore interacted with Henri Bergson, Albert Einstein, Robert Frost, Thomas Mann, George Bernard Shaw, H.G. Wells, and Romain Rolland. Visits to Persia and Iraq (in 1932) and Sri Lanka (in 1933) composed Tagore's final foreign tour, and his dislike of communalism and nationalism only deepened. Vice President of India M. Hamid Ansari has said that Rabindranath Tagore heralded the cultural rapprochement between communities, societies and nations much before it became the liberal norm of conduct. Tagore was a man ahead of his time. He wrote in 1932, while on a visit to Iran, that "each country of Asia will solve its own historical problems according to its strength, nature and needs, but the lamp they will each carry on their path to progress will converge to illuminate the common ray of knowledge." [86] His ideas on culture, gender, poverty, education, freedom, and a resurgent Asia remain relevant today.

#### Works

Known mostly for his poetry, Tagore wrote novels, essays, short stories, travelogues, dramas, and thousands of songs. Of Tagore's prose, his short stories are perhaps most highly regarded; he is indeed credited with originating the Bengali-language version of the genre. His works are frequently noted for their rhythmic, optimistic, and lyrical nature. Such stories mostly borrow from deceptively simple subject matter: commoners. Tagore's non-fiction grappled with history, linguistics, and spirituality. He wrote autobiographies. His travelogues, essays, and lectures were compiled into several volumes, including Europe Jatrir Patro (Letters from Europe) and Manusher Dhormo (The Religion of Man). His brief chat with Einstein, "Note on the Nature of Reality", is included as an appendix to the latter. On the occasion of Tagore's 150th birthday an anthology (titled Kalanukromik Rabindra Rachanabali) of the total body of his works is currently being published in Bengali in chronological order. This includes all versions of each work and fills about eighty volumes. [88] In 2011, Harvard University Press collaborated with Visva-Bharati University to publish The Essential Tagore, the largest anthology of Tagore's works available in English; it was edited by Fakrul Alam and Radha Chakravarthi and marks the 150th anniversary of Tagore's birth. [89]



## Music and art

Tagore composed 2,230 songs and was a prolific painter. His songs compose rabindrasangit ("Tagore Song"), which merges fluidly into his literature, most of whichâ ~poems or parts of novels, stories, or plays alikeâ ~were lyricised. Influenced by the thumri style of Hindustani music, they ran the entire gamut of human emotion, ranging from his early dirge-like Brahmo devotional hymns to quasi-erotic compositions. They emulated the tonal color of classical ragas to varying extents. Some songs mimicked a given raga's melody and rhythm faithfully; others newly blended elements of different ragas. Yet about nine-tenths of his work was not bhanga gaan, the body of tunes revamped with "fresh value" from select Western, Hindustani, Bengali folk and other regional flavours "external" to Tagore's own ancestral culture. Scholars have attempted to gauge the emotive force and range of Hindustani ragas:

â

[...] the pathos of the purabi raga reminded Tagore of the evening tears of a lonely widow, while kanara was the confused realization of a nocturnal wanderer who had lost his way. In bhupali he seemed to hear a voice in the wind saying 'stop and come hither'. Paraj conveyed to him the deep slumber that overtook one at nightâ s end.

â "

â ~Reba Som, Rabindranath Tagore: The Singer and His Song.

Tagore influenced sitar maestro Vilayat Khan and sarodiyas Buddhadev Dasgupta and Amjad Ali Khan. His songs are widely popular and undergird the Bengali ethos to an extent perhaps rivaling Shakespeare's impact on the English-speaking world. It is said that his songs are the outcome of five centuries of Bengali literary churning and communal yearning. Dhan Gopal Mukerji has said that these songs transcend the mundane to the aesthetic and express all ranges and categories of human emotion. The poet gave voice to allâ ~big or small, rich or poor. The poor Ganges boatman and the rich landlord air their emotions in them. They birthed a distinctive school of music whose practitioners can be fiercely traditional: novel interpretations have drawn severe censure in both West Bengal and Bangladesh.

For Bengalis, the songs' appeal, stemming from the combination of emotive strength and beauty described as surpassing even Tagore's poetry, was such that the Modern Review observed that "[t]here is in Bengal no cultured home where Rabindranath's songs are not sung or at least attempted to be sung ... Even illiterate villagers sing his songs". A. H. Fox Strangways of The Observer introduced non-Bengalis to rabindrasangit in The Music of Hindostan, calling it a "vehicle of a personality ... [that] go behind this or that system of music to that beauty of sound which all systems put out their hands to seize."

In 1971, Amar Shonar Bangla became the national anthem of Bangladesh. It was writtenâ ~ironicallyâ ~to protest the 1905 Partition of Bengal along communal lines: lopping Muslim-majority East Bengal from Hindu-dominated West Bengal was to avert a regional bloodbath. Tagore saw the partition as a ploy to upend the independence movement, and he aimed to rekindle Bengali unity and tar communalism. Jana Gana Mana was written in shadhu-bhasha, a Sanskritised register of Bengali, and is the first of five stanzas of a Brahmo hymn that Tagore composed. It was first sung in 1911 at a Calcutta session of the Indian National Congress[95] and was adopted in 1950 by the Constituent Assembly of the Republic of India as its national anthem.

At sixty, Tagore took up drawing and painting; successful exhibitions of his many worksâ ~which made a debut appearance in Paris upon encouragement by artists he met in the south of Franceâ ~were held throughout Europe. He was likely red-green color blind, resulting in works that exhibited strange colour schemes and off-beat aesthetics. Tagore was influenced by scrimshaw from northern New Ireland, Haida carvings from British Columbia, and woodcuts by Max Pechstein. His artist's eye for his handwriting were revealed in the simple artistic and rhythmic leitmotifs embellishing the scribbles, cross-outs, and word layouts of his manuscripts. Some of Tagore's lyrics corresponded in a synesthetic sense with particular paintings.

## Theatre

At sixteen, Tagore led his brother Jyotirindranath's adaptation of Molière's *Le Bourgeois Gentilhomme*. At twenty he wrote his first drama-opera: *Valmiki Pratibha* (The Genius of Valmiki). In it the pandit Valmiki overcomes his sins, is blessed by Saraswati, and compiles the *Rāmāyana*. Through it Tagore explores a wide range of dramatic styles and emotions, including usage of revamped kirtans and adaptation of traditional English and Irish folk melodies as drinking songs. Another play, *Dak Ghar* (The Post Office), describes the child Amal defying his stuffy and puerile confines by ultimately "fall[ing] asleep", hinting his physical death. A story with borderless appeal<sup>1</sup> ~gleaning rave reviews in Europe<sup>2</sup> ~Dak Ghar dealt with death as, in Tagore's words, "spiritual freedom" from "the world of hoarded wealth and certified creeds". In the Nazi-besieged Warsaw Ghetto, Polish doctor-educator Janusz Korczak had orphans in his care stage *The Post Office* in July 1942. In *The King of Children*, biographer Betty Jean Lifton suspected that Korczak, agonising over whether one should determine when and how to die, was easing the children into accepting death. In mid-October, the Nazis sent them to Treblinka.

[I]n days long gone by [...] I can see [...] the King's postman coming down the hillside alone, a lantern in his left hand and on his back a bag of letters climbing down for ever so long, for days and nights, and where at the foot of the mountain the waterfall becomes a stream he takes to the footpath on the bank and walks on through the rye; then comes the sugarcane field and he disappears into the narrow lane cutting through the tall stems of sugarcanes; then he reaches the open meadow where the cricket chirps and where there is not a single man to be seen, only the snipe wagging their tails and poking at the mud with their bills. I can feel him coming nearer and nearer and my heart becomes glad.

~  
~ "

~ ~ Amal in *The Post Office*, 1914.

~  
[...] but the meaning is less intellectual, more emotional and simple. The deliverance sought and won by the dying child is the same deliverance which rose before his imagination, [...] when once in the early dawn he heard, amid the noise of a crowd returning from some festival, this line out of an old village song, "Ferryman, take me to the other shore of the river." It may come at any moment of life, though the child discovers it in death, for it always comes at the moment when the "I", seeking no longer for gains that cannot be "assimilated with its spirit", is able to say, "All my work is thine" [...].

~  
~ ~W. B. Yeats, Preface, *The Post Office*, 1914.

His other works fuse lyrical flow and emotional rhythm into a tight focus on a core idea, a break from prior Bengali drama. Tagore sought "the play of feeling and not of action". In 1890 he released what is regarded as his finest drama: *Visarjan* (Sacrifice). It is an adaptation of *Rajarshi*, an earlier novella of his. "A forthright denunciation of a meaningless [and] cruel superstitious rite[s]", the Bengali originals feature intricate subplots and prolonged monologues that give play to historical events in seventeenth-century Udaipur. The devout Maharaja of Tripura is pitted against the wicked head priest Raghupati. His latter dramas were more philosophical and allegorical in nature; these included *Dak Ghar*. Another is Tagore's *Chandalika* (Untouchable Girl), which was modeled on an ancient Buddhist legend describing how Ananda, the Gautama Buddha's disciple, asks a tribal girl for water.

In *Raktakarabi* ("Red" or "Blood Oleanders"), a kleptocrat rules over the

residents of Yakshapuri. He and his retainers exploit his subjectsâ ~who are benumbed by alcohol and numbered like inventoryâ ~by forcing them to mine gold for him. The naive maiden-heroine Nandini rallies her subject-compatriots to defeat the greed of the realm's sardar classâ ~with the morally roused king's belated help. Skirting the "good-vs-evil" trope, the work pits a vital and joyous lÃ~se majestÃ© against the monotonous fealty of the king's varletry, giving rise to an allegorical struggle akin to that found in *Animal Farm* or *Gulliver's Travels*. The original, though prized in Bengal, long failed to spawn a "free and comprehensible" translation, and its archaic and sonorous didacticism failed to attract interest from abroad. *Chitrangada*, *Chandalika*, and *Shyama* are other key plays that have dance-drama adaptations, which together are known as *Rabindra Nritya Natya*.

#### Novels

Tagore wrote eight novels and four novellas, among them *Chaturanga*, *Shesher Kobita*, *Char Odhay*, and *Noukadubi*. *Ghare Baire* (*The Home and the World*)â ~through the lens of the idealistic zamindar protagonist Nikhilâ ~excoriates rising Indian nationalism, terrorism, and religious zeal in the *Swadeshi* movement; a frank expression of Tagore's conflicted sentiments, it emerged out of a 1914 bout of depression. The novel ends in Hindu-Muslim violence and Nikhil'sâ ~likely mortalâ ~wounding.

*Gora* raises controversial questions regarding the Indian identity. As with *Ghare Baire*, matters of self-identity (*jÃ ti*), personal freedom, and religion are developed in the context of a family story and love triangle. In it an Irish boy orphaned in the Sepoy Mutiny is raised by Hindus as the titular *gora*â ~"whitey". Ignorant of his foreign origins, he chastises Hindu religious backsliders out of love for the indigenous Indians and solidarity with them against his hegemon-compatriots. He falls for a Brahmo girl, compelling his worried foster father to reveal his lost past and cease his nativist zeal. As a "true dialectic" advancing "arguments for and against strict traditionalism", it tackles the colonial conundrum by "portray[ing] the value of all positions within a particular frame [...] not only syncretism, not only liberal orthodoxy, but the extremest reactionary traditionalism he defends by an appeal to what humans share." Among these Tagore highlights "identity [...] conceived of as dharma."

In *Jogajog* (*Relationships*), the heroine Kumudiniâ ~bound by the ideals of *Ãiva-Sati*, exemplified by *DÃ kshÃ yani*â ~is torn between her pity for the sinking fortunes of her progressive and compassionate elder brother and his foil: her roue of a husband. Tagore flaunts his feminist leanings; pathos depicts the plight and ultimate demise of women trapped by pregnancy, duty, and family honour; he simultaneously trucks with Bengal's putrescent landed gentry. The story revolves around the underlying rivalry between two familiesâ ~the Chatterjees, aristocrats now on the decline (*Biprodas*) and the Ghosals (*Madhusudan*), representing new money and new arrogance. Kumudini, *Biprodas'* sister, is caught between the two as she is married off to *Madhusudan*. She had risen in an observant and sheltered traditional home, as had all her female relations.

Others were uplifting: *Shesher Kobita*â ~translated twice as *Last Poem* and *Farewell Song*â ~is his most lyrical novel, with poems and rhythmic passages written by a poet protagonist. It contains elements of satire and postmodernism and has stock characters who gleefully attack the reputation of an old, outmoded, oppressively renowned poet who, incidentally, goes by a familiar name: "Rabindranath Tagore". Though his novels remain among the least-appreciated of his works, they have been given renewed attention via film adaptations by Ray and others: *Chokher Bali* and *Ghare Baire* are exemplary. In the first, Tagore inscribes Bengali society via its heroine: a rebellious widow who would live for herself alone. He pillories the custom of perpetual mourning on the part of widows, who were not allowed to remarry, who were consigned to seclusion and loneliness. Tagore wrote of it: "I have always regretted the ending".

#### Stories

Tagore's three-volume *Galpaguchchha* comprises eighty-four stories that reflect upon the author's surroundings, on modern and fashionable ideas, and on mind puzzles. Tagore associated his earliest stories, such as those of the "Sadhana" period, with an exuberance of vitality and spontaneity; these traits were cultivated by zamindar Tagore's life in Patisar, Shajadpur, Shelaidaha, and other villages. Seeing the common and the poor, he examined their lives with a depth and feeling singular in Indian literature up to that point. In "The Fruitseller from Kabul", Tagore speaks in first person as a town dweller and novelist imputing exotic perquisites to an Afghan seller. He channels the lucubrious lust of those mired in the blasphemous, noxious, and sudorific morass of subcontinental city life: for distant vistas. "There were autumn mornings, the time of year when kings of old went forth to conquest; and I, never stirring from my little corner in Calcutta, would let my mind wander over the whole world. At the very name of another country, my heart would go out to it [...] I would fall to weaving a network of dreams: the mountains, the glens, the forest [...]."

The *Golpoguchchho* (Bunch of Stories) was written in Tagore's Sabuj Patra period, which lasted from 1914 to 1917 and was named for another of his magazines. These yarns are celebrated fare in Bengali fiction and are commonly used as plot fodder by Bengali film and theatre. The Ray film *Charulata* echoed the controversial Tagore novella *Nastanirh* (The Broken Nest). In *Atithi*, which was made into another film, the little Brahmin boy Tarapada shares a boat ride with a village zamindar. The boy relates his flight from home and his subsequent wanderings. Taking pity, the elder adopts him; he fixes the boy to marry his own daughter. The night before his wedding, Tarapada runs off again. *Strir Patra* (The Wife's Letter) is an early treatise in female emancipation. *Mrinal* is wife to a Bengali middle class man: prissy, preening, and patriarchal. Travelling alone she writes a letter, which comprehends the story. She details the pettiness of a life spent entreating his viraginous virility; she ultimately gives up married life, proclaiming, *Amio bachbo. Ei bachlum*: "And I shall live. Here, I live."

*Haimanti* assails Hindu arranged marriage and spotlights their often dismal domesticity, the hypocrisies plaguing the Indian middle classes, and how *Haimanti*, a young woman, due to her insufferable sensitivity and free spirit, foredid herself. In the last passage Tagore blasts the reification of Sita's self-immolation attempt; she had meant to appease her consort Rama's doubts of her chastity. *Musalmani Didi* eyes recrudescing Hindu-Muslim tensions and, in many ways, embodies the essence of Tagore's humanism. The somewhat auto-referential *Darpaharan* describes a fey young man who harbours literary ambitions. Though he loves his wife, he wishes to stifle her literary career, deeming it unfeminine. In youth Tagore likely agreed with him. *Darpaharan* depicts the final humbling of the man as he ultimately acknowledges his wife's talents. As do many other Tagore stories, *Jibito o Mrito* equips Bengalis with a ubiquitous epigram: *Kadombini moriya proman korilo she more naiã* ~"Kadombini died, thereby proving that she hadn't."

#### Poetry

Tagore's poetic style, which proceeds from a lineage established by 15th- and 16th-century Vaishnava poets, ranges from classical formalism to the comic, visionary, and ecstatic. He was influenced by the atavistic mysticism of Vyasa and other rishi-authors of the Upanishads, the Bhakti-Sufi mystic Kabir, and Ramprasad Sen. Tagore's most innovative and mature poetry embodies his exposure to Bengali rural folk music, which included mystic Baul ballads such as those of the bard Lalou. These, rediscovered and repopularised by Tagore, resemble 19th-century Kartã bhajã hymns that emphasise inward divinity and rebellion against bourgeois *bhadralok* religious and social orthodoxy. During his Shelaidaha years, his poems took on a lyrical voice of the *moner manush*, the Bã uls' "man within the heart" and Tagore's "life force of his deep recesses", or meditating upon the *jeevan devata* ~the demiurge or the "living God within". This figure connected with divinity through appeal to nature and the emotional interplay of human drama. Such tools saw use in his *Bhã nusiã*<sup>1</sup> ha poems

chronicling the Radha-Krishna romance, which were repeatedly revised over the course of seventy years.

The time that my journey takes is long and the way of it long.  
I came out on the chariot of the first gleam of light, and pursued my voyage through the wildernesses of worlds leaving my track on many a star and planet. It is the most distant course that comes nearest to thyself, and that training is the most intricate which leads to the utter simplicity of a tune. The traveller has to knock at every alien door to come to his own, and one has to wander through all the outer worlds to reach the innermost shrine at the end.  
My eyes strayed far and wide before I shut them and said 'Here art thou!' The question and the cry 'Oh, where?' melt into tears of a thousand streams and deluge the world with the flood of the assurance 'I am!'

â  
â ~

â ~ Song XII, Gitanjali, 1913.

Tagore reacted to the halfhearted uptake of modernist and realist techniques in Bengali literature by writing matching experimental works in the 1930s. These include *Africa* and *Camalia*, among the better known of his latter poems. He occasionally wrote poems using *Shadhu Bhasha*, a Sanskritised dialect of Bengali; he later adopted a more popular dialect known as *Cholti Bhasha*. Other works include *Manasi*, *Sonar Tori* (Golden Boat), *Balaka* (Wild Geese, a name redolent of migrating souls), and *Purobi*. *Sonar Tori*'s most famous poem, dealing with the fleeting endurance of life and achievement, goes by the same name; hauntingly it ends: *Shunno nodir tire rohinu poÅ'i / Jaha chhilo loe gÃ'alo shonar tori* â ~ "all I had achieved was carried off on the golden boat â ~ only I was left behind." *Gitanjali* (â | 'às â | vâ | ¾â | ,às â | â | ²â | ç) is Tagore's best-known collection internationally, earning him his Nobel.

Song VII of *Gitanjali*:

â | â | @â | ¾â | ° â | â | 'â | ¾â | " â | ,às â | ,â | ¼â | s â | ,às â | vâ | ¾â | °  
â | ,â | -â | ² â | â | ²â | â | -â | ¾â | °  
â | vâ | s â | @â | ¾â | ° â | -â | ¾â | ,às â | °â | ¾â | ~às â | "â | ç â | â | °  
â | ,â | ¾â | às â | ° â | â | ¹â | â | -â | ¾â | °â | ½  
â | â | ²â | â | -â | ¾â | ° â | -às â | @â | ¾â | "às â | 'â | ,â | ¼â | s  
â | @â | çâ | ²â | "às â | vâ | s â | â | ,â | ¼â | ¾â | ² â | -â | °â | s ,  
â | vâ | s â | @â | ¾â | ° â | -â | ½â | ¾ â | çâ | ¾â | -às â | -às â | vâ | ¾â | °  
â | @â | s â | ~â | ° â | "â | â | -â | ¾â | °â | ½ vâ | vâ | s â | @â | ¾â | ° â | -â | ¾â | ,às â | ~â | ¾â | ~às â | "â | ¾ â | @â | s â | °  
â | -â | -â | çâ | ° â | 'â | °â | - â | -â | °â | ¾-  
â | @â | ¹â | ¾â | -â | -â | ç, â | vâ | s â | @â | ¾â | ° â | 'â | ¾â | -â | ¼â | s  
â | |â | çâ | vâ | s â | 'â | ¾â | â | -às â | sâ | °â | ¾â | ½  
â | às â | -â | " â | ²â | -â | ¼â | s â | -â | vâ | " â | -â | °â | ç  
â | -â | |â | ç â | ,â | °â | ² â | -â | ¾â | â | ¶â | ç â | 'â | ,â | ¼â | ç,  
â | â | 'â | " â | ,às â | °â | s â | |â | çâ | -às â | -â | °â | ç  
â | ,â | -â | ² â | ,â | çâ | |â | s â | ° â | vâ | ¾â | °â | ½

Amar e gan chheÅ'echhe tar shÃ'kol Ã'longkar  
Tomar kachhe rakhe ni ar shajer Ã'hongkar  
Ã'longkar je majhe pÃ'Å'e milÃ'nete aÅ'al kÃ're,  
Tomar kÃ'tha Å'hake je tar mukhÃ'ro jhÃ'ngkar.  
Tomar kachhe khaÅ'fe na mor kobir gÃ'rbo kÃ'ra,  
MÃ'hakobi, tomar paeete dite chai je dhÃ'ra.  
Jibon loe jÃ'ton kori jodi shÃ'rol bÃ'fshi goÅ'i,  
Apon shure dibe bhoiri sÃ'kol chhidro tar.

Tagore's free-verse translation:

â

My song has put off her adornments.  
 She has no pride of dress and decoration.  
 Ornaments would mar our union; they would come  
 between thee and me; their jingling would drown thy whispers.  
 My poet's vanity dies in shame before thy sight.  
 O master poet, I have sat down at thy feet.  
 Only let me make my life simple and straight,  
 like a flute of reed for thee to fill with music.

â "

"Klanti" (à|-às à|²à|¾à|"às à|vâ|ç; "Weariness"):

à|-às à|²à|¾à|"às à|vâ|ç à| à|@à|¾à|° à|-às à|·à|@à|¾ à|-à|°às à|°às à|°à|-às ,  
 Â Â Â Â Â Â Â Â Â Â à|°à|¾às à|-à|à|ç à|°à|çà|,à|çà|-à|¾às à|°à|à|¾à|ç à|-à|-às à|¾  
 Â Â Â Â à| à| -à|-às à|¹à|çà|-à|¾à|¾ à|¾à|°às à|¾à|°às à|-à|¾à| à|°às à| à| à|ç à| à|@à|"à|  
 à| à| à|-às à|à|"à|¾ à|-às à|·à|@à|¾ à|-à|°às , à|-às à|·à|@à|¾ à|-à|°às , à|-às à|·à|@à|¾ à|  
 Â Â Â Â Â Â Â Â Â Â à| à| à|às à|"à|vâ|¾ à|-às à|·à|@à|¾ à|-à|°às à|°às à|°à|-às ,  
 Â Â Â Â Â Â Â Â Â Â à|°à|çà|,à|"à|°à|¾à|"às à|vâ|¾à|-à|¾à| à|-à|à|ç à|-à|-às à|¾  
 Â Â Â Â à|à|çà|"às à|° à|vâ|¾à|°às à|°às à|à|às à|°à| às à|-à|¾à|²à|¾à|-à|¾ à|¾às à|-à|¾à|-à|  
 à|,às à| à|@às à|²à|¾à|"à|vâ|¾ à|-às à|·à|@à|¾ à|-à|°às , à|-às à|·à|@à|¾ à|-à|°às , à|-às à|

Klanti amar khã'ma kã'ro probhu,  
 Pã'the jodi pichhie poã'i kobhu.  
 Ei je hia thã'ro thã'ro kã'pe aji ã'montã'ro,  
 Ei bedona khã'ma kã'ro khã'ma kã'ro probhu.  
 Ei dinota khã'ma kã'ro probhu,  
 Pichhon-pane takai jodi kobhu.  
 Diner tape roudrojalae shukae mala pujar thalae,  
 Shei mlanota khã'ma kã'ro khã'ma kã'ro, probhu.

Gloss by Tagore scholar Reba Som:

â

Forgive me my weariness O Lord  
 Should I ever lag behind  
 For this heart that this day trembles so  
 And for this pain, forgive me, forgive me, O Lord  
 For this weakness, forgive me O Lord,  
 If perchance I cast a look behind  
 And in the day's heat and under the burning sun  
 The garland on the platter of offering wilts,  
 For its dull pallor, forgive me, forgive me O Lord.

â "

Tagore's poetry has been set to music by composers: Arthur Shepherd's triptych for soprano and string quartet, Alexander Zemlinsky's famous Lyric Symphony, Josef Bohuslav Foerster's cycle of love songs, Leo Janáček's famous chorus "Potulná ělenec" ("The Wandering Madman") for soprano, tenor, baritone, and male chorusâ ~JW 4/43â ~inspired by Tagore's 1922 lecture in Czechoslovakia which Janáček attended, and Garry Schyman's "Praan", an adaptation of Tagore's poem "Stream of Life" from Gitanjali. The latter was composed and recorded with vocals by Palbasha Siddique to accompany Internet celebrity Matt Harding's 2008 viral video. In 1917 his words were translated adeptly and set to music by Anglo-Dutch composer Richard Hageman to produce a highly regarded art song: "Do Not Go, My Love". The second movement of Jonathan Harvey's "One Evening" (1994) sets an excerpt beginning "As I was watching the sunrise ..." from a letter of Tagore's, this composer having previously chosen a text by the poet for his piece "Song Offerings" (1985).

Politics

Tagore's political thought was tortuous. He opposed imperialism and supported Indian nationalists, and these views were first revealed in Manast, which was mostly composed in his twenties. Evidence produced during the Hinduâ ~German Conspiracy Trial and latter accounts affirm his awareness of the Ghadarites, and stated that he sought the support of Japanese Prime Minister Terauchi Masatake and former Premier Ā kuma Shigenobu. Yet he lampooned the Swadeshi movement; he rebuked it in "The Cult of the Charka", an acrid 1925 essay. He

urged the masses to avoid victimology and instead seek self-help and education, and he saw the presence of British administration as a "political symptom of our social disease". He maintained that, even for those at the extremes of poverty, "there can be no question of blind revolution"; preferable to it was a "steady and purposeful education".

So I repeat we never can have a true view of man unless we have a love for him. Civilisation must be judged and prized, not by the amount of power it has developed, but by how much it has evolved and given expression to, by its laws and institutions, the love of humanity.

â  
â "

â ~ Sã dhanã : The Realisation of Life, 1916.

Such views enraged many. He escaped assassinationâ ~and only narrowlyâ ~by Indian expatriates during his stay in a San Francisco hotel in late 1916; the plot failed when his would-be assassins fell into argument. Yet Tagore wrote songs lionising the Indian independence movement. Two of Tagore's more politically charged compositions, "Chitto Jetha Bhayshunyo" ("Where the Mind is Without Fear") and "Ekla Chalo Re" ("If They Answer Not to Thy Call, Walk Alone"), gained mass appeal, with the latter favoured by Gandhi. Though somewhat critical of Gandhian activism, Tagore was key in resolving a Gandhiâ ~Ambedkar dispute involving separate electorates for untouchables, thereby mooting at least one of Gandhi's fasts "unto death".

Repudiation of knighthood

Tagore renounced his knighthood, in response to the Jallianwala Bagh massacre in 1919. In the repudiation letter to the Viceroy, Lord Chelmsford, he wrote[1]  
â

The time has come when badges of honour make our shame glaring in the incongruous context of humiliation, and I for my part, wish to stand, shorn, of all special distinctions, by the side of those of my countrymen who, for their so called insignificance, are liable to suffer degradation not fit for human beings.

â "

Santiniketan and Visva-Bharati

Tagore despised rote classroom schooling: in "The Parrot's Training", a bird is caged and force-fed textbook pagesâ ~to death. Tagore, visiting Santa Barbara in 1917, conceived a new type of university: he sought to "make Santiniketan the connecting thread between India and the world [and] a world center for the study of humanity somewhere beyond the limits of nation and geography." The school, which he named Visva-Bharati,â ~[â °] had its foundation stone laid on 24 December 1918 and was inaugurated precisely three years later. Tagore employed a brahmacharya system: gurus gave pupils personal guidanceâ ~emotional, intellectual, and spiritual. Teaching was often done under trees. He staffed the school, he contributed his Nobel Prize monies, and his duties as steward-mentor at Santiniketan kept him busy: mornings he taught classes; afternoons and evenings he wrote the students' textbooks. He fundraised widely for the school in Europe and the United States between 1919 and 1921.

Impact

Every year, many events pay tribute to Tagore: Kabipranam, his birth anniversary, is celebrated by groups scattered across the globe; the annual Tagore Festival held in Urbana, Illinois; Rabindra Path Parikrama walking pilgrimages from Calcutta to Santiniketan; and recitals of his poetry, which are held on important anniversaries. Bengali culture is fraught with this legacy: from language and arts to history and politics. Amartya Sen scantily deemed Tagore a "towering figure", a "deeply relevant and many-sided

contemporary thinker". Tagore's Bengali originalsâ ~the 1939 RabÃ«ndra RachanÃ valÃ«â ~is canonised as one of his nation's greatest cultural treasures, and he was roped into a reasonably humble role: "the greatest poet India has produced".

Who are you, reader, reading my poems an hundred years hence?  
I cannot send you one single flower from this wealth of the spring, one single  
streak of gold from yonder clouds.  
Open your doors and look abroad.  
From your blossoming garden gather fragrant memories of the vanished flowers of  
an hundred years before.  
In the joy of your heart may you feel the living joy that sang one spring  
morning, sending its glad voice across an hundred years.

â  
â ~

â ~ The Gardener, 1915.

Tagore was renowned throughout much of Europe, North America, and East Asia. He co-founded Dartington Hall School, a progressive coeducational institution; in Japan, he influenced such figures as Nobel laureate Yasunari Kawabata. Tagore's works were widely translated into English, Dutch, German, Spanish, and other European languages by Czech indologist Vincenc LesnÃ½, French Nobel laureate AndrÃ© Gide, Russian poet Anna Akhmatova, former Turkish Prime Minister BÃ¼lent Ecevit, and others. In the United States, Tagore's lecturing circuits, particularly those of 1916â ~1917, were widely attended and wildly acclaimed. Some controversiesâ ~involving Tagore, possibly fictive, trashed his popularity and sales in Japan and North America after the late 1920s, concluding with his "near total eclipse" outside Bengal. Yet a latent reverence of Tagore was discovered by an astonished Salman Rushdie during a trip to Nicaragua.

By way of translations, Tagore influenced Chileans Pablo Neruda and Gabriela Mistral; Mexican writer Octavio Paz; and Spaniards JosÃ© Ortega y Gasset, Zenobia CamprubÃ-, and Juan RamÃ³n JimÃ©nez. In the period 1914â ~1922, the JimÃ©nez-CamprubÃ- pair produced twenty-two Spanish translations of Tagore's English corpus; they heavily revised The Crescent Moon and other key titles. In these years, JimÃ©nez developed "naked poetry". Ortega y Gasset wrote that "Tagore's wide appeal [owes to how] he speaks of longings for perfection that we all have [...] Tagore awakens a dormant sense of childish wonder, and he saturates the air with all kinds of enchanting promises for the reader, who [...] pays little attention to the deeper import of Oriental mysticism". Tagore's works circulated in free editions around 1920â ~alongside those of Plato, Dante, Cervantes, Goethe, and Tolstoy.

Tagore was deemed overrated by some. Graham Greene doubted that "anyone but Mr. Yeats can still take his poems very seriously." Several prominent Western admirersâ ~including Pound and, to a lesser extent, even Yeatsâ ~criticised Tagore's work. Yeats, unimpressed with his English translations, railed against that "Damn Tagore [...] We got out three good books, Sturge Moore and I, and then, because he thought it more important to know English than to be a great poet, he brought out sentimental rubbish and wrecked his reputation. Tagore does not know English, no Indian knows English." William Radice, who "English[ed]" his poems, asked: "What is their place in world literature?" He saw him as "kind of counter-cultur[al]," bearing "a new kind of classicism" that would heal the "collapsed romantic confusion and chaos of the 20th [c]entury." The translated Tagore was "almost nonsensical", and subpar English offerings reduced his trans-national appeal:

â



[...] anyone who knows Tagore's poems in their original Bengali cannot feel satisfied with any of the translations (made with or without Yeats's help). Even the translations of his prose works suffer, to some extent, from distortion. E.M. Forster noted [of] *The Home and the World* [that] "[t]he theme is so beautiful," but the charms have "vanished in translation," or perhaps "in an experiment that has not quite come off."

â "

â ~Amartya Sen, "Tagore and His India".

List of works

The SNLTR hosts Tagore's complete Bengali works, as does Tagore Web, including annotated songs. Translations are found at Project Gutenberg and Wikisource.

More sources are below.

Original

Bengali

Poetry

\* à|-à|¾à|""às à|,à|¿à| à|¹ à| à|¾à|~às à|°às à|° à|ªà||à|¾à|-à|²às

Bhã nusiá¹ ha á¹-hã kurer Paá, Ä valÄ«

(Songs of Bhã nusiá¹ ha á¹-hã kur)

1884

\* à|@à|¾à|""à|,às

Manasi

(The Ideal One)

1890

\* à|,às à|""à|¾à|° à|ðà|°às

Sonar Tari

(The Golden Boat)

1894

\* à|·às à|ðà|¾à|,às à| à|²à|¿

Gitanjali

(Song Offerings)

1910

\* à|·às à|ðà|¿à|@à|¾à|²às à|~

Gitimalya

(Wreath of Songs)

1914

\* à|-à|²à|¾à|~à|¾

Balaka

(The Flight of Cranes)

1916

Dramas

\* à|-à|¾à|²às à|@à|¿à|~às à|ªàs à|°à|ðà|¿à|-à|¾

Valmiki-Pratibha

(The Genius of Valmiki)

1881

\* à|-à|¿à|,à|°às à| à|~

Visarjan

(The Sacrifice)

1890

\* à|°à|¾à| à|¾

Raja

(The King of the Dark Chamber)

1910

\* à|,à|¾à|~à|""à|°

Dak Ghar

(The Post Office)

1912

\* à| à|°à|²à|¾à|~à|¾à|ðà|~

Achalayatan

(The Immovable)

1912

\* à|@às à|^-às à|ðà|sà|¾à|°à|¾

Muktadhara

(The Waterfall)

1922

\* à|°à|^-às à|ðà|^-à|°à|^-às

Raktakaravi

(Red Oleanders)

1926

Fiction

\* à|¨à|·às à|¨à|¨às à|,à|¼

Nastanirh

(The Broken Nest)

1901

\* à|·às à|°à|¾

Gora

(Fair-Faced)

1910

\* à|¨à|°às à|-à|¾à| à|°às

Ghare Baire

(The Home and the World)

1916

\* à|^-às à|·à|¾à|^-às à|·

Yogayog

(Crosscurrents)

1929

Memoirs

\* à| às à|-à|¨à|,às à|@às à|ðà|¿

Jivansmriti

(My Reminiscences)

1912

\* à|,às à|²às à|-às à|²à|¾

Chhelebelā

(My Boyhood Days)

1940

English

Translated

English

\* Chitra

1914[text 1]

\* Creative Unity

1922[text 2]

\* The Crescent Moon

1913[text 3]

\* The Cycle of Spring

1919[text 4]

\* Fireflies

1928

\* Fruit-Gathering

1916[text 5]

\* The Fugitive

1921[text 6]

\* The Gardener

1913[text 7]

\* Gitanjali: Song Offerings

1912[text 8]

\* Glimpses of Bengal

1991[text 9]

\* The Home and the World

1985[text 10]

\* The Hungry Stones

1916[text 11]  
 \* I Won't Let you Go: Selected Poems  
 1991  
 \* The King of the Dark Chamber  
 1914[text 12]  
 \* The Lover of God  
 2003  
 \* Mashi  
 1918[text 13]  
 \* My Boyhood Days  
 1943  
 \* My Reminiscences  
 1991[text 14]  
 \* Nationalism  
 1991  
 \* The Post Office  
 1914[text 15]  
 \* Sadhana: The Realisation of Life  
 1913[text 16]  
 \* Selected Letters  
 1997  
 \* Selected Poems  
 1994  
 \* Selected Short Stories  
 1991  
 \* Songs of Kabir  
 1915[text 17]  
 \* The Spirit of Japan  
 1916[text 18]  
 \* Stories from Tagore  
 1918[text 19]  
 \* Stray Birds  
 1916[text 20]  
 \* Vocation  
 1913[169]  
 Adaptations of novels and short stories in cinema  
 Hindi  
 Bengali  
 Notes

Gordon Square, London.

Gandhi Memorial Museum, Madurai.

^Â î±:Â Bengali: à|°à|-às à|°às à||às à|°à|°à|à|¥ à| à|à|°às à|°,pronounced:Â [É%obindî°É%o  
 Hindi: [rÉ Ê iÊindî°rÉ Ê naÊitî°Ê° Ê Ê°aÊîÊ kÊ r]Â ( listen).  
 ^Â î²:Â Romanised from Bengali script:Robindronath Åçhakur.  
 ^Â î³:Â Bengali calendar: 25 Baishakh, 1268Â â ^ 22 Srabon, 1348 (às°às«à|¶às à|-às à|¶à|à|°às°às°à|¶às à|¶às à|°à|à|°à|-à|£, àsssàs@às°às@ à|-à| às à|°à|à|°às à||).  
 ^Â î´:Â Gurudev translates as "divine mentor".

^Â ĩµ:Â Tagore was born at No. 6 Dwarkanath Tagore Lane, Jorasankoâ ~the address of the main mansion (the Jorasanko Thakurbari) inhabited by the Jorasanko branch of the Tagore clan, which had earlier suffered an acrimonious split. Jorasanko was located in the Bengali section of Calcutta, near Chitpur Road.

^Â ĩ¶:Â ... and wholly fictitious ...

^Â ĩ·:Â Etymology of "Visva-Bharati": from the Sanskrit for "world" or "universe" and the name of a Rigvedic goddess ("Bharati") associated with Saraswati, the Hindu patron of learning. "Visva-Bharati" also translates as "India in the World".

^Â ĩ,:Â Tagore was no stranger to controversy: his dealings with Indian nationalists Subhas Chandra Bose and Rash Behari Bose, his yen for Soviet Communism, and papers confiscated from Indian nationalists in New York allegedly implicating Tagore in a plot to overthrow the Raj via German funds. These destroyed Tagore's imageâ ~and book salesâ ~in the United States. His relations with and ambivalent opinion of Mussolini revolted many; close friend Romain Rolland despaired that "[h]e is abdicating his role as moral guide of the independent spirits of Europe and India".

^Â ĩ¹:Â On the "idea of the humanity of our God, or the divinity of Man the Eternal".

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#### External links

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The United States Assay Commission was an agency of the United States government from 1792 to 1980. Its function was to annually supervise the testing of the gold, silver, and (in its final years) base metal coins produced by the United States Mint to ensure that they met specifications. Although some members were designated by statute, for the most part the commission, which was freshly appointed each year, consisted of prominent Americans, including numismatists. Appointment to the Assay Commission was eagerly sought after, in part because commissioners received a commemorative medal. These medals, different each year, are extremely rare, with the exception of the 1977 issue which was sold to the general public.

The Mint Act of 1792 authorized the Assay Commission. Beginning in 1797, it met in most years at the Philadelphia Mint. Each year, the President of the United States appointed unpaid members, who would gather in Philadelphia to ensure the weight and fineness of silver and gold coins issued the previous year were to specifications. In 1971, the commission met, but for the first time had no gold or silver to test, with the end of silver coinage. Beginning in 1977, President Jimmy Carter appointed no members of the public to the commission, and in 1980, he signed legislation abolishing it.

[edit] History

[edit] Founding and early days (1792 - 1873)

In January 1791, Treasury Secretary Alexander Hamilton submitted a report to Congress proposing the establishment of a mint. Hamilton concluded his report:



The remedy for errors in the weight and alloy of the coins, must necessarily form a part, in the system of a mint; and the manner of applying it will require to be regulated. The following account is given of the practice in England, in this particular: A certain number of pieces are taken promiscuously out of every fifteen pounds of gold, coined at the Mint, which are deposited, for safe keeping, in a strong box, called the pix [sic, more commonly "pyx"]. This box, from time to time, is opened in the presence of the Lord Chancellor, the officers of the Treasury, and others, and portions are selected from the pieces of each coinage, which are melted together, and the mass assayed by a jury of the Company of Goldsmiths. . . . The expediency of some similar regulation seems to be manifest.

In response to Hamilton's report, Congress passed the Mint Act of 1792. In addition to setting the standards for the new nation's coinage, Congress provided for an American version of the British Trial of the Pyx:

That from every separate mass of standard gold or silver, which shall be made into coins at the said Mint, there shall be taken, set apart by the Treasurer and reserved in his custody a certain number of pieces, not less than three, and that once in every year the pieces so set apart and reserved, shall be assayed under the inspection of the Chief Justice of the United States, the Secretary and Comptroller of the Treasury, the Secretary for the Department of State, and the Attorney General of the United States, (who are hereby required to attend for that purpose at the said Mint, on the last Monday in July in each year) . . . and if it shall be found that the gold and silver so assayed, shall not be inferior to their respective standards herein before declared more than one part in one hundred and forty-four parts, the officer or officers of the said Mint whom it may concern shall be held excusable; but if any greater inferiority shall appear, it shall be certified to the President of the United States, and the said officer or officers shall be deemed disqualified to hold their respective offices.

The following January, Congress passed legislation changing the date on which the designated officials met to the second Monday in February. No meetings took place; the Mint was not yet striking gold or silver. Minting of silver began in 1794 and gold in 1795, and some coins were saved for assay: the first Mint document mentioning assay pieces is from January 1796 and indicates that exactly \$80 in silver had been put aside. The first assay commissioners did not meet until Monday, March 20, 1797, a month later than the prescribed date.[4] Once they did, annual meetings took place each year until 1800, except in 1817 as there had been no gold or silver struck since the last meeting (until 1837, the commission examined the coins since the last testing, rather than for a particular calendar year).

In 1801, the usual meeting was delayed, causing Mint Director Elias Boudinot to complain to President John Adams that depositors were anxious for an audit so the Mint could release coins struck from their bullion. Numismatist Fred Reed suggested that the delay was probably due to poor weather, making it difficult for officials to travel from the new capital of Washington, D.C., to Philadelphia for the assay.[4] In response, on March 3, 1801, Congress changed the officials required to attend to "the district judge of Pennsylvania, the attorney for the United States in the district of Pennsylvania, and the commissioner of loans for the State of Pennsylvania". The meeting finally took place on April 27, 1801. The 1806 and 1815 sessions were delayed because of outbreaks of sickness in Philadelphia; the one in 1812 was held a month late because of a heavy snowstorm which prevented the commissioners from reaching the Mint. No meeting took place in 1817; a fire had damaged the Philadelphia Mint in January 1816, and no gold or silver awaited the commission. In 1818, Congress substituted the Collector of the Port of Philadelphia for the Pennsylvania loans commissioner as a member of the Assay Commission.

With the Coinage Act of 1834, Congress removed the automatic disqualification of Mint officers in the event of an unfavorable assay, leaving the decision to the president. The Mint Act of 1837 established the Assay Commission in the form it would have for most of the remainder of its existence. It provided that "an annual trial shall be made of the pieces reserved for this purpose [i.e., set aside for the assay] at the Mint and its branches, before the judge of the district court of the United States, for the eastern district of Pennsylvania, the attorney of the United States, for the eastern district of Pennsylvania, and the collector of the port of Philadelphia, and such other persons as the President shall, from time to time, designate for that purpose, who shall meet as commissioners, for the performance of this duty, on the second Monday in February, annually". The usual procedure for members of the public to be named to the commission after public appointments began was for the Mint Director to send the president a list of candidates for his approval.

In 1861, as the American Civil War broke out, North Carolina joined the Confederate States. The Charlotte Mint, taken over by the Confederacy, eventually closed as it used up all its dies and could obtain no more from Philadelphia. Nevertheless, 12½ half eagles (\$5 gold coins) were sent from Charlotte to Philadelphia, through enemy lines, in October 1861. They were duly tested by the 1862 Assay Commission, and were found to be correct.[12]

[edit] Later years (1873â ^1949)

The Coinage Act of 1873 revised the laws relating to coinage and the Mint and retired several denominations including the two-cent piece. The act also changed the officers required to serve on the Assay Commission:

That to secure a due conformity in the gold and silver coins to their respective standards of fineness and weight, the judge of the district court of the United States for the eastern district of Pennsylvania, the Comptroller of the Currency, the assayer of the assay-office at New York, and such other persons as the President shall, from time to time, designate, shall meet as assay-commissioners, at the mint in Philadelphia, to examine and test, in the presence of the Director of the Mint, the fineness and weight of the coins reserved by the several mints for this purpose, on the second Wednesday in February, annually.

The act also required the Mint to put aside one of every thousand gold coins struck, and one of every two thousand silver coins for the assay. It provided the procedure for putting the coins aside, sealing them in envelopes, and placing them in a pyx to be opened by the assay commissioners.

The 1881 Assay Commission found that approximately 3,000 silver dollars struck at the Carson City Mint (1881-CC) had been struck in .892 silver rather than the legally mandated .900. It is unclear if the Treasury took any steps to attempt to recover the issued pieces. The 1885 commission detected a single silver dollar which was 1.51 grains (0.098 g) below specifications, the permitted tolerance being 1.50 grains (0.097½ g).[16] In 1921, the Assay Commission found that some coins struck at the Denver Mint were struck in .905 or .906 silver, above the legal .900 by more than the permitted tolerance. Investigation found that ingots which had been rejected and were intended for melting had instead been used for coin.[17] In the early 20th century, the San Francisco Mint struck silver coins for the Philippines, then a US possession; those pieces were included in the assay. Proof coins struck by the Mint for collectors were included in the assay; pieces struck under contract with foreign governments were not.[19]

The pyx was a rosewood box, 3 feet (0.91½ m) square, of European work, and sealed by heavy padlocks. It was not filled by the coins put aside for the 1934 Assay Commission, of which there were 759 with a total face value of \$12,050.[20][21] This had increased by 1940 to 79,847 coins, all silver as gold coins were no longer being struck,[22] and by 1941, many reserved coins could not be kept in the pyx, instead being placed in packing boxes, overflowing with sealed envelopes.[19] By the late 1940s, more than ten million coins were being

struck each day at Philadelphia alone;[23] in 1947, Congress reduced the number of silver coins required to be put aside for assay from one in 2,000 to one in 10,000.[24]

[edit] Final years and abolition (1950â ^1980)

By the 1950s, there was considerable competition among numismatists to be appointed an assay commissioner. Appointees received no compensation, but the appointment was prestigious and carried with it a prized assay medal. The procedure was changed so that the Mint Director submitted the names of more individuals than would actually be appointed to the White House, where the final choices were made. It remained possible for the director to ask for special consideration for certain individuals. Later nominations were also screened by the Federal Bureau of Investigation and by the IRS. The Mint Director received nominations for assay commissioner from legislators, political organizations, government officials, and from members of the public.

In 1971, for the first time, the Assay Commission had no silver coins to test; none were struck by the Mint for circulation in 1970.[16] Although part-silver Kennedy half dollars were struck in 1970, they were only for collectors and were not put aside for assay. Commissioners could instead test 21,975 dimes and 11,098 quarters, all made from copper-nickel clad,[20] though as the Associated Press, reporting on the 1973 Assay Commission, put it, "a discovery of a bum coin hasn't occurred in years." [27] Only one in every 100,000 clad or silver-clad pieces was put aside for the Assay Commission, and only one in every 200,000 dimes. At the 1974 meeting, one copper-nickel Eisenhower dollar was discovered which weighed 15 grains below specification; after reference to the rules, the coin was deemed barely within guidelines. Numismatist Charles Logan, in his 1979 article about the impending end of the Assay Commission, stated that this incident pointed out "the basic problem with the annual trial. First, the members were not exactly sure how their job was done, or what the requirements were. Second, they really did not want to report a fault in the coinage. Finally, even if the one dollar coin had been found faulty, [it would have had] little consequence, except to prompt greater vigilance at the Mint." [29]

In early 1977, outgoing Mint Director Mary Brooks sent a list of 117 nominees to the new president, Jimmy Carter, from which it was expected that about two or three dozen names would be selected. Carter refused to make any public appointments, feeling the Assay Commission was unneeded given that the Mint performed the same work through routine internal checks and that the \$2,500 appropriated each year was a poor use of taxpayer money. Only government members served on the Assay Commission in 1977â ^1980.[29] Even so, hundreds of numismatists applied to be on the 1978 commission. Carter made no appointments that year; the only members were those designated by statute.[31]

The 1979 meeting, attended by the government-employed commission members and Mint Director Stella Hackel Sims, was held eight days late on February 22 due to schedule conflicts.[29] In June 1979, Carter's Presidential Reorganization Project recommended the abolition of the Assay Commission and two other small agencies. The report estimated that having an Assay Commission cost the federal government about \$20,000 and that the work was done better by vending machine manufacturers to avoid having their machines jam.[32] In August, columnist Jack Anderson deemed the commission an example of wasteful spending in Washington, characterizing its activities, "more than a decade ago, the government stopped putting either gold or silver in its coinsâ ~but the commission continues to hold its annual luncheon meeting. Solemnly, the commissioners measure the amounts of nonprecious metals in U.S. coins, and strike a medal to commemorate their activities. This useless exercise costs the taxpayers about \$20,000 a year." [33] As coin collector and columnist Gary Palmer put it in 1979, "who really cares if the weight of a cupro-nickel quarter is off by a grain or two?" [34]

On March 14, 1980, Carter approved legislation abolishing the Assay Commission, as well as the other two agencies, as recommended by his Reorganization Project. The President wrote in a signing statement that with

the end of gold and silver coinage, the need for the commission had diminished.[35] Numismatic leaders objected to the ending of the commission, considering the expense small and the tradition worth keeping, although they concurred the commission "had become an anachronism".[36] At the time of its abolition, the Assay Commission was the oldest existing government commission. In 2000 and 2001, New Jersey Congressman Steven Rothman introduced legislation to revive the Assay Commission, stating that re-establishing the commission would assure public confidence in the gold, silver, and platinum bullion coins struck by the Mint. The bills died in committee.[37]

#### [edit] Functions and activities

The general function of the Assay Commission was to examine the gold and silver coins of the Mint and ensure that they met the proper specifications. Assay commissioners were placed on one of three committees in most years: the Counting, Weighing, and Assaying Committees. The Counting Committee verified that the number of each type of coin in packets selected from the pyx matched what Mint records said should be there. The Weighing Committee measured the weight of coins from the pyx, checking them against the weight required by law. The Assaying Committee worked with the Philadelphia Mint's assayer as he measured the precious metal content of some of the coins.[39] By statute, the commission was required to ensure that the weights used at the Mint conformed to the government's official standard pound weight which had been brought from the United Kingdom.[16] In some years there was a Committee on Resolutions~in 1912, it urged that a leaflet be published for visitors to the Mint's coin collection, and that a medal be struck to commemorate the collection. The full Assay Commission adopted that committee's report.

According to a description of the 1948 meeting, silver coins selected for assay were first placed between steel rollers until the thickness was reduced to .0001 inches (0.0025Â mm), and then were chopped into fine pieces and dissolved in nitric acid. The fineness of the silver in the coin could be determined by the amount of salt solution needed to precipitate all the silver in the liquid.[23] Numismatist Francis Pessolano-Filos described the work of the Assay Commission:

Using balances and weights, the commission weighed several examples of each type of coin, then used calipers to examine them for proper thickness, and finally, using various acids and solvents, determined the amount of alloy used in manufacture of the planchets. Ledgers and journal books on the mint were also examined. If there were any imperfections or deviations from the legal standards in the coins examined, the information was immediately sent to the president of the United States.

The commission operated under rules first adopted by the 1856 commission, and then passed down, year to year, and amendable by any Assay Commission, although in practice little change was made. Under the rules, the Director of the Mint called the assay commissioners to order, then introduced the federal judge who was an ex officio member, who presided over the meetings; if the judge was absent, the members elected a chairman. The chairman divided the members into the committees. If there had been a change of officers at a mint, commissioners examined coins from before and after. After the committees completed their work, the members re-assembled to report their findings and to vote on their report.

Every Assay Commission passed the coinage that it was called upon to examine.[4] If pieces varying from the standard were found, that was also noted; the 1885 Assay Commission reported the one substandard silver coin, which came from the Carson City Mint, but urged the president to take no action, noting that the coin was underweight by an amount too small to be measured by the scales at Carson City.[16]

Remains of coins used in the assay were melted by the Mint; those put aside for the Assay Commission that were not used were placed in circulation from Philadelphia, and were not marked or distinguished in any way. There were

thousands of coins for the commission, of which only a few were assayed. Commissioners often purchased some of the remaining pieces as souvenirs, although commemorative coins could not be purchased if Congress had given the exclusive right to sell them to a sponsoring organizationâ ~they were instead destroyed.[39]

[edit] Commissioners

Appointments of members of the public to the Assay Commission by the president are known to have been made as early as 1841; the final ones were made in 1976. Many early commissioners were chosen for their scientific or intellectual attainments. Such qualifications were not required of later public appointees, who included such prominent figures as Ellin Berlin, wife of songwriter Irving Berlin. The first women to be appointed to the Assay Commission were Mrs. Kellogg Fairbanks of Chicago and Mrs. B.B. Munford of Richmond, Virginia, both in 1920.[45]

The recordholder for service as a commissioner is Herbert Gray Torrey, 36Â times an assay commissioner between 1874 and 1910 (missing only 1879) by virtue of his office as assayer of the New York Assay Office. The recordholder as a presidential appointee is Dr. James Lewis Howe, head of the Department of Chemistry at Washington and Lee University, 18Â times an assay commissioner, serving in 1907 and then each year from 1910 to 1926. An employee of the National Bureau of Standards was included in the presidential appointments each year; he brought with him the weights used in the assay, which were checked by the agency in advance. Although no future president served as an assay commissioner,[a]Comptroller of the Currency Charles G. Dawes was a commissioner in 1899 and 1900; he was Vice President of the United States from 1925 to 1929.[47]

Among those appointed was coin collector and Congressman William A. Ashbrook, 14 times an assay commissioner between 1908 and 1934. Ashbrook's presence on the 1934 Assay Commission has led to speculation that he might have used his position as an assay commissioner (he left Congress in 1921) to secure one or more 1933 Saint-Gaudens double eagles, almost all of which were melted due to the end of gold coinage for circulation. Assay commissioners were traditionally allowed to purchase coins from the pyx that were not assayed, and numismatic historian Roger Burdette speculates that Ashbrook, generally well-treated by the Treasury Department due to his onetime congressional position, might have exchanged other gold pieces for the 1933 coins.[48]

The three known specimens of the 1873-CC quarter, without arrows by the date, and the only known dime of that description, may have been salvaged from assay pieces, as the remainder of those coins had been ordered melted as underweight.[12] A similar mystery attends the 1894 Barber dime struck at San Francisco (1894-S) of which the published mintage is 24, although it is not certain whether this total includes the one sent to Philadelphia to await the 1895 Assay Commission. The fact that one of the 1895 assay commissioners was Robert Barnett, chief clerk of the San Francisco Mint, has led numismatic writers Nancy Oliver and Richard Kelly to speculate that he may have been made an assay commissioner in order to retrieve the dime. The 1895 Assay Commission report confirms that the dime was there, as it was counted by the Counting Committee. The dime is not mentioned as having been either weighed or assayed; Oliver and Kelly, in a May 2011 article in *The Numismatist*, suggest that Barnett used that privilege of assay commissioners to obtain the rarity. He is not known, however, to have written or spoken of the matter before his murder in 1904.[49]

In 1964, former assay commissioners formed the Old Time Assay Commissioners Society (OTACS). When President Carter stopped appointing public members to the commission in 1977, the OTACS fundraised in an unsuccessful attempt to induce the government to continue that tradition. The society met annually through 2012, usually at the site of the yearly convention of the American Numismatic Association (ANA).[50] With the number of surviving OTACS members at less than three dozen, the society plans no further meetings; its 2012 session in conjunction with the ANA convention in Philadelphia included an event at the

mint.[51]

[edit] Medals

Assay Commission medals were struck from a variety of metals, including copper, silver, bronze, and pewter. The first Assay Commission medals were struck in 1860 at the direction of Mint Director James Ross Snowden. The initial purpose in having medals struck was not principally to provide keepsakes to the assay commissioners, but to advertise the Mint's medal-striking capabilities. The nascent custom lapsed when Snowden left office in 1861.

Numismatists R.W. Julian and Ernest E. Keusch, in their work on Assay Commission medals, theorize that the resumption of Assay Commission medal striking in 1867 was at the request of Mint Engraver James B. Longacre to new Mint Director William Millward. Medals to be given to assay commissioners were struck each year after that until public members ceased to be appointed to the Assay Commission in 1977.

Early assay medals featured on the obverse a bust of Liberty or figure of Columbia, and on the reverse a wreath surrounding the words "annual assay" and the year. The 1870 obverse, by Longacre's successor William Barber, features Moneta surrounded by implements of the assay, such as scales and the pyx. The distinctive designs for each year would sometimes be topicalâ ~the 1876 medal bears a design for the centennial of American Independence, and 1879's depicted the recently-deceased Mint Director Henry Linderman. Beginning in 1880, they most often featured the president or Treasury Secretary. The medals in 1901 and from 1903 to 1909 were rectangular, a style popular at the time. The 1920 reverse, by Engraver George T. Morgan, had a design which symbolized the ending of World War I; in 1921, an extra medal was struck in gold, given by the assay commissioners to outgoing President Woodrow Wilson as a mark of respect.

The 1936 issuance was a mule of the Mint's medals for the president at the time, Franklin Roosevelt, and the first president, George Washington. Bearing the words, "annual assay 1936" on the edge, the medal was prepared in this manner by order of Mint Director Nellie Tayloe Ross after Mint officials realized that they had forgotten to prepare a special design for an assay medal. The 1950 medal illustrates a meeting of three 1792 officeholders (Secretary of the Treasury Hamilton, Secretary of State Thomas Jefferson and Chief Justice John Jay). Although they were officeholders designated by the Mint Act of 1792, no assay took place until 1797, by which time all three had left those offices. There was no specially-designed medal in 1954; instead, the assay commissioners, who met in Philadelphia on Lincoln's Birthday, February 12, 1954, chose to receive the Mint's standard presidential medal depicting Abraham Lincoln, with the commissioner's name on the edge. The final medals, 1976 and 1977, were oval and of pewter. The 1977 medal, depicting Martha Washington, was not needed for presentation, as no public assay commissioners were appointed. They were presented to various Mint and other Treasury officials, and when there was public objection, more were struck and were placed on sale for \$20 at the mints and other Treasury outlets in 1978. Material was available for about 1,500 medals, and they were initially not available by mail.[64] They were still available in person, and by mail order, in 1980.[36]

All Assay Commission medals are extremely rare. Except for the 1977 medal, none is believed to have been issued in a quantity of greater than 200, and in most years fewer than 50 were struck. Additional copies of several 19th-century issues are known to have been illicitly struck; the Mint ended such practices in the early 20th century. The obverse of the 1909 issue, depicting Treasury Secretary George Cortelyou, was reused as Cortelyou's entry in the Mint's series of medals honoring Secretaries of the Treasury. The later pieces were struck with a blank reverse, but in the early 1960s, the reverse design from the Assay Commission issue was used with the Cortelyou obverse, and an unknown number sold to the public. The restrikes are said to be less distinctly struck than the originals.

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## Explanatory notes

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*Marasmius rotula* is a common species of agaric fungus in the family Marasmiaceae. Widespread in the Northern Hemisphere, it is commonly known variously as the pinwheel mushroom, the pinwheel *Marasmius*, the little wheel, the collared parachute, or the horse hair fungus. The type species of the genus *Marasmius*, *M. rotula* was first described scientifically in 1772 by mycologist Giovanni Antonio Scopoli and assigned its current name in 1838 by Elias Fries.

The fruit bodies, or mushrooms, of *M. rotula* are characterized by their whitish, thin, and membranous caps up to 2 cm (0.8 in) wide that are sunken in



the center, and pleated with scalloped margins. The slender and wiry black hollow stems measure up to 8.0 cm (3.1 in) long by 1.5 mm (0.06 in) thick. On the underside of the caps are widely-spaced white gills that are attached to a collar encircling the stem. The mushrooms grow in groups or clusters on decaying wood such as fallen twigs and sticks, moss-covered logs, and stumps.

Unlike other mushrooms known to release spores in response to a circadian rhythm, spore release in *M. rotula* is dependent upon sufficient moisture. Dried mushrooms may revive after rehydrating and continue to release spores for up to three weeks—a sustained spore production of markedly longer duration than other typical agarics. There are several species of *Marasmius* with which *M. rotula* might be confused due to somewhat similar overall appearances, but differences in size, gill arrangement, and substrate are usually sufficient field characteristics to distinguish them. Although *M. rotula* mushrooms are not generally considered edible, they produce a unique peroxidase enzyme that is attracting research interest for possible use in bioengineering applications.

#### [edit] Taxonomy

The species was first described by Italian mycologist Giovanni Antonio Scopoli as *Agaricus rotula* in 1772.[4] In 1821 Elias Magnus Fries redescribed the mushroom in *Systema Mycologicum*,[5] and later transferred it to *Marasmius* in his 1838 *Epicrasis Systematis Mycologici*. [6] Synonyms include names derived from generic transfers to *Androsaceus* by Narcisse Théophile Patouillard in 1887,[7] and to *Chamaeceras* by Otto Kuntze in 1898; [2] both of these genera are now obsolete and have since been sunk back into *Marasmius*. [8]

In his 1821 *A Natural Arrangement of British Plants*, Samuel Frederick Gray introduced the generic name *Micromphale*, including the species *Micromphale collariatum*, [1] which was based on William Withering's 1796 *Merulius collariatus*. [9] In 1946 Alexander H. Smith and Rolf Singer proposed to conserve the name *Marasmius* over *Micromphale*; the latter had nomenclatorial priority as it was published first. [10] The generic name *Marasmius*, with *M. rotula* as the lectotype species, was later conserved at the 1954 Paris Congress on Botanical Nomenclature. [11] [12] *M. rotula* is also the type species of section *Marasmius* within the genus. This grouping of species is characterized by inamyloid flesh, a cap cuticle with broom cells (finger-like projections common to *Marasmius* species) ornamented with numerous warts, gills usually attached to a collar surrounding the stem, and the presence of black rhizomorphs on the stem. [13]

Several varieties of *M. rotula* have been described. Miles Berkeley and Moses Ashley Curtis named var. *fuscus* in 1869 for its brown cap. [14] In 1887 Pier Andrea Saccardo described var. *microcephalus* from Italy, with caps half the normal size. [15] It is now understood, however, that fruit body morphology is variable and dependent upon environmental conditions. Joseph Schröter described var. *phyllophyla* in 1889, [16] but that taxon is now treated as *Marasmius bulliardii*. [17]

*Marasmius rotula* is commonly known as the "pinwheel mushroom", the "pinwheel *Marasmius*", [18] the "collared parachute", [19] or the "horse hair fungus". [20] This latter name is shared with other *Marasmius* species, including *M. androsaceus* [21] and *M. crinis-equi*. [22] Gray called it the "collared dimple-stool". [1] The name "little wheel fungus" is suggestive of the collar to which the gills are attached like the spokes of a wheel, [23] like the specific epithet, which is a diminutive of *rota*, the Latin word for "wheel". [18]

#### [edit] Description

The cap of the fruit body is thin and membranous, measuring 3 to 20 mm (0.1 to 0.8 in) in diameter. [24] It has a convex shape slightly depressed in the center, conspicuous furrows in an outline of the gills, and scalloped edges. Young, unexpanded caps are yellowish brown; as the cap expands, the color lightens to whitish or light pinkish-white, [25] often with a darker, sometimes brown center. [26] The variety *fusca* has brown caps. [14] The white or slightly yellowish flesh is very thin, reaching about 0.25–1.5 mm thick in the central part of the cap, and even thinner at the margin. [27]

Gills are attached to a collar, never to the stem, although some specimens have the collar pressed close enough to it that this characteristic may be less

obvious.[18] Widely-spaced, they have the same whitish to pale yellow color as the flesh, and typically number between 16 and 22.[26] They are initially narrow, but thicken downward to about 1.5 mm at the exposed edge.[27] The stem is 1.2 to 8.0 cm (0.5 to 3.1 in) long and up to 0.15 cm (0.06 in) thick, with a smooth, sometimes shiny surface.[20] It is tough, hollow, and either straight or with some curving. The color is blackish-brown up to a lighter, almost translucent apex. The base of the stem may be connected to dark brown or black root-like rhizomorphs 0.1 to 0.3 mm thick.[27] Mature specimens display no veil.[20]

Note particularly the manner in which the hair-like stem is set into the tiny socket, the sparsity of the gill development, and the fine furrows and scallopings of the margin of the cap. A Swiss matchmaker could not excel such workmanship.

Details of the fruit bodies' appearance, color in particular, are somewhat variable and dependent on growing conditions. For example, specimens growing on logs in oak and hickory forests in the spring tend to have more yellowish-white, depressed caps than those found in the same location in autumn, which are light yellow brown and more convex in shape.[27] The fruit body development of *M. rotula* is hemiangiocarpous, with an hymenium that is only partially enclosed by basidiocarp tissues. Robert Kärner showed that a cortina-like tissue covers the young gills before the expanding cap breaks away from the stem. In unfavorable weather conditions, however, the mushrooms may fail to develop normally and instead produce semi-gasteroid basidiocarps.[29]

[edit] Microscopic characteristics

Viewed in deposit, such as with a spore print, the spores of *Marasmius rotula* appear white or pale yellow.[25] Under an optical microscope, they are hyaline (translucent), teardrop- or pip-shaped, and have dimensions of 7 to 10 by 3 to 5 µm.[20] The basidia (spore-producing cells) are four-spored, club-shaped or nearly so, and 21 to 21 by 4 to 17 µm. Along the edge of the gill, interspersed among the basidia, are non-reproductive cells, the cheilocystidia; these are club-shaped with rough wart-like protuberances on the surface.[26] The gill edges further feature broom cells, which are variably shaped, thin-walled, and measure 7 to 32 by 2.5 to 20 µm. Their apical surfaces are covered with yellowish, blunt, and conical warts or incrustations 0.2 to 1.5 by 0.1 to 1 µm.[27]

[edit] Similar species

*Marasmius capillaris* grows on oak leaves.

The stem of *Tetrapyrgos nigripes* appears to have a powdery bloom.

There are several less-common species of *Marasmius* with which *M. rotula* might be confused due to somewhat similar overall appearances, but differences in size, gill arrangement, and substrate are usually sufficient field characteristics to distinguish between them. For example, *Marasmius capillaris* has a pale tan cap with a white center, and grows on oak leaves without forming clusters.[24] Furthermore, its cap is evenly rounded, unlike the pleated and furrowed cap of *M. rotula*, [30] and its stem is somewhat thinner (usually less than 0.3 mm) and slightly darker in color.[31]

*M. rotula* is distinguished from *M. bulliardii* by its larger size, and greater

number of gills.[26]*M. limosus* is found in marshes, where it fruits on the dead stems of reeds and rushes.[32]*Tetrapyrgos nigripes* (formerly treated in *Marasmius*) has white caps that are 5 to 10 mm (0.2 to 0.4 in) in diameter, attached gills that are sometimes slightly decurrent, a dark stem covered with tiny white hairs that give it a powdered appearance, and triangular to star-shaped spores.[33]*M. neorotula*, described from Brazil, was considered by its discoverer Rolf Singer to be closely related to *M. rotula*. In addition to its tropical distribution, it can distinguished from *M. rotula* by its smaller size and more widely spaced gills.[34]*M. rotuloides*, known only from montane forests of Trinidad, can only be reliably distinguished from *M. rotula* by microscopic characteristics: it has smaller, ovoid spores measuring 5 by 2.5  $\mu\text{m}$ . [35]

Other *Marasmius* species with a pinwheel arrangement of gills are readily distinguished from *M. rotula* by differences in color, including the orange *M. siccus*, the pink *M. pulcherripes*, and the rust *M. fulvoferrugineus*. [30]*Mycena corticola* is smaller than *Marasmius rotula*, has a pale pink-brown cap, and is usually found growing singly or in small groups on bark near the base of living trees. [18]

#### [edit] Ecology and distribution

*Marasmius rotula* is a saprobic species [30] and as such obtains nutrients by decomposing dead organic matter. It grows in deciduous forests and fruits in groups or clusters on dead wood (especially beech), woody debris such as twigs or sticks, and occasionally on rotting leaves. The fruit bodies, which are easily overlooked because of their diminutive size, [23] are often present in abundance after rains. [36] The species is relatively intolerant of low water potentials, and will grow poorly or not at all under water stress conditions. [37] [38] It is unable to degrade leaf litter until it becomes more fragmented and more compacted so that the water-holding capacity increases in the deeper layers of the soil. [37] The Magnolia Warbler has been noted to line its nests with the fruit bodies' stems. [39]

In 1975 American mycologist Martina S. Gilliam investigated the periodicity of spore release in *M. rotula* and concluded that spore discharge did not follow a regular circadian rhythm, as is typical of agaric and bolete mushrooms, [40] but rather was dependent on rain. A threshold of rainfall is required to elicit a spore discharge response and the duration of peak spore discharge correlates with the amount of rainfall, rather than its duration. Furthermore, Gilliam noted that spore prints were more readily obtained if the stem ends were placed in water, suggesting that water must enter through the fruit body for discharge to occur. [41]

Like those of many other species of *Marasmius*, the fruit bodies of *M. rotula* can desiccate and shrivel in dry periods, then revive when sufficient moisture is available again in the form of rain or high humidity. Gilliam's study demonstrated that revived fruit bodies were capable of discharging spores over a period of at least three weeks, whereas previous studies using similar methods with other Agaricomycetes showed spore discharge occurred over a shorter period of up to six days after revival. The potential for sustained spore production and discharge may be due to the growth of new basidioles (immature basidia) during periods of growth, which then complete maturation when the mushroom revives. This may also explain why the gills become thicker as the mushroom matures. [41]

The fungus is widespread and common in its preferred habitats in North America, Europe, and northern Asia. [32] Although far less common in southerly locations, isolated collections have been reported from Africa (Congo, [42] Nigeria, [43] Sierra Leone, [44] and Tanzania [45]) and South Asia (India). [46] In North America *M. rotula* is most common in the eastern part of the continent. [20]

*Marasmius rotula* is generally considered inedible, [18] but not poisonous. The mushroom has no distinguishable odor, and its taste is mild or bitter. [20] Louis Krieger, writing in *National Geographic* in the 1920s, noted that the mushroom was used as an addition to gravies and, when used to garnish venison,

"adds the appropriate touch of the wild woodlands." [28] The fruit bodies will bioaccumulate cadmium: a study of the metal concentration of 15 wild mushroom species of India showed that *M. rotula* accumulated the highest concentration of that metal. [46]

A peroxidase enzyme known as MroAPO (Marasmius rotula aromatic peroxygenase) is attracting research interest for possible applications in biocatalysis. In general, enzymes that catalyze oxygen-transfer reactions are of great utility in chemical synthesis since they work selectively and under ambient conditions. Fungal peroxidases can catalyze oxidations that are difficult for the organic chemist, including those involving aromatic substrates such as aniline, 4-aminophenol, hydroquinone, resorcinol, catechol, and paracetamol. [47] The *M. rotula* enzyme is the first fungal peroxygenase that can be produced in high yields. It is highly stable over a wide pH range, and in a variety of organic solvents. [48] The enzyme has other potential for use as a biosensor for aromatic substances in environmental analysis and drug monitoring. [47]

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[edit] Cited literature

[edit] External links

In classical mechanics, the Laplaceâ ^Rungeâ ^Lenz vector (or simply the LRL vector) is a vector used chiefly to describe the shape and orientation of the orbit of one astronomical body around another, such as a planet revolving around a star. For two bodies interacting by Newtonian gravity, the LRL vector is a constant of motion, meaning that it is the same no matter where it is calculated on the orbit;[1] equivalently, the LRL vector is said to be conserved. More generally, the LRL vector is conserved in all problems in which two bodies interact by a central force that varies as the inverse square of the distance between them; such problems are called Kepler problems.[2]

The hydrogen atom is a Kepler problem, since it comprises two charged particles interacting by Coulomb's law of electrostatics, another inverse square central force. The LRL vector was essential in the first quantum mechanical derivation of the spectrum of the hydrogen atom,[3] before the development of the SchrÃdinger equation. However, this approach is rarely used today.

In classical and quantum mechanics, conserved quantities generally correspond to a symmetry of the system. The conservation of the LRL vector corresponds to an unusual symmetry; the Kepler problem is mathematically equivalent to a particle moving freely on the surface of a four-dimensional (hyper-)sphere,[4] so that the whole problem is symmetric under certain rotations of the four-dimensional space.[5] This higher symmetry results from two properties of the Kepler problem: the velocity vector always moves in a perfect circle and, for a given total energy, all such velocity circles intersect each other in the same two points.[6]

The Laplaceâ ^Rungeâ ^Lenz vector is named after Pierre-Simon de Laplace, Carl Runge and Wilhelm Lenz. It is also known as the Laplace vector, the Rungeâ ^Lenz vector and the Lenz vector. Ironically, none of those scientists discovered it.

The LRL vector has been re-discovered several times[7] and is also equivalent to the dimensionless eccentricity vector of celestial mechanics.[8] Various generalizations of the LRL vector have been defined, which incorporate the effects of special relativity, electromagnetic fields and even different types of central forces.

[edit] Context

A single particle moving under any conservative central force has at least four constants of motion, the total energy  $E$  and the three Cartesian components of the angular momentum vector  $L$ . The particle's orbit is confined to a plane defined by the particle's initial momentum  $p$  (or, equivalently, its velocity  $v$ ) and the vector  $r$  between the particle and the center of force (see Figure 1, below).

As defined below (see Mathematical definition), the Laplace–Runge–Lenz vector (LRL vector)  $A$  always lies in the plane of motion for any central force.

However,  $A$  is constant only for an inverse-square central force.[1] For most central forces, however, this vector  $A$  is not constant, but changes in both length and direction; if the central force is approximately an inverse-square law, the vector  $A$  is approximately constant in length, but slowly rotates its direction. A generalized conserved LRL vector can be defined for all central forces, but this generalized vector is a complicated function of position, and usually not expressible in closed form.[9][10]

The plane of motion is perpendicular to the angular momentum vector  $L$ , which is constant; this may be expressed mathematically by the vector dot product equation  $r \cdot L = 0$ ; likewise, since  $A$  lies in that plane,  $A \cdot L = 0$ .

The LRL vector differs from other conserved quantities in the following property. Whereas for typical conserved quantities, there is a corresponding cyclic coordinate in the three-dimensional Lagrangian of the system, there does not exist such a coordinate for the LRL vector. Thus, the conservation of the LRL vector must be derived directly, e.g., by the method of Poisson brackets, as described below. Conserved quantities of this kind are called "dynamic", in contrast to the usual "geometric" conservation laws, e.g., that of the angular momentum.

[edit] History of rediscovery

The LRL vector  $A$  is a constant of motion of the important Kepler problem, and is useful in describing astronomical orbits, such as the motion of the planets. Nevertheless, it has never been well known among physicists, possibly because it is less intuitive than momentum and angular momentum. Consequently, it has been rediscovered independently several times over the last three centuries.[7]

Jakob Hermann was the first to show that  $A$  is conserved for a special case of the inverse-square central force,[11] and worked out its connection to the eccentricity of the orbital ellipse. Hermann's work was generalized to its modern form by Johann Bernoulli in 1710.[12] At the end of the century, Pierre-Simon de Laplace rediscovered the conservation of  $A$ , deriving it analytically, rather than geometrically.[13] In the middle of the nineteenth century, William Rowan Hamilton derived the equivalent eccentricity vector defined below,[8] using it to show that the momentum vector  $p$  moves on a circle for motion under an inverse-square central force (Figure 3).[6]

At the beginning of the twentieth century, Josiah Willard Gibbs derived the same vector by vector analysis.[14] Gibbs' derivation was used as an example by Carle Runge in a popular German textbook on vectors,[15] which was referenced by Wilhelm Lenz in his paper on the (old) quantum mechanical treatment of the hydrogen atom.[16] In 1926, the vector was used by Wolfgang Pauli to derive the spectrum of hydrogen using modern quantum mechanics, but not the Schrödinger equation;[3] after Pauli's publication, it became known mainly as the Runge–Lenz vector.

[edit] Mathematical definition

For a single particle acted on by an inverse-square central force described by the equation , the LRL vector  $A$  is defined mathematically by the formula[1]

where

Since the assumed force is conservative, the total energy  $E$  is a constant of motion

Furthermore, the assumed force is a central force, and thus the angular momentum vector  $L$  is also conserved and defines the plane in which the particle travels. The LRL vector  $A$  is perpendicular to the angular momentum vector  $L$  because both  $p \times L$  and  $r$  are perpendicular to  $L$ . It follows that  $A$  lies in the plane of the orbit.

This definition of the LRL vector  $A$  pertains to a single point particle of mass  $m$  moving under the action of a fixed force. However, the same definition may be extended to two-body problems such as Kepler's problem, by taking  $m$  as the reduced mass of the two bodies and  $r$  as the vector between the two bodies.

A variety of alternative formulations for the same constant of motion may also be used. The most common is to scale by  $mk$  to define the eccentricity vector

[edit] Derivation of the Kepler orbits

The shape and orientation of the Kepler problem orbits can be determined from the LRL vector as follows.[1] Taking the dot product of  $A$  with the position vector  $r$  gives the equation

where  $\hat{r}$  is the angle between  $r$  and  $A$  (Figure 2). Permuting the scalar triple product

and rearranging yields the defining formula for a conic section

of eccentricity

and latus rectum

The major semiaxis  $a$  of the conic section may be defined using the latus rectum and the eccentricity

where the minus sign pertains to ellipses and the plus sign to hyperbolae. Taking the dot product of  $A$  with itself yields an equation involving the energy  $E$

which may be rewritten in terms of the eccentricity

Thus, if the energy  $E$  is negative (bound orbits), the eccentricity is less than one and the orbit is an ellipse. Conversely, if the energy is positive (unbound orbits, also called "scattered orbits"), the eccentricity is greater than one and the orbit is a hyperbola. Finally, if the energy is exactly zero, the eccentricity is one and the orbit is a parabola. In all cases, the direction of  $A$  lies along the symmetry axis of the conic section and points from the center of force toward the periapsis, the point of closest approach.

[edit] Circular momentum hodographs

The conservation of the LRL vector  $A$  and angular momentum vector  $L$  is useful in showing that the momentum vector  $p$  moves on a circle under an inverse-square central force.[6][7]

Taking the dot product of

with itself yields

Further choosing  $L$  along the  $z$ -axis, and the major semiaxis as the  $x$ -axis, yields the locus equation for  $p$ ,

.

In other words, the momentum vector  $p$  is confined to a circle of radius  $mk/L$  centered on  $(0, A/L)$ . The eccentricity  $e$  corresponds to the cosine of the angle  $\hat{r}$  shown in Figure 3. In the degenerate limit of circular orbits, and thus



vanishing  $A$ , the circle centers at the origin  $(0,0)$ . For brevity, it is also useful to introduce the variable  $\phi$ . This circular hodograph is useful in illustrating the symmetry of the Kepler problem.

[edit] Constants of motion and superintegrability

The seven scalar quantities  $E$ ,  $A$  and  $L$  (being vectors, the latter two contribute three conserved quantities each) are related by two equations,  $A \cdot L = 0$  and  $A^2 = m^2 k^2 + 2 m E L^2$ , giving five independent constants of motion. This is consistent with the six initial conditions (the particle's initial position and velocity vectors, each with three components) that specify the orbit of the particle, since the initial time is not determined by a constant of motion. Since the magnitude of  $A$  (and the eccentricity  $e$  of the orbit) can be determined from the total angular momentum  $L$  and the energy  $E$ , only the direction of  $A$  is conserved independently; moreover, since  $A$  must be perpendicular to  $L$ , it contributes only one additional conserved quantity.

A mechanical system with  $d$  degrees of freedom can have at most  $2d - 1$  constants of motion, since there are  $2d$  initial conditions and the initial time cannot be determined by a constant of motion. A system with more than  $d$  constants of motion is called superintegrable and a system with  $2d - 1$  constants is called maximally superintegrable.[17] Since the solution of the Hamilton–Jacobi equation in one coordinate system can yield only  $d$  constants of motion, superintegrable systems must be separable in more than one coordinate system.[18] The Kepler problem is maximally superintegrable, since it has three degrees of freedom ( $d=3$ ) and five independent constant of motion; its Hamilton–Jacobi equation is separable in both spherical coordinates and parabolic coordinates,[19] as described below.

Maximally superintegrable systems follow closed, one-dimensional orbits in phase space, since the orbit is the intersection of the phase-space isosurfaces of their constants of motion. Consequently, the orbits are perpendicular to all gradients of all these independent isosurfaces, five in this specific problem, and hence are determined by the generalized cross products of all of these gradients. As a result, all superintegrable systems are automatically describable by Nambu mechanics,[20] alternatively, and equivalently, to Hamiltonian mechanics. Maximally superintegrable systems can be quantized using commutation relations, as illustrated below.[21] Nevertheless, equivalently, they are also quantized in the Nambu framework, such as this classical Kepler problem into the quantum hydrogen atom.[22]

[edit] Evolution under perturbed potentials

The Laplace–Runge–Lenz vector  $A$  is conserved only for a perfect inverse-square central force. In most practical problems such as planetary motion, however, the interaction potential energy between two bodies is not exactly an inverse square law, but may include an additional central force, a so-called perturbation described by a potential energy  $h(r)$ . In such cases, the LRL vector rotates slowly in the plane of the orbit, corresponding to a slow apsidal precession of the orbit. By assumption, the perturbing potential  $h(r)$  is a conservative central force, which implies that the total energy  $E$  and angular momentum vector  $L$  are conserved. Thus, the motion still lies in a plane perpendicular to  $L$  and the magnitude  $A$  is conserved, from the equation  $A^2 = m^2 k^2 + 2 m E L^2$ . The perturbation potential  $h(r)$  may be any sort of function, but should be significantly weaker than the main inverse-square force between the two bodies.

The rate at which the LRL vector rotates gives information about the perturbing potential  $h(r)$ . Using canonical perturbation theory and action-angle coordinates, it is straightforward to show[1] that  $A$  rotates at a rate of

where  $T$  is the orbital period and the identity  $L \frac{d\phi}{dt} = m \tilde{r}^2 \frac{d\tilde{\phi}}{dt}$ , was used to convert the time integral into an angular integral (Figure 5). The expression in angular brackets,  $\tilde{a} \langle h(r) \tilde{a} \rangle$ , represents the perturbing potential, but averaged over one full period; that is, averaged over one full passage of the body around its orbit. Mathematically, that time average corresponds to the following quantity in curly braces. This averaging helps to suppress

fluctuations in the rate of rotation.

This approach was used to help verify Einstein's theory of general relativity, which adds a small inverse-cubic perturbation to the normal Newtonian gravitational potential.[23]

Inserting this function into the integral and using the equation

to express  $r$  in terms of  $\hat{I}$ , the precession rate of the periaapsis caused by this non-Newtonian perturbation is calculated to be[23]

which closely matches the observed anomalous precession of Mercury[24] and binary pulsars.[25] This agreement with experiment is considered to be strong evidence for general relativity.[26][27]

[edit] Poisson brackets

The three components  $L_i$  of the angular momentum vector  $L$  have the Poisson brackets[1]

where  $i=1,2,3$  and  $\hat{\epsilon}_{ijks}$  is the fully antisymmetric tensor, i.e., the Levi-Civita symbol; the summation index  $s$  is used here to avoid confusion with the force parameter  $k$  defined above. The Poisson brackets are represented here as square brackets (not curly braces), both for consistency with the references and because they will be interpreted as quantum mechanical commutation relations in the next section and as Lie brackets in a following section.

As noted below, a scaled Laplace-Runge-Lenz vector  $D$  may be defined with the same units as angular momentum by dividing  $A$  by  $E$ . The Poisson brackets of  $D$  with the angular momentum vector  $L$  can then be written in a similar form[28]

The Poisson brackets of  $D$  with itself depend on the sign of  $E$ , i.e., on whether the total energy  $E$  is negative (producing closed, elliptical orbits under an inverse-square central force) or positive (producing open, hyperbolic orbits under an inverse-square central force). For negative energies  $E < 0$ , i.e., for bound systems  $E < 0$  the Poisson brackets are

whereas, for positive energy, the Poisson brackets have the opposite sign,

The Casimir invariants for negative energies are

and have vanishing Poisson brackets with all components of  $D$  and  $L$ ,

$C_2$  is trivially zero, since the two vectors are always perpendicular.

However, the other invariant,  $C_1$ , is non-trivial and depends only on  $m$ ,  $k$  and  $E$ . Upon canonical quantization, this invariant allows the energy levels of hydrogen-like atoms to be derived using only quantum mechanical canonical commutation relations, instead of the conventional solution of the Schrödinger equation.

[edit] Quantum mechanics of the hydrogen atom

Poisson brackets provide a simple guide for quantizing most classical systems: the commutation relation of two quantum mechanical operators is specified by the Poisson bracket of the corresponding classical variables, multiplied by  $i\hbar$ .[29]

By carrying out this quantization and calculating the eigenvalues of the Casimir operator for the Kepler problem, Wolfgang Pauli was able to derive the energy levels of hydrogen-like atoms (Figure 6) and, thus, their atomic emission spectrum.[3] This elegant derivation was obtained before the development of the Schrödinger equation.[30]

A subtlety of the quantum mechanical operator for the LRL vector  $A$  is that the momentum and angular momentum operators do not commute; hence, the cross product of  $p$  and  $L$  must be defined carefully.[28] Typically, the operators for the Cartesian components  $A_s$  are defined using a symmetrized product,

from which the corresponding additional ladder operators for  $L$  can be defined,

These further connect different eigenstates of  $L^2$ .

A normalized first Casimir invariant operator, quantum analog of the above, can likewise be defined,

where  $H^{-1}$  is the inverse of the Hamiltonian energy operator, and  $I$  is the identity operator.

Applying these ladder operators to the eigenstates of the total angular momentum, azimuthal angular momentum and energy operators, the eigenvalues of the first Casimir operator  $C_1$  are  $n^2 - 1$ . Importantly, by dint of the vanishing of  $C_2$ , they are independent of the  $l$  and  $m$  quantum numbers, making the energy levels degenerate.[28]

Hence, the energy levels are given by

which coincides with the Rydberg formula for hydrogen-like atoms (Figure 6). The additional symmetry operators  $A$  have implicitly connected the different  $l$  multiplets among themselves, for a given energy (and  $C_1$ ). In effect, they have enlarged the group  $SO(3)$  to  $SO(4)$ .

[edit] Conservation and symmetry

The conservation of the LRL vector corresponds to a subtle symmetry of the system. In classical mechanics, symmetries are continuous operations that map one orbit onto another without changing the energy of the system; in quantum mechanics, symmetries are continuous operations that "mix" electronic orbitals of the same energy, i.e., degenerate energy levels. A conserved quantity is usually associated with such symmetries.[1] For example, every central force is symmetric under the rotation group  $SO(3)$ , leading to the conservation of angular momentum  $L$ . Classically, an overall rotation of the system does not affect the energy of an orbit; quantum mechanically, rotations mix the spherical harmonics of the same quantum number  $l$  without changing the energy.

The symmetry for the inverse-square central force is higher and more subtle. The peculiar symmetry of the Kepler problem results in the conservation of both the angular momentum vector  $L$  and the LRL vector  $A$  (as defined above) and, quantum mechanically, ensures that the energy levels of hydrogen do not depend on the angular momentum quantum numbers  $l$  and  $m$ . The symmetry is more subtle, however, because the symmetry operation must take place in a higher-dimensional space; such symmetries are often called "hidden symmetries".[31] Classically, the higher symmetry of the Kepler problem allows for continuous alterations of the orbits that preserve energy but not angular momentum; expressed another way, orbits of the same energy but different angular momentum (eccentricity) can be transformed continuously into one another. Quantum mechanically, this corresponds to mixing orbitals that differ in the  $l$  and  $m$  quantum numbers, such as the  $s$  ( $l=0$ ) and  $p$  ( $l=1$ ) atomic orbitals. Such mixing cannot be done with ordinary three-dimensional translations or rotations, but is equivalent to a rotation in a higher dimension.

For negative energies  $\hat{E} < 0$ , i.e., for bound systems  $\hat{H} < 0$  the higher symmetry group is  $SO(4)$ , which preserves the length of four-dimensional vectors

In 1935, Vladimir Fock showed that the quantum mechanical bound Kepler problem is equivalent to the problem of a free particle confined to a three-dimensional unit sphere in four-dimensional space.[4] Specifically, Fock showed that the Schrödinger wavefunction in the momentum space for the Kepler problem was the stereographic projection of the spherical harmonics on the sphere. Rotation of the sphere and reprojection results in a continuous mapping of the elliptical orbits without changing the energy; quantum mechanically, this corresponds to a mixing of all orbitals of the same energy quantum number  $n$ . Valentine Bargmann noted subsequently that the Poisson brackets for the angular momentum vector  $L$  and the scaled LRL vector  $D$  formed the Lie algebra for  $SO(4)$ . [5] Simply put, the six quantities  $D$  and  $L$  correspond to the six

conserved angular momenta in four dimensions, associated with the six possible simple rotations in that space (there are six ways of choosing two axes from four). This conclusion does not imply that our universe is a three-dimensional sphere; it merely means that this particular physics problem (the two-body problem for inverse-square central forces) is mathematically equivalent to a free particle on a three-dimensional sphere.

For positive energies  $\hat{E} > 0$ , i.e., for unbound, "scattered" systems  $\hat{E} > 0$  the higher symmetry group is  $SO(3,1)$ , which preserves the Minkowski length of 4-vectors

Both the negative- and positive-energy cases were considered by Fock[4] and Bargmann[5] and have been reviewed encyclopedically by Bander and Itzykson.[32][33]

The orbits of central-force systems  $\hat{E} < 0$  and those of the Kepler problem in particular  $\hat{E} < 0$  are also symmetric under reflection. Therefore, the  $SO(3)$ ,  $SO(4)$  and  $SO(3,1)$  groups cited above are not the full symmetry groups of their orbits; the full groups are  $O(3)$ ,  $O(4)$  and  $O(3,1)$ , respectively. Nevertheless, only the connected subgroups,  $SO(3)$ ,  $SO(4)$  and  $SO(3,1)$ , are needed to demonstrate the conservation of the angular momentum and LRL vectors; the reflection symmetry is irrelevant for conservation, which may be derived from the Lie algebra of the group.

[edit] Rotational symmetry in four dimensions

The connection between the Kepler problem and four-dimensional rotational symmetry  $SO(4)$  can be readily visualized.[32][34][35] Let the four-dimensional Cartesian coordinates be denoted  $(w, x, y, z)$  where  $(x, y, z)$  represent the Cartesian coordinates of the normal position vector  $\mathbf{r}$ . The three-dimensional momentum vector  $\mathbf{p}$  is associated with a four-dimensional vector on a three-dimensional unit sphere

where  $\hat{\mathbf{w}}$  is the unit vector along the new  $w$ -axis. The transformation mapping  $\mathbf{p}$  to  $\hat{\mathbf{w}} \cdot \mathbf{p}$  can be uniquely inverted; for example, the  $x$ -component of the momentum equals

and similarly for  $p_y$  and  $p_z$ . In other words, the three-dimensional vector  $\mathbf{p}$  is a stereographic projection of the four-dimensional vector, scaled by  $p_0$  (Figure 8).

Without loss of generality, we may eliminate the normal rotational symmetry by choosing the Cartesian coordinates such that the  $z$ -axis is aligned with the angular momentum vector  $\mathbf{L}$  and the momentum hodographs are aligned as they are in Figure 7, with the centers of the circles on the  $y$ -axis. Since the motion is planar, and  $\mathbf{p}$  and  $\mathbf{L}$  are perpendicular,  $p_z = \hat{\mathbf{L}} \cdot \mathbf{p} = 0$  and attention may be restricted to the three-dimensional vector  $\mathbf{p} = (\hat{\mathbf{L}} \cdot \mathbf{p}, \hat{\mathbf{L}} \cdot \mathbf{p}, \hat{\mathbf{L}} \cdot \mathbf{p})$ . The family of Apollonian circles of momentum hodographs (Figure 7) correspond to a family of great circles on the three-dimensional sphere, all of which intersect the  $\hat{\mathbf{L}} \cdot \mathbf{x}$ -axis at the two foci  $\hat{\mathbf{L}} \cdot \mathbf{x} = \pm 1$ , corresponding to the momentum hodograph foci at  $p_x = \pm p_0$ . These great circles are related by a simple rotation about the  $\hat{\mathbf{L}} \cdot \mathbf{x}$ -axis (Figure 8). This rotational symmetry transforms all the orbits of the same energy into one another; however, such a rotation is orthogonal to the usual three-dimensional rotations, since it transforms the fourth dimension  $\hat{\mathbf{L}} \cdot \mathbf{w}$ . This higher symmetry is characteristic of the Kepler problem and corresponds to the conservation of the LRL vector.

An elegant action-angle variables solution for the Kepler problem can be obtained by eliminating the redundant four-dimensional coordinates in favor of elliptic cylindrical coordinates  $(\tilde{x}, \tilde{y}, \tilde{z})$  [36]

where  $sn$ ,  $cn$  and  $dn$  are Jacobi's elliptic functions.

[edit] Generalizations to other potentials and relativity

The Laplace-Runge-Lenz vector can also be generalized to identify conserved quantities that apply to other situations.

In the presence of an electric field  $E$ , the conserved generalized Laplace-Runge-Lenz vector is [19][37]

where  $q$  is the charge on the orbiting particle.

Further generalizing the Laplace-Runge-Lenz vector to other potentials and special relativity, the most general form can be written as[9]

where  $u = 1/r$  (cf. Bertrand's theorem) and  $\hat{r} \cdot \hat{L} = \cos \hat{\theta}$ , with the angle  $\hat{\theta}$  defined by

and  $\hat{L}$  is the Lorentz factor. As before, we may obtain a conserved binormal vector  $B$  by taking the cross product with the conserved angular momentum vector

These two vectors may likewise be combined into a conserved dyadic tensor  $W$

For illustration, the LRL vector for a non-relativistic, isotropic harmonic oscillator can be calculated.[9] Since the force is central

the angular momentum vector is conserved and the motion lies in a plane. The conserved dyadic tensor can be written in a simple form

although it should be noted that  $p$  and  $r$  are not necessarily perpendicular. The corresponding Runge-Lenz vector is more complicated

where  $\omega$  is the natural oscillation frequency and  $\omega_0$

[edit] Proofs that the Laplace-Runge-Lenz vector is conserved in Kepler problems

The following are arguments showing that the LRL vector is conserved under central forces that obey an inverse-square law.

[edit] Direct proof of conservation

A central force acting on the particle is

for some function of the radius  $r$ . Since the angular momentum is conserved under central forces, and

where the momentum and where the triple cross product has been simplified using Lagrange's formula

The identity

yields the equation

For the special case of an inverse-square central force  $F = -k/r^2$ , this equals

Therefore,  $A$  is conserved for inverse-square central forces

A shorter proof is obtained by using the relation of angular momentum to angular velocity,  $\vec{L} = I\vec{\omega}$ , which holds for a particle traveling in a plane perpendicular to  $\vec{L}$ . Specifying to inverse-square central forces, the time derivative of  $A$  is

where the last equality holds because a unit vector can only change by rotation, and  $\vec{v}$  is the orbital velocity of the rotating vector. Thus,  $A$  is seen to be a difference of two vectors with equal time derivatives.

As described below, this LRL vector  $A$  is a special case of a general conserved vector that can be defined for all central forces.[9][10] However, since most central forces do not produce closed orbits (see Bertrand's theorem), the analogous vector rarely has a simple definition and is generally a multivalued function of the angle  $\hat{\theta}$  between  $r$  and  $\hat{L}$ .

[edit] Hamilton-Jacobi equation in parabolic coordinates

The constancy of the LRL vector can also be derived from the Hamilton-Jacobi equation in parabolic coordinates  $(\hat{r}, \hat{\theta})$ , which are defined by the equations

where  $r$  represents the radius in the plane of the orbit

The inversion of these coordinates is

Separation of the Hamilton-Jacobi equation in these coordinates yields the two equivalent equations[19][38]

where  $\hat{I}$  is a constant of motion. Subtraction and re-expression in terms of the Cartesian momenta  $p_x$  and  $p_y$  shows that  $\hat{I}$  is equivalent to the LRL vector

[edit] Noether's theorem

The connection between the rotational symmetry described above and the conservation of the LRL vector can be made quantitative by way of Noether's theorem. This theorem, which is used for finding constants of motion, states that any infinitesimal variation of the generalized coordinates of a physical system

that causes the Lagrangian to vary to first order by a total time derivative

corresponds to a conserved quantity  $\hat{I}$

In particular, the conserved LRL vector component  $A_i$  corresponds to the variation in the coordinates[39]

where  $i$  equals 1, 2 and 3, with  $x_i$  and  $p_i$  being the  $i$ th components of the position and momentum vectors  $\mathbf{r}$  and  $\mathbf{p}$ , respectively; as usual,  $\delta_{ij}$  represents the Kronecker delta. The resulting first-order change in the Lagrangian is

Substitution into the general formula for the conserved quantity  $\hat{I}$  yields the conserved component  $A_i$  of the LRL vector

[edit] Lie transformation

The Noether theorem derivation of the conservation of the LRL vector  $A$  is elegant, but has one drawback: the coordinate variation  $\delta x_i$  involves not only the position  $\mathbf{r}$ , but also the momentum  $\mathbf{p}$  or, equivalently, the velocity  $\mathbf{v}$ . [40] This drawback may be eliminated by instead deriving the conservation of  $A$  using an approach pioneered by Sophus Lie. [41][42] Specifically, one may define a Lie transformation[31] in which the coordinates  $\mathbf{r}$  and the time  $t$  are scaled by different powers of a parameter  $\epsilon$  (Figure 9)

This transformation changes the total angular momentum  $L$  and energy  $E$

but preserves their product  $EL^2$ . Therefore, the eccentricity  $e$  and the magnitude  $A$  are preserved, as may be seen from the equation for  $A^2$

The direction of  $A$  is preserved as well, since the semiaxes are not altered by a global scaling. This transformation also preserves Kepler's third law, namely, that the semiaxis  $a$  and the period  $T$  form a constant  $T^2/a^3$ .

[edit] Alternative scalings, symbols and formulations

Unlike the momentum and angular momentum vectors  $\mathbf{p}$  and  $\mathbf{L}$ , there is no universally accepted definition of the Laplace-Runge-Lenz vector; several different scaling factors and symbols are used in the scientific literature. The most common definition is given above, but another common alternative is to divide by the constant  $mk$  to obtain a dimensionless conserved eccentricity vector

where  $\mathbf{v}$  is the velocity vector. This scaled vector  $\mathbf{e}$  has the same direction as  $\mathbf{A}$  and its magnitude equals the eccentricity of the orbit. Other scaled versions are also possible, e.g., by dividing  $\mathbf{A}$  by  $m$  alone

or by  $p_0$

which has the same units as the angular momentum vector  $\mathbf{L}$ . In rare cases, the sign of the LRL vector may be reversed, i.e., scaled by  $-1$ . Other common symbols for the LRL vector include  $\mathbf{a}$ ,  $\mathbf{R}$ ,  $\mathbf{F}$ ,  $\mathbf{J}$  and  $\mathbf{V}$ . However, the choice of scaling and symbol for the LRL vector do not affect its conservation.

An alternative conserved vector is the binormal vector  $\mathbf{B}$  studied by William Rowan Hamilton[8]

which is conserved and points along the minor semiaxis of the ellipse; the LRL vector  $\mathbf{A} = \mathbf{B} \times \mathbf{L}$  is the cross product of  $\mathbf{B}$  and  $\mathbf{L}$  (Figure 4). The vector  $\mathbf{B}$  is denoted as "binormal" since it is perpendicular to both  $\mathbf{A}$  and  $\mathbf{L}$ . Similar to the LRL vector itself, the binormal vector can be defined with different scalings and symbols.

The two conserved vectors,  $\mathbf{A}$  and  $\mathbf{B}$  can be combined to form a conserved dyadic tensor  $\mathbf{W}$ [9]

where  $\hat{I}_1$  and  $\hat{I}_2$  are arbitrary scaling constants and represents the tensor product (which is not related to the vector cross product, despite their similar symbol). Written in explicit components, this equation reads

Being perpendicular to each another, the vectors  $\mathbf{A}$  and  $\mathbf{B}$  can be viewed as the principal axes of the conserved tensor  $\mathbf{W}$ , i.e., its scaled eigenvectors.  $\mathbf{W}$  is perpendicular to  $\mathbf{L}$

since  $\mathbf{A}$  and  $\mathbf{B}$  are both perpendicular to  $\mathbf{L}$  as well,  $\mathbf{L} \cdot \mathbf{A} = \mathbf{L} \cdot \mathbf{B} = 0$ . For clarification, this equation reads in explicit components

[edit] See also

[edit] References

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[edit] Further reading

The Greater Crested Tern[2] (*Thalasseus bergii*), also called Crested Tern or Swift Tern, is a seabird in the tern family which nests in dense colonies on coastlines and islands in the tropical and subtropical Old World. Its five subspecies breed in the area from South Africa around the Indian Ocean to the central Pacific and Australia, all populations dispersing widely from the breeding range after nesting. This large tern is closely related to the Royal and Lesser Crested Terns, but can be distinguished by its size and bill colour.

The Greater Crested Tern has grey upperparts, white underparts, a yellow bill, and a shaggy black crest which recedes in winter. Its young have a distinctive appearance, with strongly patterned grey, brown and white plumage, and rely on their parents for food for several months after they have fledged. Like all members of the genus *Thalasseus*, the Greater Crested Tern feeds by plunge diving for fish, usually in marine environments; the male offers fish to the female as part of the courtship ritual.

This is an adaptable species which has learned to follow fishing boats for jettisoned bycatch, and to utilise unusual nest sites such as the roofs of buildings and artificial islands in salt pans and sewage works. Its eggs and young are taken by gulls and ibises, and human activities such as fishing, shooting and egg harvesting have caused local population declines. There are no global conservation concerns for this bird, which has a stable total population of more than 500,000 individuals.

[edit] Taxonomy

The terns, family Sternidae, are small to medium-sized seabirds closely related to the gulls, skimmers and skuas. They are gull-like in appearance, but typically have a lighter build, long pointed wings (which give them a fast, buoyant flight), a deeply forked tail and short legs. Most species are grey above and white below, and have a black cap which is reduced or flecked with white in the winter.[3]

The Greater Crested Tern was originally described as *Sterna bergii* by German naturalist Martin Lichtenstein in 1823, but was moved to its current genus, *Thalasseus*,[5] after mitochondrial DNA studies confirmed that the three main head patterns shown by terns (no black cap, black cap, black cap with a white forehead) corresponded to distinct clades.[6]

The Greater Crested Tern's closest relatives within its genus appear to be the

Lesser Crested Tern (*T. bengalensis*), and the Royal Tern, (*T. maximus*).[6] The DNA study did not include the critically endangered Chinese Crested Tern (*T. bernsteini*), but as that bird was formerly considered to be conspecific with the Greater Crested Tern as a synonym of the subspecies *T. b. cristatus*, it is presumably also very closely related.[7]

The genus name of the Greater Crested Tern is derived from Greek *Thalassa*, "sea", and the species epithet *bergii* commemorates Carl Heinrich Bergius, a Prussian pharmacist and botanist who collected the first specimens of this tern near Cape Town.[8]

The Greater Crested Tern has about five geographical races, differing mainly in the colour of the upperparts and bill. These are listed below in taxonomic sequence. A similar number of other potential subspecies have been proposed, but are not considered valid.[9]

Subspecies[10]

Breeding range

Distinctive features

Population estimates

*T. b. bergii*[11]

(Lichtenstein, 1823)

Coasts of South Africa and Namibia

Dark grey above, slightly larger than *thalassina*, least white on head[12]

20,000 individuals (inc 6,336 breeding pairs in South Africa and up to 1,682 pairs in Namibia)[13]

*T. b. enigma*[11][14]

(Clancey, 1979)

Zambezi delta, Mozambique, south to Durban, South Africa

Palest subspecies[9]

8,000â ^10,000 individuals in Madagascar and Mozambique[13]

*T. b. cristata*[12]

(Stephens, 1826)

Eastern Indian Ocean, Australia and western Pacific Ocean

Like *bergii*, with tail, rump and back concolorous. paler in Australia

500,000+ individuals in Australia[9]

*T. b. thalassina*[12]

(Stresemann, 1914)

Western Indian Ocean

Small and pale, larger and less pale in south of range

2,550â ^4,500 individuals in Eastern Africa and Seychelles[13]

*T. b. velox*[12]

(Cretzschmar, 1827)

Red Sea, Persian Gulf, northern Indian Ocean

Largest, heaviest, darkest and longest-billed subspecies

33,000 in Middle East (inc 4,000 pairs Oman and 3,500 pairs on islands off Saudi Arabia)[9]

[edit] Description

The Greater Crested Tern is a large tern with a long (5.4â ^6.5Â cm, 2.1â ^2.6Â in) yellow bill, black legs, and a glossy black crest which is noticeably shaggy at its rear. The breeding adult of the nominate subspecies *T. b. bergii* is 46â ^49Â cm (18â ^19Â in) long, with a 125â ^130Â cm (49â ^51Â in) wing-span; this subspecies weighs 325â ^397Â g (11.4â ^14.0Â oz).[12] The forehead and the underparts are white, the back and inner wings are dusky-grey. In winter, the upperparts plumage wears to a paler grey, and the crown of the head becomes white, merging at the rear into a peppered black crest and mask.[15]

The adults of both sexes are identical in appearance, but juvenile birds are distinctive, with a head pattern like the winter adult, and upperparts strongly patterned in grey, brown, and white; the closed wings appear to have dark bars. After moulting, the young terns resemble the adult, but still have a variegated wing pattern with a dark bar on the inner flight feathers.[12]

The northern subspecies *T. b. velox* and *T. b. thalassina* are in breeding plumage from May to September or October, whereas the relevant period for the

two southern African races is from December to April. For *T. b. cristata*, the moult timing depends on location; birds from Australia and Oceania are in breeding plumage from September to about April, but those in Thailand, China and Sulawesi have this appearance from February to June or July.[12]

The Royal Tern is similar in size to this species, but has a heavier build, broader wings, a paler back and a blunter, more orange bill. The Greater Crested often associates with the Lesser Crested Tern, but is 25% larger than the latter, with a proportionately longer bill, longer and heavier head, and bulkier body.[15] Lesser Crested Tern has an orange-tinted bill, and in immature plumage it is much less variegated than Greater Crested.[11]

The Greater Crested Tern is highly vocal, especially at its breeding grounds. The territorial advertising call is a loud, raucous, crow-like kerrak. Other calls include a korrkorrkorr given at the nest by anxious or excited birds, and a hard wep wep in flight.[15]

[edit] Distribution and habitat

The Greater Crested Tern occurs in tropical and warm temperate coastal parts of the Old World from South Africa around the Indian Ocean to the Pacific and Australia. The subspecies *T. b. bergii* and *T. b. enigma* breed in Southern Africa from Namibia to Tanzania, and possibly on islands around Madagascar. There is then a break in the breeding distribution of this species until Somalia and the Red Sea, and another discontinuity further east in southern India.[9]

The Greater Crested Tern breeds on many islands in the Indian Ocean including Aldabra and Etoile in the Seychelles, the Chagos Archipelago, and Rodrigues.[16] There are colonies on numerous Pacific islands, including Kiribati, Fiji, Tonga, the Society Islands and the Tuamotus.[17]

The nests are located on low-lying sandy, rocky, or coral islands, sometimes amongst stunted shrubs, often without any shelter at all.[15] When not breeding, the Greater Crested Tern will roost or rest on open shores, less often on boats, pilings, harbour buildings and raised salt mounds in lagoons. It is rarely seen on tidal creeks or inland waters.[13]

All populations of Greater Crested Tern disperse after breeding. When Southern African birds leave colonies in Namibia and Western Cape Province, most adults move east to the Indian Ocean coastline of South Africa. Many young birds also travel east, sometimes more than 2,000 km (1,200 mi), but others move northwards along the western coast. *T. b. thalassina* winters on the east African coast north to Kenya and Somalia and may move as far south as Durban. Populations of *T. b. velox* breeding from the Persian Gulf eastwards appear to be sedentary or dispersive rather than truly migratory, but those breeding in the Red Sea winter south along the east African coast to Kenya.[13] *T. b. cristata* mostly stays within 400 km (260 mi) of its colonies, but some birds wander up to around 1,000 km (600 mi).[18] This species has occurred as a vagrant to Hawaii,[19] New Zealand,[20][21] North Korea,[20] Jordan,[20] and Israel.[15]

[edit] Behaviour

[edit] Breeding

The Greater Crested Tern breeds in colonies, often in association with other seabirds. It is monogamous and the pair bond is maintained through the year and sometimes in consecutive breeding seasons.[22] The colony size is related to the abundance of pelagic fish prey,[13] and the largest documented colony, with 13,000 to 15,000 pairs, is in the Gulf of Carpentaria in northern Australia, a region which also supports major colonies of other seabirds. Since nesting in this area follows the summer monsoonal flooding, it is presumably a response to fish stocks rising, probably due to river run-off providing extra nutrient to the Gulf.[23] This tern does not show site fidelity, frequently changing its nest site from year to year,[15] sometimes by more than 200 km (130 mi).[18]

A male Greater Crested Tern establishes a small area of the colony in preparation for nesting, and initially pecks at any other tern entering his territory. If the intruder is another male, it retaliates in kind, and is normally vigorously repelled by the incumbent. A female entering the nest area

reacts passively to the male's aggression, enabling him to recognise her sex and initiate pair formation by display, including head raising and bowing; this behaviour is frequently repeated during nesting to reinforce the bond between the pair. Terns also use fish as part of the courtship ritual. One bird flies around the colony with a fish in its beak, calling loudly; its partner may also fly, but the pair eventually settle and the gift is exchanged.[24]

The nest is a shallow scrape in the sand on open, flat or occasionally sloping ground. It is often unlined, but sometimes includes stones or cuttlefish bones. One, sometimes two, eggs are laid and incubated by both parents for 25 to 30 days prior to hatching.[13] The eggs are cream with blackish streaks.[25] Egg laying is synchronised within a breeding colony[26] and more tightly so within sub-colonies.[27] Parents do not recognize their own eggs or newly hatched chicks, but are able to distinguish their chicks by the time they are two days-old, shortly before they begin to wander from the nest.[28] The precocial chicks, which are very pale with black speckling, are brooded and fed by both parents, but may gather in crÃ"ches when older. The young terns fledge after 38 to 40 days, but remain dependent on the parents after leaving the colony until they are about four months old.[13]

In South Africa, this species has adapted to breeding on the roofs of building, sometimes with Hartlaub's Gull, which also shares the more typical nesting sites of the nominate race. In 2000, 7.5% of the population of this subspecies bred on roofs.[29] Artificial islands in salt pans and sewage works have also recently been colonised by this adaptable seabird.[9]

Adult terns have few predators, but in Namibia immature birds are often robbed of their food by Kelp Gulls, and that species, along with Hartlaub's Gull, Silver Gull and Sacred Ibis, has been observed feeding on eggs or nestlings, especially when colonies are disturbed.[9][30] Smaller subcolonies with a relatively larger numbers of nests located on the perimeter are subject to more predation.[27] In Australia, predation by cats and dogs, and occasional deaths by shooting or collisions with cars, wires or light-towers have been documented.[8]

Commercial fisheries can have both positive and negative effects on the Greater Crested Tern. Juvenile survival rates are improved where trawler discards provide extra food, and huge population increases in the southeastern Gulf of Carpentaria are thought to have been due to the development of a large prawn trawl fishery.[31] Conversely, purse-seine fishing reduces the available food supply, and sizeable fluctuations in the numbers of Great Crested Terns breeding in the Western Cape of South Africa are significantly related to changes in the abundance of pelagic fish, which are intensively exploited by purse-seine fishing.[30] Terns may be killed or injured by collisions with trawl warps, trapped in trawls or discarded gear, or hooked by longline fishing, but, unlike albatrosses and petrels, there is little evidence that overall numbers are significantly affected.[13]

An unusual incident was the incapacitation of 103 terns off Robben Island, South Africa by marine foam, generated by a combination of wave action, kelp mucilage and phytoplankton. After treatment, 90% of the birds were fit to be released.[32]

#### [edit] Feeding

Fish are the main food of the Greater Crested Tern, found to make up nearly 90% of all prey items with the remainder including cephalopods, crustaceans and insects.[13] Unusual vertebrate prey included agamid lizards and green turtle hatchlings.[31]

The Great Crested Tern feeds mostly at sea by plunge diving to a depth of up to 1 m (3 ft), or by dipping from the surface, and food is usually swallowed in mid-air. Birds may forage up to 10 km (6 mi) from land in the breeding season. Prey size ranges from 7 to 138 mm (0.27 to 5.4 in) in length and up to 30 g (1.1 oz) in weight. Shoaling pelagic fish such as anchovy and sardine are typical prey,[13] but bottom-living species are taken as discards from commercial fishing. This tern actively follows trawlers, including at night, and during the fishing season trawl discards can constitute 70% of its diet.[31] Prawn

fishing is particularly productive in providing extra food, since prawns usually represent only 10–20% of the catch, the remaining being bycatch, mainly fish such as cardinalfish and gobies.[31]

A study of an area of the Great Barrier Reef where the number of breeding Great Crested Terns has grown ten-fold, probably due to extra food from trawl by-catch, suggested that Lesser Crested and Sooty Terns have moved away and now breed on a part of the reef where fishing is banned. It is possible that the large increase in the number of Greater Crested Terns may have affected other species through competition for food and nesting sites.[33]

Terns have red oil droplets in the cone cells of the retinas of their eyes. This improves contrast and sharpens distance vision, especially in hazy conditions.[34] Birds that have to see through an air/water interface, such as terns and gulls, have more strongly coloured carotenoid pigments in the cone oil drops than other avian species.[35] The improved eyesight helps terns to locate shoals of fish, although it is uncertain whether they are sighting the phytoplankton on which the fish feed, or observing other terns diving for food.[36] Tern's eyes are not particularly ultraviolet sensitive, an adaptation more suited to terrestrial feeders like the gulls.[37]

[edit] Status

The Greater Crested Tern has a widespread distribution range, estimated at 1–10 million square kilometres (0.4–3.8 million square miles). The population has not been quantified, but it is not believed to approach the thresholds for either the size criterion (fewer than 10,000 mature individuals) or the population decline criterion (declining more than 30% in ten years or three generations) of the IUCN Red List. For these reasons, the species is evaluated as being of Least Concern at the global level.[1] However, there are concerns for populations in some areas such as the Gulf of Thailand where the species no longer breeds, and in Indonesia where egg harvesting has caused declines.[9]

All subspecies except *T. b. cristata* are covered under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA).[38] Parties to the Agreement are required to engage in a wide range of conservation strategies described in a detailed action plan. The plan is intended to address key issues such as species and habitat conservation, management of human activities, research, education, and implementation.[39]

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<sup>a</sup> Gill, F; Donsker D (eds). "IOC World Bird Names (v 2.11)". International Ornithologists' Union. <http://www.worldbirdnames.org/n-shorebirds.html>. Retrieved 28 February 2012

<sup>a</sup> Snow & Perrin (1998) 764

<sup>a</sup> Adapted from Bridge et al. (2005). This study did not include the Chinese Crested Tern

<sup>a</sup> This genus had originally been created by Heinrich Boie in 1822, but had been abandoned until the Bridge (2005) study confirmed the need for a separate genus for the crested terns.

<sup>a b</sup> Bridge, Eli S.; Jones, Andrew W. & Baker, Allan J. (2005). "A phylogenetic framework for the terns (Sternini) inferred from mtDNA sequences: implications for taxonomy and plumage evolution" (PDF). *Molecular Phylogenetics and Evolution* 35 (2): 459–469. doi:10.1016/j.ympev.2004.12.010. PMID 15804415. <http://www.cmnh.org/site/Files/Ornithology/MPETerns.pdf>.

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<sup>a b</sup> Higgins & Davies (1996) 605–609

<sup>a b c d e f g h</sup> Del Hoyo et al. (1996) 648

<sup>a</sup> Parentheses indicate originally described under a different name

<sup>a b c</sup> Harrison (1988) 383

<sup>a b c d e f g</sup> Olsen & Larsson (1995) 35–42

^ a b c d e f g h i j k Cooper (2006) 760â ^764  
 ^ Not considered by Olsen & Larsson (1995)  
 ^ a b c d e f Snow & Perrin (1998) 770â ^771  
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#### [edit] External links

The England national rugby union team represents England in rugby union. They compete in the annual Six Nations Championship with France, Ireland, Scotland, Italy, and Wales. They have won this championship on 26 occasions, 12 times winning the Grand Slam, making them the most successful team in the tournament's history. They are ranked fifth in the world by the International Rugby Board as of 26 November 2012. England won the Rugby World Cup in 2003 and finished runners-up in 1991 and 2007. A recent highlight for the national team has been a monumental 38â ^21 victory over the world champion All Blacks in the 2012 Autumn Tests.

The history of the team extends back to 1871 when the English rugby team played their first official Test match, losing to Scotland by one try. England dominated the early Home Nations Championship (now the Six Nations) which started in 1883. Following the schism of rugby football in 1895, England did not win the Championship again until 1910. England first played against New Zealand in 1905, South Africa in 1906, and Australia in 1909. England was one of the teams invited to take part in the inaugural Rugby World Cup in 1987 and went on to appear in the final in the second cup in 1991, losing 12â ^6 to Australia. Following their 2003 Six Nations Grand Slam, England won that year's World Cup â ^beating Australia 20â ^17 in extra time. They also contested the final in 2007, losing 15â ^6 to South Africa.

England players traditionally wear a white shirt with a Rose embroidered on the chest, white shorts, and navy blue socks with a white trim.

Their home ground is Twickenham Stadium where they first played in 1910. The

team is administered by the Rugby Football Union (RFU). Four former players have been inducted into the International Rugby Hall of Fame; one of these is also a member of the IRB Hall of Fame. Four other former players are members of the IRB Hallâ ~two for their accomplishments as players, and two for their achievements in other roles in the sport.

#### [edit] History

The expansion of rugby in the first half of the 19th century was driven by ex-pupils from many of England's Public Schools, especially Rugby, who, upon finishing school, took the game with them to universities, to London, and to the counties.[4] England's first international match was against Scotland on Monday 27 March 1871.[5] Not only was this match England's first, but it also proved to be the first ever rugby union international.[5] Scotland won the match by a goal and a try to a try,[6][7] in front of a crowd of 4,000 people at Raeburn Place, Edinburgh.[8] A subsequent international took place at the Oval in London on 5 February 1872 which saw England defeat Scotland by a goal, a drop goal and two tries to one drop goal.[7][9][10] In those early days there was no points system, it was only after 1890 that a format allowing the introduction of a points system was provided.[7] Up until 1875 international rugby matches were decided by the number of goals scored (conversions and dropped goals), but from 1876 the number of tries scored could be used to decide a match if teams were level on goals.[11]

In 1875, England played their first game against the Irish at the Oval, winning by one goal, one drop goal and one try to nil;[7] the match was Ireland's first ever Test.[12][13] England defeated Scotland in 1880 to become the first winners of the Calcutta Cup.[14][15] Their first match against Wales was played on 19 February 1881 at Richardson's Field in Blackheath.[15][16] England recorded their largest victory, defeating the Welsh by seven goals, six tries, and one drop goal to nil[7] and scoring 13 tries in the process.[16] The subsequent meeting the following year at St Helens in Swansea was a closer contest; with England winning by two goals and four tries to nil[7][17] Two years later, the first Home Nations championship was held and England emerged as the inaugural winners.[18] In 1889, England played their first match against a non-home nations team when they defeated the New Zealand Natives by one goal and four tries to nil[7] at Rectory Field in Blackheath.[19][20] In 1890 England shared the Home Nations trophy with Scotland.[21]

England first played New Zealand (the All Blacks) in 1905. The All Blacks scored five tries, worth three points at this time, to win 15â ^0.[22] The following year, they played France for the first time, and later that year they first faced South Africa (known as the Springboks); James Peters was withdrawn from the England squad after the South Africans objected to playing against a black player. The match was drawn 3â ^3.[23] England first played France in 1905, and Australia (known as the Wallabies) in 1909 when they were defeated 3â ^9.[24]

The year 1909 saw the opening of Twickenham as the RFU's new home, which heralded a golden era for English rugby union. England's first international at Twickenham brought them victory over Wales, and England went on to win the International Championship (then known as the Five Nations) for the first time since the great schism of 1895. Although England did not retain the title in 1911, they did share it in 1912. A Five Nations Grand Slam was then achieved in 1913 and 1914 as well as in 1921 following the First World War. England subsequently won the Grand Slam in 1924 and as well as in 1925.[25] This was despite having started 1925 with a loss to the All Black Invincibles in front of 60,000 fans at Twickenham.[26]

After winning another Grand Slam in 1928, England played the Springboks in front of 70,000 spectators at Twickenham in 1931. Following the ejection of France due to professionalism in 1930, which thus reverted The Five Nations back to the Home Nations tournament,[27] England went on to win the 1934 and 1937 Home Nations with a Triple Crown,[28] and in 1935 achieved their first victory over the All Blacks.[29][30]

When the Five Nations resumed with the re-admission of France in 1947 after the Second World War, England shared the championship with Wales. The early



Five Nations competitions of the 1950s were unsuccessful for England, winning one match in the 1950 and 1951 championships.[25] England won the 1953 Five Nations, and followed this up with a Grand Slam in 1957, and win in 1958. England broke France's four-championship streak by winning the 1963 Championship.[25] After this victory, England played three Tests in the Southern Hemisphere and lost all three: 21â ^11 and 9â ^6 against the All Blacks, and 18â ^9 against Australia.[31] England did not win a single match in 1966, and managed only a draw with Ireland. They did not win another Championship that decade.

Don White was appointed as England's first-ever coach in 1969. According to former Northampton player Bob Taylor, "Don was chosen because he was the most forward-thinking coach in England".[32] His first match in charge was an 11â ^8 victory over South Africa at Twickenham in 1969. Of the eleven games England played with White in charge they won three, and drew one and lost seven. He resigned as England coach in 1971.

England had wins against Southern Hemisphere teams in the 1970s; with victories over South Africa in 1972, New Zealand in 1973 and Australia in 1973 and 1976. The 1972 Five Nations Championship was not completed due to the Troubles in Northern Ireland when Scotland and Wales refused to play their Five Nations away fixtures in Ireland. England played in Dublin in 1973 and were given a standing ovation lasting five minutes. After losing 18â ^9 at Lansdowne Road, the England captain, John Pullin famously stated, "We might not be very good but at least we turned up." [33]

England started the following decade with a Grand Slam victory in the 1980 Five Nations â ^ their first for 23 years.[34] However in the 1983 Five Nations Championship, England failed to win a game and picked up the wooden spoon.[35] In the first Rugby World Cup in New Zealand and Australia, England were grouped in pool A alongside Australia, Japan and the United States. England lost their first game 19â ^6 against Australia. They went on to defeat Japan and the United States, and met Wales in their quarter-final, losing the match 16â ^3.[36]

In 1989, England won matches against Romania and Fiji, followed by victories in their first three Five Nations games of 1990. They lost to Scotland in their last game however, giving Scotland a Grand Slam. England recovered in the following year by winning their first Grand Slam since 1980. England hosted the 1991 World Cup and were in pool A, along with the All Blacks, Italy and the United States. Although they lost to the All Blacks in pool play, they qualified for a quarter-final going on to defeat France 19â ^10. England then defeated Scotland 9â ^6 to secure a place in the final against Australia which they lost 12â ^6.[37]

The next year, England completed another Grand Slam and did not lose that year, including a victory over the Springboks. In the lead up to the 1995 World Cup in South Africa, England completed another Grand Slam â ^ their third in five years. In the World Cup, England defeated Argentina, Italy and Samoa in pool play and then defeated Australia 25â ^22 in their quarter-final. England's semi-final was dominated by the All Blacks and featured four tries, now worth five points each, by Jonah Lomu; England lost 45â ^29.[38] They then lost the third/fourth place play-off match against France.[39]

In 1997, Clive Woodward became England's coach. That year, England drew with New Zealand at Twickenham after being heavily defeated in Manchester the week before. England toured Australia, New Zealand and South Africa in 1998. Many of the England team made themselves unavailable for the tour nicknamed the "tour from hell" where England suffered a record 76â ^0 defeat to the Wallabies.[40] In 1999 during the last ever Five Nations match, Scott Gibbs sliced through six English tackles to score in the last minute, and the last ever Five Nations title went to Scotland.

England commenced the new decade by winning the inaugural Six Nations title.[41] In 2001, Ireland defeated England 20â ^14 in a postponed match at Lansdowne Road to deny them a Grand Slam.[42] Although the 2002 Six Nations Championship title was won by France, England had the consolation of winning the Triple Crown.[43] In 2002, England defeated Argentina in Buenos Aires, and

then a second string All Blacks,[44] Australia, and South Africa at Twickenham.[45][46][47][48] In 2003, England won the Grand Slam for the first time since 1995, followed by wins over Australia and the All Blacks on their Summer tour in June.

Going into the 2003 World Cup, England were one of the tournament favourites.[49] They reached the final on 22 November 2003 against Australia and became World champions after a match-winning drop goal by Jonny Wilkinson in extra time that made the final score 20â ^17. On 8 December, the English team greeted 750,000 supporters on their victory parade through London before meeting Queen Elizabeth II at Buckingham Palace.[50]

In the 2004 Six Nations Championship, England lost to both France and Ireland and finished third.[51] Sir Clive Woodward resigned on 2 September and Andy Robinson was appointed England head coach.[52] Robinson's first Six Nations campaign in 2005 resulted in fourth place for England,[53] and although they then defeated Australia 26â ^16,[54] the year was completed with a 23â ^19 loss to the All Blacks.[55]

Following their loss to South Africa in the 2006 end of year Tests,[56] England had lost eight of their last nine Tests â ^ their worst ever losing streak. Coach Andy Robinson resigned after this run, and attack coach Brian Ashton was appointed head coach in December 2006.[57] England started the 2007 Six Nations Championship with a Calcutta Cup victory over Scotland.[58] The championship also included a historic match at Croke Park against Ireland which England lost 43â ^13, their heaviest ever defeat to Ireland.[59]

In the 2007 World Cup England played in Pool A with Samoa, Tonga, South Africa and the United States. They qualified for the quarter finals after losing embarrassingly to South Africa 36â ^0 where they defeated Australia 12â ^10, and then faced hosts France in their semi final. England won 14â ^9 to qualify for the final against South Africa, which they lost 15â ^6. England followed up the World Cup with two consecutive 2nd place finishes in the Six Nations, behind Wales and Ireland respectively. The 2009 Six Nations also saw Martin Johnson take up the job of Head Coach. Johnson resigned in November 2011 following a miserable World Cup which ended in quarter-final defeat by France and featured a series of on and off-field controversies.

[edit] Twickenham

Up until 1910, the English rugby team used various stadia in a number of venues around England before settling at Twickenham Stadium. After sell-out matches at Crystal Palace in 1905 and 1906 against New Zealand and South Africa respectively, the Rugby Football Union (RFU) decided to invest in their own ground. In 1906, the RFU arranged for William Williams to find a home ground for English Rugby. The land for the ground was purchased the following year for Â£5,572 12s and 6d, and construction began the following year.[60]

The first England match was held on 9 October 1910 between England and Wales. England ran out winners, 11â ^6, beating Wales for the first time since 1898.[61] The stadium was expanded in 1927 and again in 1932. Further upgrades did not happen until the 1990s when new North, East and West stands were built.[60] A new South stand was built in 2005 and 2006 to make the stadium into a complete bowl. The first match to be played at the redeveloped Twickenham was on Sunday 5 November 2006 against the All Blacks.[62] England lost the match 20â ^41 in front of a record crowd of 82,076.[63]

Although England have played home matches almost exclusively at Twickenham since 1910, they have played at Huddersfield's Galpharm Stadium twice in 1998, at Old Trafford against New Zealand in 1997 and at Wembley Stadium against Canada in 1992.[64][65] In addition, they also played the first of a two-test series against Argentina at Old Trafford in June 2009, a match originally scheduled to be held in Argentina but moved by the country's national federation for financial reasons.[66]

[edit] Swing Low, Sweet Chariot

Swing Low, Sweet Chariot is very commonly sung at England fixtures â ^ especially at Twickenham. The song arrived in the rugby canon through the Welsh male voice choirs who sang many spirituals. It was a popular rugby song at

clubs during the 1950s and 1960s and was sung every year at Twickenham during the end-of-season all-day Middlesex Sevens tournament accompanied by risqué hand gestures that played on the double entendres of some of the words. During the 1970s the Twickenham crowd also sang it during England matches then coming into the last match of the 1988 season, against the Irish, England had lost 15 of their previous 23 matches in the Five Nations Championship. The Twickenham crowd had only seen one solitary England try in the previous two years and at half time against Ireland they were 0-3 down. During the second half a remarkable transformation took place and England started playing an expansive game many had doubted they were capable of producing. A 0-3 deficit was turned into a 35-3 win, with England scoring six tries.

In the 35-3 win, three of England's tries were scored by Chris Oti, a player who had made a reputation for himself that season as a speedster on the left wing. A group of boys from the Benedictine school Douai following a tradition at their school games sang the song on his final try, and other spectators around the ground joined in.[67][68] Since then Swing Low, Sweet Chariot became a song to sing at England home games,[69] in the same way that The Fields of Athenry is sung in Dublin and Cwm Rhondda is sung at Cardiff. It has since become the anthem of the team as in 1991 the result of a plan of the then RFU marketing director Mike Coley for the team to launch a song leading up to that year's Rugby World cup. He had wanted to use Jerusalem but it was used in the Rugby League cup final that year so the song was changed at short notice to Swing Low. there were a number of versions recorded including a 'rap' version with Jerry Guscott doing a solo. Needless to say that was never released but the version released did reach the top 40 in the UK singles chart during the competition and was then adopted as the England rugby song.[70]

England have returned to the traditional all-white shirts, white shorts with navy and white socks. The emblem on the shirts is a red rose, rather than the Plantagenet Three Lions displayed on the shirts of the England football and cricket teams. The strip is manufactured by Canterbury and O2 is the shirt sponsor.[71] Red was the change strip, although prior to the introduction of the red strip, navy blue was used. Purple was used as the change strip as of the 2009 autumn internationals, reflecting the traditional colour of the original England track-suits from the 1960s, 70s and 80s. For the 2011 Rugby World Cup the change kit was black.

The Rugby Football Union (RFU) had created the national side's emblem prior to an English team being sent to Edinburgh to play a Scottish side. A red rose was chosen to be the side's emblem.[72] The white kit worn by the national team was taken from the kit used at Rugby School.[72] Alfred Wright, an employee of the Rugby Football Union, is credited with the standardisation and new design of the rose, which up until 1920 had undergone many variations in its depiction.[72] The Wright design is thought to have been used without minor alteration until the late 1990s.[72] It was not until 1997 that the rose was modernised when Nike became the official strip supplier.

In 2003 England first used a skin-tight strip. This was intended to make it more difficult for the opposition to grasp the shirt when tackling.[73] The home and away strips for 2007 were unveiled on 15 May that year. The materials used are superior, offering improved performance to the 2003 kit. However, a sweeping red mark on the base-white front which forms St George's Cross on the top left, and a changed away-strip (dark blue to red), have received criticism because it is felt that emphasis has been placed on St George's Cross at the expense of the traditional red rose.[74] The new strip was introduced in England's home game against Wales on 4 August, while the alternative strip was first used against France on 18 August.[75]

The former England home strip is white with a strip of red around the neck, and the away strip is black (causing much controversy due to the famous All-Black kit of New Zealand), both kits have a ground breaking new technology in the form of a gripper print. A special strip was worn during the match versus Wales in the 2010 Six Nations Championship which replicated that worn in 1910 to celebrate the 100 year anniversary of Twickenham. The current England

strip is made by Canterbury which features a plain white strip with a purple and gold away strip identical to the former Arsenal football club's away kit.

[edit] Record

[edit] Six Nations

England competes annually in the Six Nations Championship, which is played against five other European nations: France, Ireland, Italy, Scotland, and Wales. The Six Nations started out as the Home Nations Championship in 1883 which England won with a Triple Crown. England have won the title more times than any other nation by winning it outright 26 times, and sharing victory ten times. Their longest wait between championships was 18 years (1892â ^1910). During the Six Nations, England also contests the Calcutta Cup with Scotland (which England first won in 1880) and the Millennium Trophy with Ireland (which England first won in 1988). The matches between England and France are traditionally known as "Le Crunch." In the 2010 championship, England began with a 30â ^17 victory over Wales on 6 February. England wore replicas of their shirts worn in 1910 to commemorate 100 years of rugby at Twickenham.

[edit] World Cup

England has contested every Rugby World Cup since it began in 1987, reaching the final three times and winning it once in 2003.

In the inaugural tournament they finished second in their pool before losing to Wales in the quarter-finals. They again finished pool runners-up in 1991 but recovered to beat France in their quarter-final, and then Scotland in their semi-final, en route to a 12â ^6 final defeat to Australia.

In 1995 England topped their group and defeated Australia 25â ^22 at the quarter-final stage before being beaten by the All Blacks in the semi-final. Their third-fourth place play-off match against France was lost 19â ^9.

The 1999 competition saw England again finish second in the group stage. Though they proceeded to win a play-off game against Fiji, they went out of the tournament in the quarter-finals, losing 44â ^21 to South Africa.

England exacted revenge over South Africa in the early stages of the 2003 tournament, winning 25â ^6 to qualify for the knockout stages as winners of Pool C. They defeated Wales in their quarter-final, before a subsequent semi-final victory against the French earned them a place in the final in Sydney. After a tense match and a 20-minute period of extra time, Jonny Wilkinson kicked over a drop goal and England thereby triumphed 20â ^17 over Australia to lift the Webb Ellis Cup.

The 2007 defence of the cup in France got off to a very poor start, with a below par victory over the United States and a heavy 36â ^0 defeat to South Africa leaving the holders on the brink of elimination at the group stage. Improved performances against Samoa and Tonga saw England again reach the knockout stages as pool runners-up, before a surprise 12â ^10 defeat of Australia in Marseille and a narrow 14â ^9 victory over the host nation France carried England to a second successive final appearance. The final was played in Paris on 20 October against South Africa, who won by 15 points to 6.

England's Jonny Wilkinson became the highest overall points scorer in World Cup history when he kicked all 12 points in England's quarter-final victory over Australia in 2007. He kicked a further 9 points (including a 40-yard (40Â m) drop goal) in the semi final and 6 in the final defeat to South Africa.[77] England has the fourth most points in World Cup history with (1,246), and the fourth highest number of tries scored with (131).[78]

[edit] World Cup

Correct as of 8 October 2011

[edit] Overall

England has won 356 of their 668 Test matches, a winning record of 54.10%.[79] When the World Rankings were introduced in October 2003, England was ranked first. They briefly fell to second in September that year before regaining first place. They fell to second, and then to third in June 2004. After the 2005 Six Nations they fell to sixth where they remained until they moved into fifth in December that year. In 2006, their ranking again fell and they finished the year ranked seventh. 2007 saw them bounce back to third after

their good run in that year's World Cup when they finished second. In 2008 their rankings slipped so that during the 2009 Six Nations Championship they dropped to their lowest ranking of eighth. They again were eighth during the autumn internationals of the same year. After a resurgence which saw them rise to a ranking of fourth in the world, the team again slipped, following a poor showing at the Rugby World Cup 2011, and was ranked sixth on 27 February 2012. Following a remarkable 24â ^22 Six Nations win against France in Paris on 11 March 2012, the team is again ranked fourth in the world as of 12 March 2012.[76]

Their Test record against all nations, updated 10 February 2013:[79][80][81]

[edit] Players

[edit] Current squad

England's 33-man Elite Player Squad for 2013 Six Nations.[82]

Caps updated after the game vs Ireland February 2013. (10 February 2013)

Note: Flags indicate national union for the club/province as defined by the International Rugby Board.

[edit] Notable players

Four former England representatives have been inducted into the International Rugby Hall of Fame: Bill Beaumont, Martin Johnson, Jason Leonard and Wavell Wakefield.[83][84]

Five former England internationals are also members of the IRB Hall of Fame. Three of themâ ~Johnson,[85]Alan Rotherham and Harry Vassall[86]â ~were inducted for their accomplishments as players. Two other former England players, John Kendall-Carpenter and Clive Woodward, were inducted into the IRB Hall for non-playing accomplishments in the sport.[85]

Wavell Wakefield represented England in 31 Tests between 1920 and 1927, including 13 Tests as captain. He was involved in three Five Nations Grand Slams in 1921, 1923 and 1924. Playing as flanker, Wakefield introduced new elements to back row tactics which beforehand concentrated on the set piece. He became a Member of Parliament in 1935, and was knighted in 1944. He became the RFU President in 1950 and following his retirement from politics was awarded the title the first Baron Wakefield of Kendal.[87]

Between 1975 and 1982, Bill Beaumont represented England in 34 Tests. Playing at lock, he was captain between 1978 and 1982 in 21 Tests including the 1980 Grand Slam â ^ England's first since 1957. Later that year, he captained the British Lions to South Africa â ^ the first time an Englishman had captained the Lions since 1930. Furthermore, Beaumont represented the Barbarians FC on fifteen occasions.[88]

The youngest ever England captain at 22, Will Carling represented England in 72 Tests, and as captain 59 times between 1988 and 1996. He was best known as a superlative leader, motivating England to a remarkable three Grand Slams in five years, including back to back slams in 1991 and 1992. He also led England to the final of the 1991 World Cup, and captained the Barbarians FC. His playing talents were not as flashy as some of his colleagues, but his effectiveness cemented him as a first choice at centre on the selection sheet. On merit alone it is quite possible he would already be in the Hall of Fame were it not for some outspoken tendencies of his with respect to the English RFU committee ("Old Farts"), who may as a result be reluctant to acknowledge his achievements. He was made an OBE in 1991.

Described as arguably "the greatest forward" to play for England,[89]Martin Johnson played 84 Tests for England, and eight Tests for the British and Irish Lions.[90] He first represented England in 1993, and later that year the Lions. He captained the Lions to South Africa in 1997, and in 1999 was appointed captain of England. He became England's most successful ever captain. He became the first player to captain two Lions tours when he captained them in Australia in 2001.[91] He retired from Test rugby after he led England to a Six Nations Grand Slam and World Cup victory in 2003 and has since become the team Manager.[89] At the 2011 IRB Awards ceremony in Auckland on 24 October 2011, the night after the World Cup Final, Johnson was inducted into the IRB Hall of Fame alongside all other World Cup-winning captains from 1987 through 2007

(minus the previously inducted Australian John Eales).[85]

Jason Leonard, also known as "The Fun Bus", [92] appeared 114 times for England at prop, which was the world record for international appearances for a national team until 2005, when it was surpassed by Australia's scrum-half George Gregan.[93] He was on the England team that finished runners up to Australia in the 1991 Rugby World Cup final, but avenged this twelve years later, coming on as a substitute for Phil Vickery in England's victorious 2003 Rugby World Cup final appearance. He also went on three British and Irish Lions tours where he was capped five times.[93]

Alan Rotherham and Harry Vassall, both 19th-century greats for Oxford and England, were inducted into the IRB Hall in April 2011. The IRB recognised them for "their unique contribution to the way that Rugby was played", specifically stating that they "are credited with pioneering the passing game and the three-man backline, which became widespread during the 1880s." [86]

Two other England internationals, John Kendall-Carpenter and Clive Woodward, were inducted into the IRB Hall alongside Johnson at the 2011 IRB Awards. Although both had notable careers for England, they were recognised for accomplishments in other roles in the sport. Kendall-Carpenter was cited as one of four key figures in the creation of the Rugby World Cup, whilst Woodward was inducted as coach of the 2003 World Cup winners, alongside all other World Cup-winning coaches from 1987 to 2007.[85]

[edit] Individual records

Jonny Wilkinson holds the record for most points for England: 1,151.[94] Wilkinson is also the most capped back with 91 caps. The record for tries is held by Rory Underwood with 49 tries. The most capped England player is former prop Jason Leonard who made 114 appearances over his 14-year career.[95] England's youngest ever Test player was Colin Laird who was 18 years and 134 days old when he played against Wales in 1927.[96]

[edit] Training

Pennyhill Park Hotel is the chosen training base for the team until the finish of the 2011â ^12 season. Loughborough University, Bisham Abbey and the University of Bath grounds served as training bases prior to this agreement. Martin Johnson noted the hotel's facilities and its proximity to Twickenham and Heathrow as deciding factors in this decision.[97] The team had their own pitchside gym and fitness rooms constructed on the hotel premises at the start of the long-term arrangement. Since its completion in 2010 the team also regularly use Surrey Sports Park at the University of Surrey in nearby Guildford for much of their training.[98]

[edit] Club versus country

Although the England team is governed by the Rugby Football Union (RFU), players have been contracted to their clubs since the advent of professionalism in late 1995. Since then, players have often been caught in a "power struggle" between their clubs and the RFU; this is commonly referred to as a club versus country conflict.[99] The first major conflict between England's top clubs (who play in the English Premiership) and the RFU occurred in 1998, when some of the clubs refused to release players to tour Australia, New Zealand and South Africa.[100] The tour became known as the "Tour from hell" after an England squad of second-string players were defeated in all four Tests, including a 76â ^0 defeat by Australia.[101] The clubs also withdrew from the 1998/99 European Cup (now called the Heineken Cup).[102]

In 2001, the top clubs and the RFU formed England Rugby to help govern the club and international game. The parties agreed to restrict the number of matches at club and international level that elite players (a group of 50 or 60 players selected by the RFU) could play in order to prevent player burnout and injuries.[103] In return for releasing players from club commitments, the clubs were to receive compensation from the RFU. This agreement was considered central to the England victory in the 2003 World Cup. Sir Clive Woodward, England coach from November 1997, resigned in 2004 because he was unable to get the access to the players that he wanted; "I wanted more from the union â ^ more training days with the players, more influence over the way they were treated â ^

and ended up with less." [104] Andy Robinson, Woodward's successor, blamed the lack of control over players for his team's unsuccessful record. [105] Brian Ashton, who took over from Robinson, intentionally named his playing squad for Six Nations matches in 2007 at an early opportunity in the hope that their clubs would not play them in the weekend prior to a Test. [106] The RFU and the Premiership clubs are negotiating a similar deal to the one in 2001 that will enable international players to be released into the England squad prior to international matches. [107]

[edit] Coaches

The following is a list of all England coaches. The first appointed coach was Don White in 1969. The current England Manager is Stuart Lancaster. [108] He succeeded Martin Johnson, who stepped down on 16 November 2011 after a disappointing World Cup campaign that also featured several off-field controversies. [109] Lancaster, as England Manager, is responsible for the coaching appointments. The coaching team currently includes offensive coaches, defensive coaches, kicking coaches, scrumming, tackling etc. [110] [111]

(French player Pierre Villepreux was coaching the team during a brief part of 1989, for a training camp in Portugal)

Updated 1 December 2012

Name

Tenure

Tests

Won

Drew

Lost

Win percentage

Don White [32]

20 December 1969 – 17 April 1971

700111000000000000011

700030000000000000003

700010000000000000001

700070000000000000007

700127300000000000027.3

John Elders

1972 – 16 March 1974

700116000000000000016

700060000000000000006

700010000000000000001

700090000000000000009

700137500000000000037.5

John Burgess

18 January 1975 – 31 May 1975

700060000000000000006

700010000000000000001

500000000000000000000

700050000000000000005

700116700000000000016.7

Peter Colston

3 January 1976 – 17 March 1979

700118000000000000018

700060000000000000006

700010000000000000001

700111000000000000011

700133300999990000033.3

Mike Davis

24 November 1979 – 6 March 1982

700116000000000000016

700110000000000000010

700020000000000000002

700040000000000000004

7001625000000000000062.5  
Dick Greenwood  
15 January 1983 â ^ 20 April 1985  
7001170000000000000017  
700040000000000000004  
700020000000000000002  
7001110000000000000011  
7001235000000000000023.5  
Martin Green  
1 June 1985 â ^ 8 June 1987  
7001140000000000000014  
700050000000000000005  
500000000000000000000  
700090000000000000009  
7001357000000000000035.7  
Geoff Cooke  
16 January 1988 â ^ 19 March 1994  
7001500000000000000050  
7001360000000000000036  
700010000000000000001  
7001130000000000000013  
7001720000000000000072.0  
Jack Rowell  
4 June 1994 â ^ 12 July 1997  
7001290000000000000029  
7001210000000000000021  
500000000000000000000  
700080000000000000008  
7001724000000000000072.4  
Sir Clive Woodward  
15 November 1997 â ^ 2 September 2004[112]  
7001830000000000000083  
7001590000000000000059  
700020000000000000002  
7001220000000000000022  
7001711009999900000071.1  
Andy Robinson  
15 October 2004 â ^ 29 November 2006[113][114]  
7001220000000000000022  
700090000000000000009  
500000000000000000000  
7001130000000000000013  
7001409000000000000040.9  
Brian Ashton  
20 December 2006 â ^ 1 June 2008[115]  
7001220000000000000022  
7001120000000000000012  
500000000000000000000  
7001100000000000000010  
7001545000000000000054.5  
Rob Andrew[116]  
1 June 2008 â ^ 30 June 2008[117]  
700020000000000000002  
500000000000000000000  
500000000000000000000  
700020000000000000002  
&05000000000000000000.0  
Martin Johnson  
1 July 2008[117] â ^ 16 November 2011  
7001380000000000000038



7001210000000000000021  
7000100000000000000001  
7001160000000000000016  
7001553000000000000055.3

Stuart Lancaster

8 December 2011 â ^ present

7001140000000000000014  
7000800000000000000008  
7000100000000000000001  
7000500000000000000005  
7001571000000000000057.1

[edit] Media coverage

In England matches are shown either on Sky Sports (non-competition international tests) or the terrestrial channels BBC (Six Nations) or ITV (World Cup). In Australia the England national rugby union team home games are currently broadcast on Setanta Sports Australia.

In one of the scenes of the feature film, *Invictus*, England (credited as the "England Rose's" [sic]) can be seen playing South Africa in run up to the 1995 Rugby World Cup.

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[edit] External links

[edit] Titles

Katharine Hepburn

Studio publicity photograph, ca.Â 1941

Born

Katharine Houghton Hepburn(1907-05-12)May 12, 1907Hartford, Connecticut, U.S.

Died

June 29, 2003(2003-06-29) (agedÂ 96)Fenwick, Connecticut, U.S.

Alma mater

Bryn Mawr College

Occupation

Actress

Years active

1928â ^1994

Spouse(s)

Ludlow Ogden Smith (1928â ^1934)

Partner(s)

Spencer Tracy (1941â ^1967, his death)

Parents

Katharine Martha Houghton Hepburn

Thomas Norval Hepburn

Awards

4 Academy Awards, 2 BAFTAs, 1 Emmy (full list)

Katharine Houghton Hepburn (May 12, 1907 â ^ June 29, 2003) was an American actress of film, stage, and television. Known for her headstrong independence and spirited personality, Hepburn's career as a Hollywood leading lady spanned more than 60 years. Her work came in a range of genres, from screwball comedy to literary drama, and she received four Academy Awards for Best Actressâ ~a record for any performer. Hepburn's characters were often strong, sophisticated women with a hidden vulnerability.

Raised in Connecticut by wealthy, progressive parents, Hepburn began to act while studying at Bryn Mawr College. After four years in the theatre, favorable reviews of her work on Broadway brought her to the attention of Hollywood. Her early years in the film industry were marked with success, including an Academy Award for her third picture, *Morning Glory* (1933), but this was followed by a series of commercial failures. In 1938 she was labeled "box office poison". Hepburn masterminded her own comeback, buying out her contract with RKO Radio Pictures and acquiring the film rights to *The Philadelphia Story*, which she sold on the condition that she be the star. In the 1940s she was contracted to Metro-Goldwyn-Mayer, where her career focused on an alliance with Spencer Tracy. The screen-partnership spanned 25 years, and produced nine movies.

Hepburn challenged herself in the latter half of her life, as she regularly appeared in Shakespeare stage productions and tackled a range of literary roles. She found a niche playing middle-aged spinsters, such as in *The African Queen* (1951), a persona the public embraced. Three more Oscars came for her work in *Guess Who's Coming to Dinner* (1967), *The Lion in Winter* (1968), and *On Golden Pond* (1981). In the 1970s she began appearing in television movies, which became the focus of her career in later life. She remained active into old age, making her final screen appearance in 1994 at the age of 87. After a period of inactivity and ill-health, Hepburn died in 2003 at the age of 96.

Hepburn famously shunned the Hollywood publicity machine, and refused to conform to societal expectations of women. She was outspoken, assertive, athletic, and wore trousers before it was fashionable for women to do so. She married once, as a young woman, but thereafter lived independently. A 26-year affair with her co-star Spencer Tracy was hidden from the public. With her unconventional lifestyle and the independent characters she brought to the screen, Hepburn came to epitomize the "modern woman" in 20th-century America and helped change perceptions of women. In 1999, she was named by the American Film Institute as the top female Hollywood legend.[1]

[edit] Early life

Hepburn was born in Hartford, Connecticut, on May 12, 1907, the second of six children. Her parents were Thomas Norval Hepburn (1879â ^1962), a urologist at Hartford Hospital, and Katharine Martha Houghton (1878â ^1951), a feminist campaigner. Both fought for social change in America: Thomas Hepburn helped

establish the New England Social Hygiene Association, which educated the public about venereal disease,[2] while Katharine Martha headed the Connecticut Woman Suffrage Association and later campaigned for birth control with Margaret Sanger.[3] As a child, Hepburn joined her mother on several "Votes For Women" demonstrations.[4] The Hepburn children were raised to exercise freedom of speech and encouraged to think and debate on any topic they wished.[5] Her parents were criticized by the community for their progressive views, which stimulated Hepburn to fight against barriers she encountered.[6][7] Hepburn said she realized from a young age that she was the product of "two very remarkable parents",[8] and credited her "enormously lucky" upbringing with providing the foundation for her success.[9][10] She remained close to her family throughout her life.[11]

The young Hepburn was a tomboy who liked to call herself Jimmy and cut her hair short like a boy's.[12] Thomas Hepburn was eager for his children to use their minds and bodies to the limit, and taught them to swim, run, dive, ride, wrestle, and play golf and tennis.[13] Golf became a passion for his oldest daughter: she took daily lessons and became very good, reaching the semi-final of the Connecticut Young Women's Golf Championship.[14] She loved swimming in Long Island Sound, and took ice-cold baths every morning in the belief that "the bitterer the medicine, the better it was for you." [15] Hepburn was a fan of movies from a young age, and went to see one every Saturday night.[16] With her friends and siblings, she would put on plays and perform to her neighbors for 50 cents a ticket to raise money for the Navajo people.[17]

On April 3, 1921, while visiting friends in Greenwich Village, Hepburn discovered the body of her older brother Tom, whom she adored,[18] dead from an apparent suicide. He had tied a sheet around a beam and hanged himself.[19] The Hepburn family denied it was suicide and maintained that Tom's death must have been an experiment that had gone wrong.[20] The incident made the teenage Hepburn nervous, moody, and suspicious of people.[21] She shied away from other children, dropped out of Oxford School, and began receiving private tutoring.[22] For many years, she used Tom's birthday (November 8) as her own. It was not until her 1991 autobiography, *Me: Stories of My Life*, that Hepburn revealed her true birth date.[23]

In 1924, Hepburn gained a place at Bryn Mawr College. She attended the institution primarily to satisfy her mother, who had studied there, and recalled disliking the experience.[24] It was the first time she had been in school for several years, and she was self-conscious and uncomfortable with her classmates.[25] She struggled with the scholastic demands of university, and was once suspended for smoking in her room.[26] Hepburn was drawn to acting but roles in college plays were conditional on good grades. Once her marks had improved, she began performing regularly.[26] The lead role in a production of *The Woman in the Moon* in her senior year, and the positive response it received, cemented Hepburn's plans to pursue a theatrical career.[14] She graduated with a degree in history and philosophy in June 1928.[27]

[edit] Career

[edit] Breaking into theatre (1928â ~1932)

Hepburn left Bryn Mawr determined to become an actress.[28] The day after graduating,[29] she traveled to Baltimore to meet Edwin H. Knopf, who ran a successful stock theatre company. Impressed by her eagerness, Knopf cast Hepburn in his current production, *The Czarina*. [30] She received good reviews for her small role; the *Printed Word* described her performance as "arresting". [31] She was given a part in the following week's show, but here Hepburn was less accomplished. She was criticized for her shrill voice, and so left Baltimore to study with an acclaimed voice tutor in New York City.[32]

Knopf decided to produce *The Big Pond* in New York and called for Hepburn to be the understudy to the leading lady. A week before opening, the lead was fired and replaced with Hepburn, which gave her a starring role after only four weeks in the theatre.[33] On opening night, Hepburn turned up late, mixed her lines, tripped over her feet, and spoke too high and fast to be comprehensible.[32] She was promptly fired, and the original leading lady rehired. Undeterred,



Hepburn joined forces with producer Arthur Hopkins, and accepted the role of a schoolgirl in *These Days*. Her Broadway debut came on November 12, 1928, at the Cort Theatre, but reviews for the show were poor and it closed after eight nights.[32] Hopkins promptly hired Hepburn as the lead understudy in Philip Barry's play *Holiday*. In early December, after only two weeks, she quit to marry Ludlow Ogden Smith, her beau from college. She planned to leave the theatre behind, but began to miss the work and quickly resumed the understudy role in *Holiday*, which she held for six months.[34]

In 1929, Hepburn turned down a role with the Theatre Guild to play the lead in *Death Takes a Holiday*. She felt the role was perfect,[35] but again she was fired.[36] Hepburn went back to the Guild and took an understudy role for minimum pay in *A Month in the Country*. In the spring of 1930, Hepburn joined a stock company in Stockbridge, Massachusetts. She left halfway through the summer season, and continued studying with a drama tutor.[37] In early 1931, she was cast in the Broadway production of *Art and Mrs. Bottle*. She was released from the role after the playwright took a dislike to her, saying "She looks a fright, her manner is objectionable, and she has no talent", but then rehired when no other actress could be found.[38] It went on to be a small success.[39]

Hepburn appeared in a number of plays with a summer stock company in Ivoryton, Connecticut, and she proved to be a hit.[38] During the summer of 1931, Philip Barry asked her to appear in his new play, *The Animal Kingdom*, alongside Leslie Howard. They began rehearsals in November, Hepburn feeling sure this was the role to make her a star, but Howard disliked the actress and again she was fired.[40] When she asked Barry why she had been let go, he responded, "Well, to be brutally frank, you weren't very good." [40] This unsettled the self-assured Hepburn, but she continued to look for work.[41] She took a small role in an upcoming play, but as rehearsals began she received an offer to read for the lead role in the Greek fable *The Warrior's Husband*. [42]

*The Warrior's Husband* proved to be Hepburn's break-out performance. Biographer Charles Higham states that the play was ideal for the actress, requiring an aggressive energy and athleticism, and she enthusiastically involved herself with its production.[43] It opened on March 11, 1932, at the Morosco Theatre on Broadway. Hepburn's first entrance called for her to leap down a narrow stairway with a stag over her shoulder, wearing a short silver tunic. The show ran for three months, and Hepburn received positive reviews.[44] Richard Garland of the *New York World-Telegram* wrote, "It's been many a night since so glowing a performance has brightened the Broadway scene." [45]

[edit] Hollywood success (1932â ^1934)

A scout for the Hollywood agent Leland Hayward spotted Hepburn's appearance in *The Warrior's Husband*, and asked her to test for the part of Sydney Fairfield in the upcoming RKO film *A Bill of Divorcement*. Hepburn was unhappy with her test scene, and sent material from *Holiday* instead.[46] Director George Cukor was impressed by what he saw: "There was this odd creature," he recalled, "she was unlike anybody I'd ever heard." He particularly liked the manner in which she picked up a glass: "I thought she was very talented in that action." [47] Offered the role, Hepburn demanded \$1,500 a week, a large amount for an unknown actress.[48] Cukor encouraged the studio to accept her demands[28] and they signed Hepburn to a temporary contract with a three-week guarantee.[49] RKO head David O. Selznick recounted that he took a "tremendous chance" in casting the unusual actress.[50]

Hepburn arrived in California in July 1932, at 25 years old. She starred in *A Bill of Divorcement* opposite John Barrymore, showing no sign of intimidation.[50][51] Although she struggled to adapt to the nature of film acting, Hepburn was fascinated by the industry from the start.[52] The picture was a success and Hepburn received rave reviews.[53] Mordaunt Hall of the *New York Times* called her performance "exceptionally fine ... Miss Hepburn's characterization is one of the finest seen on the screen".[54] The *Variety* review declared, "Standout here is the smash impression made by Katharine Hepburn in her first picture assignment. She has a vital something that sets

her apart from the picture galaxy." [55] On the strength of *A Bill of Divorcement*, RKO signed the actress to a long-term contract. [56] George Cukor became a lifetime friend and colleagueâhe and Hepburn made ten films together. [57]

Hepburn's second film was *Christopher Strong* (1933), the story of an aviatrix and her affair with a married man. The picture was not commercially successful, but Hepburn's own reviews were good. [58] Regina Crewe wrote in the *Journal American* that although her mannerisms were grating, "they compel attention, and they fascinate an audience. She is a distinct, definite, positive personality." [59] Her third picture confirmed Hepburn as a major actress in Hollywood. [60] For playing aspiring actress Eva Lovelace in *Morning Glory*, she won an Academy Award for Best Actress. She had seen the script on the desk of producer Pandro S. Berman and, convinced that she was born to play the part, insisted that the role be hers. [61] Hepburn chose not to attend the awards ceremonyâas she would not for the duration of her careerâbut was thrilled with the win. [62] Her success continued with the role of Jo in the screen adaptation of *Little Women* (1933). The movie was a hit, one of the film industry's biggest successes to date, [50] and Hepburn won the Best Actress prize at the Venice Film Festival. *Little Women* was one of Hepburn's personal favorites and she was proud of her performance, later saying, "I defy anyone to be as good as I was [as Jo]." [60]

By the end of 1933 Hepburn was at the top of her profession, but yearned to prove herself on Broadway. [63] Jed Harris, one of the most successful theatre producers of the 1920s, was going through a career slump. [64] He asked Hepburn to appear in the play *The Lake*, which she agreed to do for a low salary. [65] Before she was given leave, RKO asked that she film *Spitfire* (1934). Hepburn's role in the movie was Trigger Hicks, an uneducated mountain girl. It is widely considered one of her worst films, and Hepburn received poor reviews for the effort. [66] Hepburn kept a picture of Hicks in her bedroom throughout her life to "[keep] me humble." [67]

*The Lake* previewed in Washington, D.C., where there was a large advance sale. [65] Harris's poor direction had eroded Hepburn's confidence, and she struggled with the performance. [68] Despite this, Harris moved the play to New York without further rehearsal. It opened at the Martin Beck Theatre on December 26, 1933, and Hepburn was roundly panned by the critics. [69] Dorothy Parker quipped, "Katharine Hepburn runs the gamut of emotions from A to B." [28] Already tied to a ten-week contract, she had to endure the embarrassment of rapidly declining box office sales. [70] Harris decided to take the show to Chicago, saying to Hepburn, "My dear, the only interest I have in you is the money I can make out of you." Hepburn refused, and paid Harris \$14,000 to close the production instead. [71] She later referred to Harris as "hands-down the most diabolical person I have ever met", [64] and claimed this experience was important in teaching her to take responsibility for her career. [72]

[edit] Career struggles, "box office poison" (1934â1938)

After the failure of *Spitfire* and *The Lake*, RKO cast Hepburn in *The Little Minister* (1934), based on a Victorian novel by James Barrie, in an attempt to repeat the success of *Little Women*. [73] There was no such recurrence, and the picture was a commercial failure. [74] The romantic drama *Break of Hearts* (1935) with Charles Boyer was poorly reviewed and also lost money at the box office. [75] After three forgettable movies, success returned to Hepburn with *Alice Adams* (1935), the story of a girl's desperation to climb the social ladder. Hepburn loved the book and was delighted to be offered the role. [76] The picture was a hit, one of Hepburn's personal favorites, and gave the actress her second Oscar nomination. [77]

Berman allowed Hepburn to select her next feature. [77] She chose George Cukor's new project, *Sylvia Scarlett* (1935), which paired her for the first time with Cary Grant. Her hair was cut short for the part, as her character masquerades as a boy for much of the film. Critics disliked *Sylvia Scarlett* and it was unpopular with the public. [78] For her next film she played Mary Stuart in John Ford's *Mary of Scotland* (1936). It met with a similarly poor

reception.[79] *A Woman Rebels* (1937) followed, a Victorian era drama where Hepburn's character fights against convention. *Quality Street* (1937) also had a period setting, this time a comedy. Neither movie was popular with the public, which meant she had made four unsuccessful pictures in a row.[80]

Alongside a series of unpopular films, problems arose from Hepburn's attitude.[81] She had a difficult relationship with the press, with whom she could be rude and provocative.[82] When asked if she had any children, she snapped back, "Yes I have five: two white and three colored." [83] She would not give interviews and denied requests for autographs,[84] which earned her the nickname "Katharine of Arrogance".[85] The public were also baffled by her boyish behavior and fashion choices, and she became a largely unpopular figure.[82][86] Hepburn sensed that she needed to leave Hollywood,[87] so returned east to star in a theatrical adaptation of *Jane Eyre*. It had a successful tour,[88] but uncertain about the script and unwilling to risk failure after the disaster of *The Lake*, Hepburn decided against taking the show to Broadway.[87] Towards the end of 1936, Hepburn vied for the role of Scarlett O'Hara in *Gone With The Wind*. [89] Producer David O. Selznick refused to offer her the part because he felt she had no sex appeal. He reportedly told Hepburn, "I can't see Rhett Butler chasing you for twelve years." [90]

For her next feature, *Stage Door* (1937) paired Hepburn with Ginger Rogers in a role that mirrored her own life—that of a wealthy society girl trying to make it as an actress.[92] Hepburn was praised for her work at early previews, which gave her top billing over Rogers,[93] and the film was nominated for Best Picture at the Academy Awards. But it was not the box office hit RKO had hoped.[92] Industry pundits blamed Hepburn for the small profit, but the studio continued its commitment to resurrecting her popularity.[94] She was cast in Howard Hawks' screwball comedy *Bringing Up Baby* (1938) alongside Cary Grant. Hepburn played the physical comedy of the film with confidence,[94] and took tips on comedic timing from her co-star Walter Catlett.[95] *Bringing Up Baby* was acclaimed by critics, but it was nevertheless unsuccessful at the box office.[96] With the genre and Grant both hugely popular at the time, biographer A. Scott Berg believes the blame lay with moviegoers' rejection of Hepburn.[97]

*Bringing Up Baby* was the last picture Hepburn did at RKO. After its release, the Independent Theatre Owners of America included Hepburn on a list of actors considered "Box Office Poison".[97] The next film RKO offered her was *Mother Carey's Chickens*, a B movie with poor prospects.[97] Hepburn turned it down, and instead opted to buy herself out of her contract for \$75,000.[98] Many actors were afraid to leave the stability of the studio system at the time, but Hepburn's personal wealth meant she could afford to be independent.[99] She signed on for the film version of *Holiday* (1938) with Columbia Pictures, pairing her for the third time with Grant. The comedy was well received by critics, but it failed to draw much of an audience,[100] and the next script offered to Hepburn came with a salary of \$10,000—less than she had received at the start of her film career.[101] Reflecting on this change in fortunes, Andrew Britton writes of Hepburn, "No other star has emerged with greater rapidity or with more ecstatic acclaim. No other star, either, has become so unpopular so quickly for so long a time." [102]

[edit] Revival (1939–1942)

Following this decline in her career, Hepburn took action to create her own comeback vehicle. She left Hollywood to look for a stage project, and signed on to star in Philip Barry's new play, *The Philadelphia Story*. It was tailored to showcase the actress, with the character of socialite Tracy Lord incorporating a mixture of humor, aggression, nervousness, and vulnerability.[103] Howard Hughes, Hepburn's beau at the time, sensed that the play could be her ticket back to Hollywood stardom and bought her the film rights before it even debuted on stage.[104] The pair also contributed a quarter of the play's production costs.[105] *The Philadelphia Story* first toured the United States, to positive reviews, and then opened in New York at the Schubert Theatre on March 29, 1939.[106] It was a big hit, critically and financially, running for 417

performances and then going on a second successful tour.[28]

Several of the major film studios approached Hepburn to produce the movie version of Barry's play.[107] She chose to sell the rights to Metro-Goldwyn-Mayer (MGM), Hollywood's number one studio,[108] on the condition that she be the star. As part of the deal she also received the director of her choice, George Cukor, but the co-stars she wanted, Clark Gable and Spencer Tracy, were both unavailable. Louis B. Mayer promised her James Stewart and \$150,000 "for anyone else you want or can get." [109] Hepburn chose her friend and previous co-star, Cary Grant, to whom she ceded top billing.[110] Before filming began, Hepburn shrewdly noted, "I don't want to make a grand entrance in this picture. MoviegoersÂ ... think I'm too la-di-da or something. A lot of people want to see me fall flat on my face." Thus the film began with Grant knocking the actress flat on her backside.[111] Berg describes how the character was crafted to have audiences "laugh at her enough that they would ultimately sympathize with her", which Hepburn felt was crucial in "re-creating" her public image.[112] The Philadelphia Story was one of the biggest hits of 1940, breaking records at Radio City Music Hall.[28] The review in Time declared, "Come on back, Katie, all is forgiven." [113] Herb Golden of Variety stated, "It's Katharine Hepburn's pictureÂ ... The perfect conception of all flighty but characterful Main Line socialite gals rolled into one, the story without her is almost inconceivable." [114] Hepburn was nominated for her third Academy Award for Best Actress, and won the New York Film Critics Circle Award for Best Actress.[115][116]

Hepburn was also responsible for the development of her next project, the romantic comedy Woman of the Year. The idea for the film was proposed to her by Garson Kanin in 1941. Hepburn passed the outline onto Joseph L. Mankiewicz at MGM, who expressed an interest in the picture. Kanin recalled how Hepburn contributed to the script: reading it, suggesting cuts and word changes, and generally providing helpful enthusiasm for the project.[117] Hepburn presented the finished product to MGM and demanded \$250,000Â ~half for her, half for the authors, Michael Kanin and Ring Lardner, Jr.[118] Her terms accepted, Hepburn was also given the director and co-star of her choice, George Stevens and Spencer Tracy. Released in 1942, Woman of the Year was another success. Critics praised the chemistry between the stars and, says Higham, noted Hepburn's "increasing maturity and polish".[119] The World-Telegram commended two "brilliant performances", [120] and Hepburn received a fourth Academy Award nomination for her role as independent career-woman Tess Harding. During the course of the movie, Hepburn signed a star contract with MGM.[110]

[edit] Slowing in the 1940s (1942Â ~1949)

In 1942, Hepburn returned to Broadway to appear in another Philip Barry play, Without Love, which was also written with the actress in mind.[120] Critics were unenthusiastic about the production but with Hepburn's popularity at a high it ran for 16 sold-out weeks.[121] MGM were eager to reunite Tracy and Hepburn for a new picture, and settled on Keeper of the Flame (1942). A dark mystery with a propaganda message on the dangers of fascism, the film was seen by Hepburn as an opportunity to make a worthy political statement.[122] It received poor notices but was a financial success, confirming the popularity of the TracyÂ ~Hepburn pairing.[123]

Since Woman of the Year Hepburn had committed to a romantic relationship with Tracy and dedicated herself to helping the star, who suffered from alcoholism and insomnia.[125] Her career slowed as a result, and she worked less for the remainder of the decade than she had done in the 1930sÂ ~notably by not appearing on-stage again until 1950.[126] Her only appearance in 1943 was a cameo in the morale-building wartime film Stage Door Canteen, playing herself. She took an atypical role in 1944, playing a Chinese peasant in the high-budget drama Dragon Seed. Hepburn was enthusiastic about the film, but it met with a tepid response and she was described as miscast.[127] She then reunited with Tracy for the film version of Without Love (1945), after which she turned down a role in The Razor's Edge to support Tracy through his return to Broadway.[128] Without Love received poor reviews, but a new TracyÂ ~Hepburn

picture was a big event and it was popular on release, selling a record number of tickets over Easter weekend 1945.[129]

Hepburn's next film was *Undercurrent* (1946), a film noir with Robert Taylor and Robert Mitchum that was poorly received.[130] A fourth film with Tracy came in 1947: a drama set in the American Old West entitled *The Sea of Grass*. Similarly to *Keeper of the Flame* and *Without Love*, a lukewarm response from critics did not stop it from being a financial success both at home and abroad.[131] The same year, Hepburn portrayed Clara Wieck Schumann in *Song of Love*. She trained intensively with a pianist for the role.[132] By the time of its release in October, Hepburn's career had been significantly affected by her public opposition to the growing anti-communist witch-hunt in Hollywood. Viewed by some as dangerously progressive, she was not offered work for nine months and people reportedly threw things at screenings of *Song of Love*. [133] Her next film role came unexpectedly, as she agreed to replace Claudette Colbert only days before shooting began on Frank Capra's political drama *State of the Union* (1948).[134] Tracy had long been signed to play the male lead, and so Hepburn was already familiar with the script and stepped up for the fifth Tracy-Hepburn picture.[133] Critics responded positively to the film and it performed well at the box office.[135]

Tracy and Hepburn appeared on screen together for a third consecutive year in the 1949 film *Adam's Rib*. Like *Woman of the Year*, it was a "battle of the sexes" comedy, and was written specifically for the duo by their friends Garson Kanin and Ruth Gordon. A story of married lawyers who oppose each other in court, Hepburn described it as "perfect for [Tracy] and me".[136] She was instrumental in getting Judy Holliday cast in the film, which kick-started the young actress's Hollywood career.[137] Although Hepburn's political views still prompted scattered picketing at theatres around the country, *Adam's Rib* was a hit, favorably reviewed and the most profitable Tracy-Hepburn picture to date.[138] The *New York Times* critic Bosley Crowther was full of praise for the film and hailed the duo's "perfect compatibility".[139]

[edit] Professional expansion (1950-1952)

The 1950s saw Hepburn take on a series of professional challenges, and stretch herself further than at any other point in her life at an age when most actresses began to retreat.[140] Berg describes the decade as "the heart of her vast legacy" and "the period in which she truly came into her own." [141] In January 1950, Hepburn made her first venture into Shakespeare, playing Rosalind in *As You Like It*. She hoped to prove she could play already established material,[29] and said, "It's better to try something difficult and flop than to play it safe all the time." [142] It opened at the Cort Theatre in New York to a capacity audience, and was virtually sold out for 148 shows.[143] The production then went on tour. Reviews for Hepburn varied, but she was noted as the only leading lady in Hollywood who was performing high-caliber material on the stage.[144]

In 1951, Hepburn filmed *The African Queen*, her first movie in Technicolor. She played Rose Sayer, a prim spinster missionary living in German East Africa at the outbreak of World War I. Co-starring Humphrey Bogart, *The African Queen* was shot mostly on location in the Belgian Congo, an opportunity Hepburn embraced.[145] It proved a difficult experience, however, and Hepburn became ill with dysentery during filming.[146] Later in life, she released a memoir about the experience. The movie was released at the end of 1951 to popular support and critical acclaim,[147] and gave Hepburn her fifth Best Actress nomination at the Academy Awards. The first successful film she had made without Tracy since *The Philadelphia Story* a decade earlier, it proved that she could be a hit without him and fully reestablished her popularity.[148]

Hepburn went on to make the sports comedy *Pat and Mike* (1952), the second film written specifically as a Tracy-Hepburn vehicle by Kanin and Gordon. Hepburn was a keen athlete, and Kanin later described this as his inspiration for the film: "As I watched Kate playing tennis one day ... it occurred to me that her audience was missing a treat." [149] Hepburn was asked to gain weight for the role, and she was under pressure to perform several sports to a high standard,

many of which did not end up in the film.[150] Pat and Mike was one of the team's most popular and critically acclaimed films, and it was also Hepburn's personal favorite of the nine films she made with Tracy.[151] The performance brought her a nomination for the Golden Globe Award for Best Actress â ^ Motion Picture Musical or Comedy.[152]

In the summer of 1952, Hepburn appeared in London's West End for a ten-week run of George Bernard Shaw's *The Millionairess*. Her parents had read Shaw to her when she was a child, which made the play a special experience for the actress.[153] Two years of intense work had left her exhausted, however, and her friend Constance Collier wrote that Hepburn was "on the verge of a nervous breakdown".[154] Widely acclaimed, *The Millionairess* was brought to Broadway.[155] In October 1952 it opened at the Shubert Theatre, where despite a lukewarm critical response it sold out its ten-week run.[154] Hepburn subsequently tried to get the play adapted into a film: a script was written by Preston Sturges, and Hepburn offered to work for nothing and pay the director herself, but no studio picked up the project.[156] She later referred to this as the biggest disappointment of her career.[153]

[edit] *Spinsters and Shakespeare* (1953â ^1962)

Pat and Mike was the last film Hepburn completed on her MGM contract, making her free to select her own projects.[155] She spent two years resting and traveling, before committing to David Lean's romantic drama *Summertime* (1955). The movie was filmed in Venice, with Hepburn playing a lonely spinster who has a passionate love affair. She described it as "a very emotional part" and found it fascinating to work with Lean.[157] At her own insistence, Hepburn performed a fall into a canal and developed a chronic eye infection as a result.[158] The role earned her another Academy Award nomination and has been cited as some of her finest work.[159][160] Lean later said it was his personal favorite of the films he made, and Hepburn his favorite actress.[161] The following year, Hepburn spent six months touring Australia with the Old Vic theatre company, playing Portia in *The Merchant of Venice*, Kate in *The Taming of the Shrew*, and Isabella in *Measure for Measure*. The tour was successful and Hepburn earned significant plaudits for the effort.[162]

Hepburn received an Academy Award nomination for the second year running for her work opposite Burt Lancaster in *The Rainmaker* (1956). Again she played a lonely woman empowered by a love affair, and it seemed that Hepburn had found a niche in playing "love-starved spinsters" that critics, audiences, and her peers clearly enjoyed.[163] Hepburn said of playing such roles, "With Lizzie Curry [*The Rainmaker*] and Jane Hudson [*Summertime*] and Rosie Sayer [*The African Queen*]â ~I was playing me. It wasn't difficult for me to play those women, because I'm the maiden aunt." [163] Less success that year came from *The Iron Petticoat* (1956), a reworking of the classic comedy *Ninotchka*, with Bob Hope. Hepburn played a cold-hearted Soviet pilot, a performance Bosley Crowther called "horrible".[164] It was a critical and commercial failure,[164] and Hepburn considered it the worst film on her resume.[163]

Tracy and Hepburn reunited on screen for the first time in five years for the office-based comedy *Desk Set* (1957). Berg notes that it worked as a hybrid of their earlier romantic-comedy successes and Hepburn's spinster persona,[165] but it performed poorly at the box office.[166] That summer Hepburn returned to Shakespeare. Appearing in Stratford, Connecticut, at the American Shakespeare Theatre, she repeated her Portia in *The Merchant of Venice* and played Beatrice in *Much Ado About Nothing*. The shows were positively received.[165] After two years away from the screen, she starred in a film adaptation of Tennessee Williams' controversial play *Suddenly, Last Summer* (1959) with Elizabeth Taylor and Montgomery Clift. The movie was shot in London, and was "a completely miserable experience" for Hepburn.[167] She clashed with director Joseph L. Mankiewicz during filming, which culminated with her spitting at him in disgust.[168] The picture was a financial success,[169] and her work as creepy aunt Violet Venable gave Hepburn her eighth Oscar nomination. Williams was pleased with the performance, writing, "Kate is a playwright's dream actress. She makes dialogue sound better than it is by a matchless beauty and clarity of

diction".[170] He wrote *The Night of the Iguana* (1961) with Hepburn in mind, but the actress, although flattered, felt the play was wrong for her and declined the part, which went to Bette Davis.[171]

Hepburn returned to Stratford in the summer of 1960 to play Viola in *Twelfth Night* and Cleopatra in *Antony and Cleopatra*. The *New York Post* wrote of her Cleopatra, "Hepburn offers a highly versatile performance ... once or twice going in for her famous mannerisms and always being fascinating to watch." [172] Hepburn herself was proud of the role.[173] Her repertoire was further improved when she appeared in Sidney Lumet's film version of Eugene O'Neill's *Long Day's Journey Into Night* (1962). It was a low-budget production, and Hepburn appeared in the film for a tenth of her established salary.[174] She called it "the greatest [play] this country has ever produced" and the role of morphine-addicted Mary Tyrone "the most challenging female role in American drama", and felt her performance was the best screen work of her career.[175] *Long Day's Journey Into Night* earned Hepburn an Oscar nomination and the Best Actress Award at the Cannes Film Festival. It remains one of her most praised performances.[176]

[edit] Success in later years (1963â ~1970)

Following the completion of *Long Day's Journey Into Night*, Hepburn took a break in her career to care for the ailing Spencer Tracy.[177] She did not work again until 1967's *Guess Who's Coming to Dinner*, her ninth film with Tracy. The movie dealt with the subject of interracial marriage, with Hepburn's niece, Katharine Houghton, playing her daughter. Tracy was dying by this point, suffering the effects of heart disease,[178] and Houghton later commented that her aunt was "extremely tense" during the production.[179] Tracy died 17 days after filming his last scene. *Guess Who's Coming to Dinner* was a triumphant return for Hepburn and her most commercially successful picture to date.[180] She won her second Best Actress Award at the Oscars, 34 years after winning her first. Hepburn felt the award was not just for her, but was also given to honor Tracy.[180]

Hepburn quickly returned to acting after Tracy's death, choosing to preoccupy herself as a remedy against grief.[181] She received numerous scripts[182] and chose to play Eleanor of Aquitaine in *The Lion In Winter* (1968), a part she called "fascinating".[183] She read extensively in preparation for the role,[184] in which she starred opposite Peter O'Toole. Filming took place in Montmajour Abbey in the south of France, an experience she loved despite beingâ ~according to director Anthony Harveyâ ~"enormously vulnerable" throughout.[185] John Russell Taylor of *The Times* suggested that Eleanor was "the performance of her ... career", and proved that she was "a growing, developing, still surprising actress".[186] The movie was nominated in all the major categories at the Academy Awards, and for the second year running Hepburn won the Oscar for Best Actress.[187] The role, combined with her performance in *Guess Who's Coming to Dinner*, also won Hepburn a British Academy Film Award (BAFTA) for Best Actress. Hepburn's next appearance was in *The Madwoman of Chaillot* (1969), which she filmed in Nice immediately after completing *The Lion in Winter*. [188] The picture was a failure critically and financially, and reviews targeted Hepburn for giving a misguided performance.[189]

From December 1969 to August 1970, Hepburn starred in the Broadway musical *Coco*, about the life of Coco Chanel. Hepburn admitted that before the show, she had never sat through a theatrical musical.[190] She was not a strong singer, but found the offer irresistible and, as Berg puts it, "what she lacked in euphony she made up for in guts".[191] The actress took vocal lessons six times a week in preparation for the show.[191] She was nervous about every performance, and recalled "wondering what the hell I was doing there." [192] Reviews for the production were mediocre, but Hepburn herself was praised and *Coco* was popular with the public.[193] Hepburn would typically receive a standing ovation at the end of the night, and the show's run was twice extended.[194] She later said *Coco* marked the first time she accepted that the public were not against her, but actually seemed to love her.[29] Her work earned Hepburn a Tony Award nomination for Best Actress in a Musical.[195]

[edit] Film, television, and theatre (1971â ~1983)

Hepburn stayed active throughout the 1970s, focusing on roles described by Andrew Britton as "either a devouring mother or a batty old lady living [alone]".[2] First she traveled to Spain to film a version of Euripides' *The Trojan Women* (1971) alongside Vanessa Redgrave. When asked why she had taken the role, she responded that she wanted to broaden her range and try everything while she still had time.[196] The movie was poorly received,[196] but the Kansas City Film Critics named Hepburn's performance the best from an actress that year. In 1971 she signed on to star in an adaptation of Graham Greene's *Travels With My Aunt*, but was unhappy with early versions of the script and took to rewriting it herself. The studio disliked her changes, so Hepburn abandoned the project and was replaced with Maggie Smith.[197] Her next film, an adaptation of Edward Albee's *A Delicate Balance* (1973) directed by Tony Richardson, had a small release and received generally unfavorable reviews.[198] She then ventured into television for the first time, in a production of Tennessee Williams' *The Glass Menagerie*. Hepburn had been wary of the medium but it proved to be one of the main television events of 1973, scoring high in the Nielsen ratings.[199] Hepburn received an Emmy Award nomination for playing wistful Southern mother Amanda Wingfield, which opened her mind to future work on the small screen.[200] Her next project was the television movie *Love Among the Ruins* (1975), a London-based Edwardian drama with her friend Laurence Olivier. It received positive reviews and high ratings, and earned Hepburn her only Emmy Award.[201]

Hepburn made her only appearance at the Academy Awards in 1974, to present the Irving G. Thalberg Memorial Award to Lawrence Weingarten. She received a standing ovation, and joked with the audience, "I'm very happy I didn't hear anyone call out 'It's about time'".[202] The following year, she was paired with John Wayne in the Western *Rooster Cogburn*, a sequel to his Oscar-winning film *True Grit*. Echoing her African Queen character Rose Sayer, Hepburn again played a deeply religious spinster who teams up with a masculine loner to avenge a family member's death.[198] The movie received mediocre reviews. Its casting was enough to draw some people to the box office, but it did not meet studio expectations and was only moderately successful.[203]

In 1976, Hepburn returned to Broadway for a three-month run of *A Matter of Gravity*. The role of eccentric Mrs. Basil was deemed a perfect showcase for the actress,[204] and the play was popular despite poor reviews.[205] It later went on a successful nationwide tour.[206] During its Los Angeles run, Hepburn fractured her hip. She chose to continue the tour performing in a wheelchair.[207] That year, she was voted "Favorite Motion Picture Actress" by the People's Choice Awards.[208] After three years away from the screen, Hepburn starred in the 1978 film *Olly Olly Oxen Free*. The adventure comedy was one of the biggest failures of her careerâ ~the screenwriter James Prideaux, who worked with Hepburn, later wrote that it "died at the moment of release" and referred to it as her "lost film".[209] Hepburn claimed the main reason she had done the film was the opportunity to ride in a hot air balloon.[210] The television movie *The Corn Is Green* (1979), which was filmed in Wales, followed. It was the last of ten films Hepburn made with George Cukor, and gained her a third Emmy nomination.[211]

By the 1980s Hepburn had developed a noticeable tremor, giving her a permanently shaking head. She did not work for two years, saying in a television interview, "I've had my dayâ ~let the kids scramble and sweat it out." [212] During this period she saw the Broadway production of *On Golden Pond*, and was impressed by its depiction of an elderly married couple coping with the difficulties of old age.[213] Jane Fonda had purchased the screen rights for her father, actor Henry Fonda, and Hepburn sought to play opposite him in the role of quirky Ethel Thayer.[214] *On Golden Pond* was a success, the second-highest grossing film of 1981.[215] It demonstrated how energetic the 74-year-old Hepburn was, as she dived fully clothed into Squam Lake and gave a lively singing performance.[213] The movie won her a second BAFTA and a record fourth Academy Award. Homer Dickens, in his book on Hepburn, notes that it was



widely considered a sentimental win, "a tribute to her enduring career." [216]

Hepburn also returned to the stage in 1981. She received a second Tony nomination for her portrayal in *The West Side Waltz* of a septuagenarian widow with a zest for life. *Variety* observed that the role was "an obvious and entirely acceptable version of [Hepburn's] own public image." [217] Walter Kerr of *The New York Times* wrote of Hepburn and her performance, "One mysterious thing she has learned to do is breathe unchallengeable life into lifeless lines." [218] She hoped to make a film out of the production, but nobody purchased the rights. [219] Hepburn's reputation as one of America's best loved actors was firmly established by this point, as she was named favorite movie actress in a survey by *People* magazine and again won the popularity award from *People's Choice*. [220] [221]

[edit] Focus on television (1984â ~1994)

In 1984, Hepburn starred in the dark comedy *Grace Quigley*, the story of an elderly woman who enlists a hitman (Nick Nolte) to kill her. Hepburn found humor in the morbid theme, but reviews were negative and the box office was poor. [222] In 1985, she presented a television documentary about the life and career of Spencer Tracy. [223] The majority of Hepburn's roles from this point were in television movies, which did not receive the critical praise of her earlier work in the medium but remained popular with audiences. [224] With each release, Hepburn would declare it her final screen appearance, but she continued to take on new roles. [225] She received an Emmy nomination for 1986's *Mrs. Delafield Wants to Marry*, then two years later returned for the comedy *Laura Lansing Slept Here*, which allowed Hepburn to act with her grandniece, Schuyler Grant. In 1991 she released her autobiography, *Me: Stories of my Life*. It topped best-seller lists for over a year. [226] She returned to television screens in 1992 for *The Man Upstairs*, co-starring Ryan O'Neal, for which she received a Golden Globe nomination. In 1994 she worked opposite Anthony Quinn in *This Can't Be Love*, which was largely based on Hepburn's own life, with numerous references to her personality and career. These later roles have been described as "a fictional version of the typically feisty Kate Hepburn character" and critics have remarked that Hepburn was essentially playing herself. [218] [225]

Hepburn's final appearance in a theatrically released film, and her first since *Grace Quigley* ten years earlier, was *Love Affair* (1994). At 86 years old, she played a supporting role alongside Annette Bening and Warren Beatty. It was the only film of Hepburn's career, other than the cameo appearance in *Stage Door Canteen*, in which she did not play a leading role. [227] Roger Ebert noted that it was the first time Hepburn had looked frail, but that the "magnificent spirit" was still there and said her scenes "steal the show". [228] *The New York Times* made similar observations as they reflected on the actress's final big-screen appearance, stating that "if she moved more slowly than before, in demeanor she was as game and modern as she had ever been". [218] Hepburn filmed one final role in the television movie *One Christmas* (1994), for which she received a Screen Actors Guild Award nomination at 87 years old. [229]

[edit] Personal life

[edit] Public image and character

"I strike people as peculiar in some way, although I don't quite understand why. Of course, I have an angular face, an angular body and, I suppose, an angular personality, which jabs into people." [218]

"I'm a personality as well as an actress. Show me an actress who isn't a personality and you'll show me a woman who isn't a star." [230]

â ~Hepburn commenting on her personality.

Hepburn was known for being fiercely private, [218] and would not give

interviews or talk to fans for much of her career.[84] She distanced herself from the celebrity lifestyle, uninterested in a social scene she saw as tedious and superficial,[231] and she wore casual clothes that went strongly against convention in an era of glamour.[232] She rarely appeared in public, even avoiding restaurants,[233] and once wrestled a camera out of a photographer's hand when he took a picture without asking.[234] Despite this she enjoyed the fame, and confessed that she would not have liked the press to ignore her completely.[235] The protective attitude thawed as she aged; beginning with a two-hour long interview on The Dick Cavett Show in 1973, Hepburn became increasingly open with the public.[236]

Hepburn's relentless energy and enthusiasm for life is often cited in biographies,[237] while a headstrong independence became key to her celebrity status.[82][218][238] This self-assuredness meant she could be controlling and difficult; her friend Garson Kanin likened her to a schoolmistress,[239] and she was famously blunt and outspoken.[232] Katharine Houghton commented that her aunt could be "maddeningly self-righteous and bossy".[240] Hepburn confessed to being, especially early in life, "a me me me person".[241] She saw herself as having a happy nature, reasoning "I like life and I've been so lucky, why shouldn't I be happy?"[177]

A. Scott Berg knew Hepburn well in her later years, and said that while she was demanding, there remained a sense of humility and humanity.[242] She led an active private life, reportedly swimming and playing tennis every morning.[149] In her eighties she was still playing tennis regularly, as indicated in her 1993 documentary All About Me.[29] She also enjoyed painting, which became a passion later in life.[243] A small bust she sculpted of Spencer Tracy's head was featured in Guess Who's Coming to Dinner.[244]

When questioned about politics, Hepburn told an interviewer, "I always just say be on the affirmative and liberal side. Don't be a 'no' person." [6] The anti-communist hysteria in 1940s Hollywood prompted her to political activity, and she made a speech against censorship in May 1947 that shocked the public.[133] Targeted by right-wing activists as a supposed communist sympathizer, she was mentioned at the hearings of the House Un-American Activities Committee.[133] She insisted that the claims made about her were untrue.[245] For decades, Hepburn openly promoted birth control and supported abortion.[29][82] She found great spirituality in existence, practicing Albert Schweitzer's theory of "Reverence for Life", [246] but did not believe in religion or the afterlife.[6] In 1991, Hepburn told a journalist, "I'm an atheist, and that's it. I believe there's nothing we can know except that we should be kind to each other and do what we can for other people." [247] Her public declarations of these beliefs led the American Humanist Association to award her the Humanist Arts Award in 1985.[248]

#### [edit] Relationships

Hepburn's only husband was Ludlow Ogden Smith, a socialite businessman from Philadelphia whom she met while a student at Bryn Mawr. The couple married on December 12, 1928, when she was 21 and he was 29.[249] Hepburn made Smith change his name to S. Ogden Ludlow so that she would not be known as "Kate Smith", which she considered too plain.[34] She never fully committed to the relationship and prioritized her career.[249] The move to Hollywood in 1932 cemented the couple's estrangement,[250] and in 1934, she traveled to Mexico to get a quick divorce. Hepburn often expressed her gratitude toward Smith for his financial and moral support in the early days of her career, and in her autobiography called herself "a terrible pig" for exploiting his love.[251] The pair remained friends until his death in 1979.[252]

Soon after moving to California, Hepburn began a relationship with her agent Leland Hayward. Both were married.[67] Hayward proposed to Hepburn after they had each divorced, but she did not wish to be married again.[253] She "liked the idea of being my own single self." [254] They were involved for four years.[255] In 1936, while she was touring Jane Eyre, Hepburn began a relationship with entrepreneur Howard Hughes. They first met while Hepburn was filming Sylvia Scarlett, when they were introduced by their mutual friend Cary

Grant.[256] Hughes wished to marry her, and the tabloids reported their impending nuptials, but at that time Hepburn was too focused on resurrecting her failing career.[257] They separated in 1938, when Hepburn left Hollywood after being labeled "box office poison".[258]

Hepburn stuck to her decision not to remarry, and made a conscious choice not to have children. She felt that motherhood should be a full-time commitment, and it was not one she was willing to make.[6] "I would have been a terrible mother," she told Berg, "because I'm basically a very selfish human being." [259] She felt she had partially experienced parenthood through her much younger siblings, which fulfilled any need to have children of her own.[260] Rumors have existed since the 1930s that Hepburn may have been a lesbian or bisexual.[261] In 2007, William J. Mann released a biography of the actress in which he argued this was the case.[262] In response to this speculation about her aunt, Katharine Houghton said, "I've never discovered any evidence whatsoever that she was a lesbian." [263]

[edit] Spencer Tracy

The most significant relationship of Hepburn's life was with Spencer Tracy. In her autobiography she wrote, "It was a unique feeling that I had for [Tracy]. I would have done anything for him." [264] Lauren Bacall, a close friend, later wrote of how "blindingly" in love Hepburn was with the actor.[265] The relationship has subsequently received much publicity, and it is often cited as one of Hollywood's legendary love affairs.[218][236][266] Meeting when she was 34 and he was 41, Tracy was initially wary of Hepburn, unimpressed that she had dirty fingernails and suspecting that she was a lesbian,[267] but Hepburn said she "knew right away that I found him irresistible." [268] Tracy remained married throughout their relationship; although he and his wife Louise had been living separate lives since the 1930s, there was never an official split and neither party pursued a divorce.[269] Hepburn did not interfere, and never fought for marriage.[270] With Tracy determined to conceal the relationship with Hepburn from his wife, it had to remain private.[271] They were careful not to be seen in public together, and maintained separate residences.[266][272] Tracy was a periodic alcoholic and troubled individual, whom Hepburn described as "tortured" by guilt and misery,[273] and she devoted herself to making his life easier.[274] Reports from people who saw them together describe how Hepburn's entire demeanor changed when around Tracy.[275] She mothered and obeyed him, and Tracy became heavily dependent on her.[276] They often spent stretches of time apart due to their work, particularly in the 1950s when Hepburn was largely abroad for career commitments.[277]

Tracy's health declined significantly in the 1960s, and Hepburn took a five-year break in her career to care for him.[177] She moved into Tracy's house for this period, and was with him when he died on June 10, 1967.[278] Out of consideration for Tracy's family, she did not attend his funeral.[279] It was only after Louise Tracy's death, in 1983, that Hepburn began to speak publicly about her feelings for her frequent co-star.[280] In response to the question of why she stayed with Tracy for so long, despite the nature of their relationship, she said, "I honestly don't know. I can only say that I could never have left him." [177] She claimed not to know how Tracy felt about her[281] and that they "just passed twenty-seven years [sic] together in what was to me absolute bliss." [281]

[edit] Final years and death

Hepburn stated in her eighties, "I have no fear of death. Must be wonderful, like a long sleep." [29] Her health began to deteriorate not long after her final screen appearance. In the winter of 1996 she was hospitalized with pneumonia.[282] By 1997 she had become very weak, was speaking and eating very little, and it was feared she would die.[283] She showed signs of dementia in her final years.[284] In May 2003, an aggressive tumor was found in Hepburn's neck. The decision was made not to medically intervene,[285] and she died on June 29, 2003, at the Hepburn family home in Fenwick, Connecticut. She was 96 years old and was buried in Cedar Hill Cemetery, Hartford. Hepburn requested that there be no memorial service.[286]

Hepburn's death received considerable public attention. Many tributes were held on television, and newspapers and magazines dedicated issues to the actress.[287] American president George W. Bush said Hepburn "will be remembered as one of the nation's artistic treasures." [288] In honor of her extensive theatre work, the lights of Broadway were dimmed for the evening of July 1, 2003.[288] In 2004, in accordance with Hepburn's wishes, her belongings were put up for auction with Sotheby's in New York. The event garnered \$5.8 million, which Hepburn willed to her family.[289]

[edit] Performances: technique and analysis

"Her best films were when she was presented as a woman on her high horse with slightly pretentious, often comically stated ideas about the world. It was for men to bring her down and get her to reveal herself as quite a good gal, sporty and democratic. We liked the idea that aristocratic people would be humanized by democratic valuesâ ~in her case, by slightly rough-necked and good-natured males." [176]

â ~Film historian and critic Richard Schickel explains the typical Hepburn role and its appeal.

According to reports, Hepburn was not an instinctive actor.[290] She liked to study the text and character carefully beforehand, making sure she knew them thoroughly, and then to rehearse as much as possible and film multiple takes of a scene.[184] With a genuine passion for the industry she committed heavily to each role,[291] and insisted on learning any necessary skills and performing stunts herself.[292] She was known to learn not only her own lines but also those of her co-stars.[293] Commenting on her motivation, Stanley Kramer said, "Work, work, work. She can work till everyone drops." [294] Hepburn involved herself in the production of each of her films, making suggestions for the script and stating her opinion on everything from costumes to lighting to camerawork.[295]

The characters Hepburn played were, with very few exceptions, wealthy and intelligent, and often strong and independent.[296] These tough characters tended to be humbled in some form and revealed to have a hidden vulnerability.[297] Garson Kanin described what he called "the formula for a Hepburn success: A high-class, or stuck-up ... girl is brought down to earth by an earthy type, or a lowbrow ... or a cataclysmic situation. It seems to have worked time and time again." [298] Due to this repeated character arc, Britton sees Hepburn as embodying the "contradictions" of the "nature and status of women", [299] as the strong females she depicts are eventually "restored to a safe position within the status quo". [300] Film critic Molly Haskell has commented on the importance of this to Hepburn's career: with an intimidating presence, it was necessary that her characters "do some kind of self-abasement, to stay on the good side of the audience." [82]

Hepburn is one of America's most celebrated actresses, [301] but she has also been criticized for a lack of versatility. Her on-screen persona closely matched her own real personality, something Hepburn admitted herself. In 1991 she told a journalist, "I think I'm always the same. I had a very definite personality and I liked material that showed that personality." [266] Playwright and author David Macaray has said, "Picture Katharine Hepburn in every movie she ever starred in and ask yourself if she's not playing, essentially, the same part over and overâ ... Icon or no icon, let's not confuse a truly fascinating and unique woman with a superior actress." [302] Another repeated criticism is that her demeanor was too cold.[266]

[edit] Legacy

Hepburn is considered an important and influential cultural figure. Ros Horton and Sally Simmons included her in their book *Women Who Changed The World*, which

honors 50 women who helped shape world history and culture.[303] She is also named in Encyclopædia Britannica's list of "300 Women Who Changed the World",[232] Ladies Home Journal's book 100 Most Important Women of the 20th century,[304] Variety magazine's "100 Icons of the Century",[305] and she is number 84 on VH1's list of the "200 Greatest Pop Culture Icons of All Time".[306] In 1999, the American Film Institute named Hepburn the "greatest American screen legend" among females.[1]

The legacy of Hepburn lies both on screen and off. Broadcaster Sheridan Morley has said she "broke the mold" for women in Hollywood,[307] where she brought a new breed of strong-willed females to the screen.[232] Film academic Andrew Britton wrote a monograph studying Hepburn's "key presence within classical Hollywood, a consistent, potentially radical disturbance",[300] and pinpoints her "central" influence in bringing feminist issues to the screen.[299] Maryann Pasda DiEdwardo has claimed that Hepburn's performances fostered a "decisiveness toward a new vision of women." [308] Off screen, Hepburn lived in a manner ahead of her time.[238] She thus came to symbolize the "modern woman" and played a part in changing attitudes towards the gender.[82][309] Horton and Simmons write, "Confident, intelligent and witty, four-time Oscar winner Katharine Hepburn defied convention throughout her professional and personal life ... Hepburn provided an image of an assertive woman whom [females] could watch and learn from." [310] After Hepburn's death, film historian Jeanine Basinger stated, "What she brought us was a new kind of heroine—modern and independent. She was beautiful, but she did not rely on that." [176] Mary McNamara, an entertainment journalist and reviewer for the Los Angeles Times wrote, "More than a movie star, Katharine Hepburn was the patron saint of the independent American female." [82] She was not universally revered by feminists, however, who were angered by her public declarations that women "cannot have it all", meaning a family and a career.[82]

Hepburn's legacy extends to fashion, where she was a pioneer for wearing trousers at a time when it was radical for a woman to do so.[311] She contributed towards making trousers acceptable for women, as fans began to imitate her clothing.[218][312] In 1986 she received a lifetime achievement award from the Council of Fashion Designers of America in recognition of the influence she played in women's fashion.[218]

A number of Hepburn's films have become classics of American cinema, with four of her pictures (The African Queen, The Philadelphia Story, Bringing Up Baby, and Guess Who's Coming to Dinner) featuring on the American Film Institute's list of the 100 Greatest American Films of all time.[313] Adam's Rib and Woman of the Year were included in the AFI's list of the Greatest American Comedies.[314] Her clipped, patrician voice is considered one of the most distinctive in film history.[176] [Â Sample, from Stage Door (1937)Â (helpÂ·info)]

[edit] Memorials

Hepburn has been honored with several memorials. The Turtle Bay community in Manhattan, New York City, where she maintained a residence for over 60 years, dedicated a garden in her name in 1997.[315] After Hepburn's death in 2003, the intersection of East 49th Street and 2nd Avenue was renamed "Katharine Hepburn Place".[316] Three years later Bryn Mawr College, Hepburn's alma mater, launched the Katharine Houghton Hepburn Center. It is dedicated to both the actress and her mother, and encourages women to address important issues affecting their gender. The center awards the annual Katharine Hepburn Medal, which "recognizes women whose lives, work and contributions embody the intelligence, drive and independence of the four-time-Oscar-winning actress".[317] The Katharine Hepburn Cultural Arts Center was opened in 2009 in Old Saybrook, Connecticut, the location of the Hepburn family beach home which she loved and later owned.[318] The building includes a performance space and a Katharine Hepburn museum.[319]

The Academy of Motion Picture Arts and Sciences library[320] and the New York Public Library hold collections of Hepburn's personal papers. Selections from the New York collection, which documents Hepburn's theatrical career, were presented in a five-month exhibition, Katharine Hepburn: In Her Own Files, in

2009.[321] Other exhibitions have been held to showcase Hepburn's career. One Life: Kate, A Centennial Celebration was held at the National Portrait Gallery in Washington from November 2007 to September 2008.[322] Kent State University exhibited a selection of Hepburn's film and theatre costumes from October 2010 to September 2011 in Katharine Hepburn: Dressed for Stage and Screen.[323] Hepburn has also been honored with her own postal stamp as part of the "Legends of Hollywood" stamp series.[324]

#### [edit] Characterizations

Hepburn is the subject of a one-woman play, *Tea at Five*, written by Matthew Lombardo. The first act features Hepburn in 1938, after being labeled "box office poison", and the second act in 1983, where she reflects on her life and career.[325] It was first performed in 2002 at the Hartford Stage.[326] Hepburn has been portrayed in *Tea at Five* by Kate Mulgrew,[325] Tovah Feldshuh,[327] Stephanie Zimbalist,[328] and Charles Busch.[329] Feldshuh also appeared as Hepburn in *The Amazing Howard Hughes*, a 1977 television movie. Mearle Ann Taylor portrayed her in *The Scarlett O'Hara War* (1980). In Martin Scorsese's 2004 biopic of Howard Hughes, *The Aviator*, Hepburn was portrayed by Cate Blanchett, who won the Academy Award for Best Supporting Actress for her performance. This marked the first instance where the portrayal of an Academy Award-winning actress was turned into an Academy Award-winning role.[330]

#### [edit] Awards and nominations

Hepburn won four Academy Awards, the record number for a performer, and a total of 12 Oscar nominations for Best Actress—a number surpassed only by Meryl Streep.[331] Hepburn also holds the record for the longest time span between first and last Oscar nominations, at 48 years.[331] She received two awards and five nominations from the British Academy Film Awards, one award and six nominations from the Emmy Awards, eight Golden Globe nominations, two Tony Award nominations, and awards from the Cannes Film Festival, Venice Film Festival, the New York Film Critics Circle Awards, the People's Choice Awards, and others. She won a Lifetime Achievement Award from the Screen Actors Guild in 1979 and received the Kennedy Center Honors, which recognize a lifetime of accomplishments in the arts, in 1990.[332][333]

Hepburn was recognized by the Academy of Motion Picture Arts and Sciences for the following performances:

6th Academy Awards (1934): Best Actress, win, for *Morning Glory*  
8th Academy Awards (1936): Best Actress, nomination, for *Alice Adams*  
13th Academy Awards (1941): Best Actress, nomination, for *The Philadelphia Story*  
15th Academy Awards (1943): Best Actress, nomination, for *Woman of the Year*  
24th Academy Awards (1952): Best Actress, nomination, for *The African Queen*  
28th Academy Awards (1956): Best Actress, nomination, for *Summertime*  
29th Academy Awards (1957): Best Actress, nomination, for *The Rainmaker*  
32nd Academy Awards (1960): Best Actress, nomination, for *Suddenly, Last Summer*  
35th Academy Awards (1963): Best Actress, nomination, for *Long Day's Journey into Night*  
40th Academy Awards (1968): Best Actress, win, for *Guess Who's Coming to Dinner*  
41st Academy Awards (1969): Best Actress, win, for *The Lion in Winter* (shared with Barbra Streisand for *Funny Girl*)  
54th Academy Awards (1982): Best Actress, win, for *On Golden Pond*

#### [edit] Filmography and theatre credits

During her 66-year career, Hepburn appeared in 44 feature films, 8 television movies, and 33 plays. Her movie career covered a range of genres, including screwball comedies, period dramas, and adaptations of works by America's top playwrights. She appeared on the stage in every decade from the 1920s to the 1980s, performing plays by Shakespeare and Shaw, and a Broadway musical.[334][335]

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 ^ Berg (2004), p. 40.  
 ^ Chandler (2011) p. 37.  
 ^ Higham (2004) p. 2.  
 ^ a b c d "Katharine Hepburn: Part 2". The Dick Cavett Show. October 3, 1973. American Broadcasting Company. Stated by Hepburn in this interview.  
 ^ Higham (2004) p. 4; Chandler (2011) p. 39; Prideaux (1996) p. 74.  
 ^ Hepburn (1991) p. 21.  
 ^ "Katharine Hepburn: Part 1". The Dick Cavett Show. October 2, 1973. American Broadcasting Company. Hepburn described herself as "enormously lucky" in this interview when talking about her background. When asked if this was the reason for her success, she responded: "Well, I think that in the first place, it's lucky if you have an intelligent, and brilliant, and inspiring father and mother, and it's lucky if you had experiences before the age of 15 which teach you not to be afraid."  
 ^ Berg (2004) p. 47, writes that Hepburn called her family "the great advantage she had had in her life and her career" and that it gave her "a leg up".  
 ^ Hepburn (1991) p. 30; Kanin (1971) p. 82.  
 ^ Chandler (2011) p. 30.  
 ^ Hepburn (1991) p. 43.; Higham (2004) p. 2.  
 ^ a b Higham (2004) p. 7.  
 ^ Higham (2004) p. 3.  
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 ^ Hepburn (1991) p. 44.  
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 ^ a b Hepburn (1991) p. 118.  
 ^ Berg (2004) p. 74.  
 ^ Hepburn (1991) p. 120.  
 ^ Higham (2004) p. 17.  
 ^ Berg (2004) p. 75.  
 ^ Dickens (1990) p. 229.  
 ^ Hepburn (1991) p. 128.  
 ^ Higham (2004) p. 23.  
 ^ Higham (2004) p. 21.  
 ^ Haver (1980) p. 94.  
 ^ a b c Haver (1980) p. 96.

^ Prideaux (1996) p. 15, quotes Hepburn saying: "It never occurred to me to doubt myself. When I first worked with John Barrymore, I watched him a bit and thought ... 'I can handle this perfectly easily!'".  
 ^ Higham (2004) pp. 30â ^31.  
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Kennelly, BarbaraBarbara Kennelly  
Luce, Clare BootheClare Boothe Luce  
Milton, Rachel TaylorRachel Taylor Milton  
Paul, AliceAlice Paul  
Peters, Ellen AshEllen Ash Peters  
Petry, AnnAnn Petry  
Porter, SarahSarah Porter  
Riddle, Theodate PopeTheodate Pope Riddle  
Rosario, Edna NegronEdna Negron Rosario  
Rudkin, Margaret FogartyMargaret Fogarty Rudkin  
Saint James, SusanSusan Saint James  
Sigourney, Lydia HuntleyLydia Huntley Sigourney  
Smith, Virginia ThrallVirginia Thrall Smith  
Smiths of Glastonbury, TheThe Smiths of Glastonbury  
Standish, Hilda CrosbyHilda Crosby Standish  
Stowe, Harriet BeecherHarriet Beecher Stowe  
Tantaquidgeon, GladysGladys Tantaquidgeon  
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Watson, Hannah BunceHannah Bunce Watson  
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Name

Hepburn, Katharine Houghton

Alternative names

Short description

Actor

Date of birth

1907-05-12

Place of birth

Hartford, Connecticut, United States



Date of death  
2003-06-29  
Place of death  
Fenwick, Old Saybrook, Connecticut, United States

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From Wikipedia, the free encyclopedia

From today's featured article

Liverpool Football Club's participation in European competitions organised by Union of European Football Associations (UEFA) began in 1964. Since then, Liverpool have won eleven European trophies, making them Britain's most successful team in UEFA competitions. They have won the UEFA Champions League (formerly known as the European Cup) five times, the UEFA Europa League (formerly known as the UEFA Cup) three times, and the UEFA Super Cup three times. Liverpool qualified for European competitions for 21 consecutive seasons until the 1985 European Cup Final, the occasion of the Heysel Stadium disaster, following which the club was banned from Europe for six seasons. Since being readmitted, they have qualified for the Champions League eight times and the UEFA Cup seven times. As a result of their victory in the 2005 UEFA Champions League Final, Liverpool won the European Champion Clubs' Cup trophy (pictured) outright. Bob Paisley is the club's most successful manager in Europe, with five trophies. Liverpool's biggest win in Europe is an 11–0 victory over Strømsgodset in the 1974–75 European Cup Winners' Cup. In European competitions, Jamie Carragher holds the club record for the most appearances, with 139, and Steven Gerrard is the club's record goalscorer, with 38 goals. (Full article...)

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On this day...

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Darwin Day; Red Hand Day

1541 – Spanish conquistador Pedro de Valdivia founded Santiago, today the capital of Chile, as Santiago del Nuevo Extremo.

1855 – Michigan State University in East Lansing, Michigan, was founded as the Agricultural College of the State of Michigan, the United States' first agricultural college.

1912 – Xinhai Revolution: Puyi, the last Emperor of China, abdicated under a deal brokered by military official and politician Yuan Shikai, formally replacing the Qing Dynasty with a new republic in China.

1974 â ^ Russian author Aleksandr Solzhenitsyn was arrested and subsequently deported from the Soviet Union for writing The Gulag Archipelago, an exposé of the Soviet forced labour camp system.  
2001 â ^ NASA's robotic space probe NEAR Shoemaker touched down on Eros (pictured), becoming the first spacecraft to land on an asteroid.  
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The restoration of the Everglades is an ongoing effort to remedy damage inflicted on the environment of southern Florida during the 20th century. It is the most expensive and comprehensive environmental repair attempt in history.[1][2] The degradation of the Everglades became an issue in the United States in the early 1970s after a proposal to construct a jetport in the Big Cypress Swamp. Studies indicated the airport would have destroyed the ecosystem in South Florida and Everglades National Park.[3] After decades of destructive practices, both state and federal agencies are looking for ways to balance the needs of the natural environment in South Florida with urban and agricultural centers that have recently and rapidly grown in and near the Everglades.

In response to floods caused by hurricanes in 1947, the Central and Southern Florida Flood Control Project (C&SF) was established to construct flood control devices in the Everglades. The C&SF built 1,400 miles (2,300 km) of canals and levees between the 1950s and 1971 throughout South Florida. Their last venture was the C-38 canal, which straightened the Kissimmee River and

caused catastrophic damage to animal habitats, adversely affecting water quality in the region. The canal became the first C&SF project to revert when the 22-mile (35 km) canal began to be backfilled, or refilled with the material excavated from it, in the 1980s. The restoration of the Kissimmee River is projected to continue until 2011.

When high levels of phosphorus and mercury were discovered in the waterways in 1986, water quality became a focus for water management agencies. Costly and lengthy court battles were waged between various government entities to determine who was responsible for monitoring and enforcing water quality standards. Governor Lawton Chiles proposed a bill that determined which agencies would have that responsibility, and set deadlines for pollutant levels to decrease in water. Initially the bill was criticized by conservation groups for not being strict enough on polluters, but the Everglades Forever Act was passed in 1994. Since then, the South Florida Water Management District (SFWMD) and the U.S. Army Corps of Engineers have surpassed expectations for achieving lower phosphorus levels.

A commission appointed by Governor Chiles published a report in 1995 stating that South Florida was unable to sustain its growth, and the deterioration of the environment was negatively affecting daily life for residents in South Florida. The environmental decline was predicted to harm tourism and commercial interests if no actions were taken to halt current trends. Results of an eight-year study that evaluated the C&SF were submitted to the United States Congress in 1999. The report warned that if no action was taken the region would rapidly deteriorate. A strategy called the Comprehensive Everglades Restoration Plan (CERP) was enacted to restore portions of the Everglades, Lake Okeechobee, the Caloosahatchee River, and Florida Bay to undo the damage of the past 50 years. It would take 30 years and cost \$7.8 billion to complete. Though the plan was passed into law in 2000, it has been compromised by politics and funding problems.

[edit] Background

The Everglades are part of a very large watershed that begins in the vicinity of Orlando. The Kissimmee River drains into Lake Okeechobee, a 730-square-mile (1,900 km<sup>2</sup>) lake with an average depth of 9 feet (2.7 m). During the wet season when the lake exceeds its capacity, the water leaves the lake in a very wide and shallow river, approximately 100 miles (160 km) long and 60 miles (97 km) wide.[4] This wide and shallow flow is known as sheetflow. The land gradually slopes toward Florida Bay, the historical destination of most of the water leaving the Everglades. Before drainage attempts, the Everglades comprised 4,000 square miles (10,000 km<sup>2</sup>), taking up a third of the Florida peninsula.[5]

Since the early 19th century the Everglades have been a subject of interest for agricultural development. The first attempt to drain the Everglades occurred in 1882 when a Pennsylvania land developer named Hamilton Disston constructed the first canals. Though these attempts were largely unsuccessful, Disston's purchase of land spurred tourism and real estate development of the state. The political motivations of Governor Napoleon Bonaparte Broward resulted in more successful attempts at canal construction between 1906 and 1920. Recently reclaimed wetlands were used for cultivating sugarcane and vegetables, while urban development began in the Everglades.[6]

The 1926 Miami Hurricane and the 1928 Okeechobee Hurricane caused widespread devastation and flooding which prompted the Army Corps of Engineers to construct a dike around Lake Okeechobee. The four-story wall cut off water from the Everglades. Floods from hurricanes in 1947 motivated the U.S. Congress to establish the Central and Southern Florida Flood Control Project (C&SF), responsible for constructing 1,400 miles (2,300 km) of canals and levees, hundreds of pumping stations and other water control devices. The C&SF established Water Conservation Areas (WCAs) in 37% of the original Everglades, which acted as reservoirs providing excess water to the South Florida metropolitan area, or flushing it into the Atlantic Ocean or the Gulf of Mexico.[7] The C&SF also established the Everglades Agricultural Area (EAA), which grows the majority of sugarcane crops in the United States. When

the EAA was first established, it encompassed approximately 27% of the original Everglades.

By the 1960s, urban development and agricultural use had decreased the size of the Everglades considerably. The remaining 25% of the Everglades in its original state is protected in Everglades National Park, but the park was established before the C&SF, and it depended upon the actions of the C&SF to release water. As Miami and other metropolitan areas began to intrude on the Everglades in the 1960s, political battles took place between park management and the C&SF when insufficient water in the park threw ecosystems into chaos. Fertilizers used in the EAA began to alter soil and hydrology in Everglades National Park, causing the proliferation of exotic plant species.[8] However, a proposition to build a massive jetport in the Big Cypress Swamp in 1969 focused attention on the degraded natural systems in the Everglades. For the first time, the Everglades became a subject of environmental conservation.[9]

[edit] Everglades as a priority

Environmental protection became a national priority in the 1970s. Time magazine declared it the Issue of the Year in January 1971, reporting that it was rated as Americans' "most serious problem confronting their community" well ahead of crime, drugs and poor schools".[10] When South Florida experienced a severe drought from 1970 to 1975, with Miami receiving only 33 inches (840 mm) of rain in 1971, 22 inches (560 mm) less than average.[11] media attention focused on the Everglades. With the assistance of governor's aide Nathaniel Reed and U.S. Fish and Wildlife Service biologist Arthur R. Marshall, politicians began to take action. Governor Reubin Askew implemented the Land Conservation Act in 1972, allowing the state to use voter-approved bonds of \$240 million to purchase land considered to be environmentally unique and irreplaceable.[12] Since then, Florida has purchased more land for public use than any other state.[13] In 1972 President Richard Nixon declared the Big Cypress Swamp "the intended location for the Miami jetport in 1969" to be federally protected.[14] Big Cypress National Preserve was established in 1974,[15] and Fakahatchee Strand State Preserve was created the same year.[12]

In 1976, Everglades National Park was declared an International Biosphere Reserve by UNESCO,[16] which also listed the park as a World Heritage Site in 1979. The Ramsar Convention designated the Everglades a Wetland of International Importance in 1987.[17] Only three locations on earth which have appeared on all three lists: Everglades National Park, Lake Ichkeul in Tunisia, and Srebarna Lake in Bulgaria.[18]

[edit] Kissimmee River

In the 1960s, the C&SF came under increased scrutiny from government overseers and conservation groups. Critics maintained its size was comparable to the Tennessee Valley Authority's dam-building projects during the Great Depression, and that the construction had run into the billions of dollars without any apparent resolution or plan.[19] The projects of the C&SF have been characterized as part of "crisis and response" cycles that "ignored the consequence for the full system, assumed certainty of the future, and succeeded in solving the momentary crisis, but set in motion conditions that exaggerate future crises".[20] The last project, to build a canal to straighten the winding floodplain of the Kissimmee River that had historically fed Lake Okeechobee which in turn fed the Everglades, began in 1962. Marjory Stoneman Douglas later wrote that the C&SF projects were "interrelated stupidity", crowned by the C-38 canal.[21] Designed to replace a meandering 90-mile (140 km) river with a 52-mile (84 km) channel, the canal was completed in 1971 and cost \$29 million. It supplanted approximately 45,000 acres (180 km<sup>2</sup>) of marshland with retention ponds, dams, and vegetation.[22] Loss of habitat has caused the region to experience a drastic decrease of waterfowl, wading birds, and game fish.[23] The reclaimed floodplains were taken over by agriculture, bringing fertilizers and insecticides that washed into Lake Okeechobee. Even before the canal was finished, conservation organizations and sport fishing and hunting groups were calling for the restoration of the Kissimmee River.[22]

Arthur R. Marshall led the efforts to undo the damage. According to Douglas, Marshall was successful in portraying the Everglades from the Kissimmee Chain of Lakes to Florida Bayâ ~including the atmosphere, climate, and limestoneâ ~as a single organism. Rather than remaining the preserve of conservation organizations, the cause of restoring the Everglades became a priority for politicians. Douglas observed, "Marshall accomplished the extraordinary magic of taking the Everglades out of the bleeding-hearts category forever".[24] At the insistent urging of Marshall, newly elected Governor Bob Graham announced the formation of the "Save Our Everglades" campaign in 1983, and in 1985 Graham lifted the first shovel of backfill for a portion of the C-38 canal.[25] Within a year the area was covered with water returning to its original state.[26] Graham declared that by the year 2000, the Everglades would resemble its predrainage state as much as possible.[25] The Kissimmee River Restoration Project was approved by Congress in the Water Resources Development Act of 1992. The project was estimated to cost \$578Â million to convert only 22 miles (35Â km) of the canal; the cost was designed to be divided between the state of Florida and the U.S. government, with the state being responsible for purchasing land to be restored.[27] A project manager for the Army Corps of Engineers explained in 2002, "What we're doing on this scale is going to be taken to a larger scale when we do the restoration of the Everglades".[28] The entire project is estimated to be completed by 2011.[27]

[edit] Water quality

Attention to water quality was focused in South Florida in 1986 when a widespread algal bloom occurred in one-fifth of Lake Okeechobee. The bloom was discovered to be the result of fertilizers from the Everglades Agricultural Area.[29] Although laws stated in 1979 that the chemicals used in the EAA should not be deposited into the lake, they were flushed into the canals that fed the Everglades Water Conservation Areas, and eventually pumped into the lake.[11] Microbiologists discovered that, although phosphorus assists plant growth, it destroys periphyton, one of the basic building blocks of marl in the Everglades. Marl is one of two types of Everglades soil, along with peat; it is found where parts of the Everglades are flooded for shorter periods of time as layers of periphyton dry.[30] Most of the phosphorus compounds also rid peat of dissolved oxygen and promote algae growth, causing native invertebrates to die, and sawgrass to be replaced with invasive cattails that grow too tall and thick for birds and alligators to nest in.[31] Tested water showed 500Â parts per billion (ppb) of phosphorus near sugarcane fields. State legislation in 1987 mandated a 40% reduction of phosphorus by 1992.

Attempts to correct phosphorus levels in the Everglades met with resistance. The sugarcane industry, dominated by two companies named U.S. Sugar and Flo-Sun, was responsible for more than half of the crop in the EAA. They were well represented in state and federal governments by lobbyists who enthusiastically protected their interests. According to the Audubon Society, the sugar industry, nicknamed "Big Fucker", donated more money to political parties and candidates than General Motors.[32] The sugar industry attempted to block government-funded studies of polluted water, and when the federal prosecutor in Miami faulted the sugar industry in legal action to protect Everglades National Park, Big Sugar tried to get the lawsuit withdrawn and the prosecutor fired.[33] A costly legal battle ensued from 1988 to 1992 between the State of Florida, the U.S. government, and the sugar industry to resolve who was responsible for water quality standards, the maintenance of Everglades National Park and the Arthur R. Marshall Loxahatchee National Wildlife Refuge.[11]

A different concern about water quality arose when mercury was discovered in fish during the 1980s. Because mercury is damaging to humans, warnings were posted for fishermen that cautioned against eating fish caught in South Florida, and scientists became alarmed when a Florida panther was found dead near Shark River Slough with mercury levels high enough to be fatal to humans.[34] When mercury is ingested it adversely affects the central nervous system, and can cause brain damage and birth defects.[35] Studies of mercury

levels found that it is bioaccumulated through the food chain: animals that are lower on the chain have decreased amounts, but as larger animals eat them, the amount of mercury is multiplied. The dead panther's diet consisted of small animals, including raccoons and young alligators. The source of the mercury was found to be waste incinerators and fossil fuel power plants that expelled the element in the atmosphere, which precipitated with rain, or in the dry season, dust.[34] Naturally occurring bacteria in the Everglades that function to reduce sulfur also transform mercury deposits into methylmercury. This process was more dramatic in areas where flooding was not as prevalent. Because of requirements that reduced power plant and incinerator emissions, the levels of mercury found in larger animals decreased as well: approximately a 60% decrease in fish and a 70% decrease in birds, though some levels still remain a health concern for people.[34]

[edit] Everglades Forever Act

In an attempt to resolve the political quagmire over water quality, Governor Lawton Chiles introduced a bill in 1994 to clean up water within the EAA that was being released to the lower Everglades. The bill stated that the "Everglades ecosystem must be restored both in terms of water quality and water quantity and must be preserved and protected in a manner that is long term and comprehensive".[36] It ensured the Florida Department of Environmental Protection (DEP) and the South Florida Water Management District (SFWMD) would be responsible for researching water quality, enforcing water supply improvement, controlling exotic species, and collecting taxes, with the aim of decreasing the levels of phosphorus in the region. It allowed for purchase of land where pollutants would be sent to "treat and improve the quality of waters coming from the EAA".[37]

Critics of the bill argued that the deadline for meeting the standards was unnecessarily delayed until 2006â ~a period of 12Â yearsâ ~to enforce better water quality. They also maintained that it did not force sugarcane farmers, who were the primary polluters, to pay enough of the costs, and increased the threshold of what was an acceptable amount of phosphorus in water from 10Â ppb to 50Â ppb.[38] Governor Chiles initially named it the Marjory Stoneman Douglas Act, but Douglas was so unimpressed with the action it took against polluters that she wrote to Chiles and demanded her name be stricken from it.[38] Despite criticism, the Florida legislature passed the Act in 1994. The SFWMD stated that its actions have exceeded expectations earlier than anticipated,[39] by creating Stormwater Treatment Areas (STA) within the EAA that contain a calcium-based substance such as lime rock layered between peat, and filled with calcareous periphyton. Early tests by the Army Corps of Engineers revealed this method reduced phosphorus levels from 80Â ppb to 10Â ppb.[40] The STAs are intended to treat water until the phosphorus levels are low enough to be released into the Loxahatchee National Wildlife Refuge or other WCAs.

[edit] Wildlife concerns

The intrusion of urban areas into wilderness has had a substantial impact on wildlife, and several species of animals are considered endangered in the Everglades region. One animal that has benefited from endangered species protection is the American Alligator (*Alligator mississippiensis*), whose holes give refuge to other animals, often allowing many species to survive during times of drought. Once abundant in the Everglades, the alligator was listed as an endangered species in 1967, but a combined effort by federal and state organizations and the banning of alligator hunting allowed it to rebound; it was pronounced fully recovered in 1987 and is no longer an endangered species.[41] However, alligators' territories and average body masses have been found to be generally smaller than in the past, and because populations have been reduced, their role during droughts has become limited.[42]

The American Crocodile (*Crocodylus acutus*) is also native to the region and has been designated as endangered since 1975. Unlike their relatives the alligators, crocodiles tend to thrive in brackish or salt-water habitats such as estuarine or marine coasts. Their most significant threat is disturbance by people. Too much contact with humans causes females to abandon their nests, and

males in particular are often victims of vehicle collisions while roaming over large territories and attempting to cross U.S. 1 and Card Sound Road in the Florida Keys. There are an estimated 500 to 1,000 crocodiles in southern Florida.[43]

The most critically endangered of any animal in the Everglades region is the Florida panther (*Puma concolor coryi*), a species that once lived throughout the southeastern United States: there were only 25-30 in the wild in 1995. The panther is most threatened by urban encroachment, because males require approximately 200 square miles (520 km<sup>2</sup>) for breeding territory. A male and two to five females may live within that range. When habitat is lost, panthers will fight over territory. After vehicle collisions, the second most frequent cause of death for panthers is intra-species aggression.[44] In the 1990s urban expansion crowded panthers from southwestern Florida as Naples and Ft. Myers began to expand into the western Everglades and Big Cypress Swamp. Agencies such as the Army Corps of Engineers and the U.S. Fish and Wildlife Service were responsible for maintaining the Clean Water Act and the Endangered Species Act, yet still approved 99% of all permits to build in wetlands and panther territory.[45] A limited genetic pool is also a danger. Biologists introduced eight female Texas cougars (*Puma concolor*) in 1995 to diversify genes, and there are between 80 and 100 panthers in the wild as of 2008[update].[44]

Perhaps the most dramatic loss of any group of animals has been to wading birds. Their numbers were estimated by eyewitness accounts to be approximately 2.5 million in the late 19th century. However, snowy egrets (*Egretta thula*), roseate spoonbills (*Platalea ajaja*), and reddish egrets (*Egretta rufescens*) were hunted to the brink of extinction for the colorful feathers used in women's hats. After about 1920 when the fashion passed, their numbers returned in the 1930s, but over the next 50 years actions by the C&SF further disturbed populations. When the canals were constructed, natural water flow was restricted from the mangrove forests near the coast of Florida Bay. From one wet season to the next, fish were unable to reach traditional locations to repopulate when water was withheld by the C&SF. Birds were forced to fly farther from their nests to forage for food. By the 1970s, bird numbers had decreased 90%. Many of the birds moved to smaller colonies in the WCAs to be closer to a food source, making them more difficult to count. Yet they remain significantly fewer in number than before the canals were constructed.[46][47]

[edit] Invasive species

Around 6 million people moved to South Florida between 1940 and 1965. With a thousand people moving to Miami each week, urban development quadrupled.[48] As the human population grew rapidly, the problem of exotic plant and animal species also grew. Many species of plants were brought in to South Florida from Asia, Central America, or Australia as decorative landscaping. Exotic animals imported by the pet trade have escaped or been released. Biological controls that keep invasive species smaller in size and fewer in number in their native lands often do not exist in the Everglades, and they compete with the embattled native species for food and space. Of imported plant species, melaleuca trees (*Melaleuca quinquenervia*) have caused the most problems. Melaleucas grow on average 100 feet (30 m) in the Everglades, as opposed to 25 to 60 feet (7.6 to 18 m) in their native Australia. They were brought to southern Florida as windbreaks and deliberately seeded in marsh areas because they absorb vast amounts of water. In a region that is regularly shaped by fire, melaleucas are fire-resistant and their seeds are more efficiently spread by fire. They are too dense for wading birds with large wingspans to nest in, and they choke out native vegetation.[49] Costs of controlling melaleucas topped \$2 million in 1998 for Everglades National Park. In Big Cypress National Preserve, melaleucas covered 186 square miles (480 km<sup>2</sup>) at their most pervasive in the 1990s.[50]

Brazilian pepper (*Schinus terebinthifolius*) was brought to Southern Florida as an ornamental shrub and was dispersed by the droppings of birds and other animals that ate its bright red berries. It thrives on abandoned agricultural land growing in forests too dense for wading birds to nest in, similar to melaleucas. It grows rapidly especially after hurricanes and has invaded

pineland forests. Following Hurricane Andrew, scientists and volunteers cleared damaged pinelands of Brazilian pepper so the native trees would be able to return to their natural state.[51]

The species that is causing the most impediment to restoration is the Old World climbing fern (*Lygodium microphyllum*), introduced in 1965. The fern grows rapidly and thickly on the ground, making passage for land animals such as black bears and panthers problematic. The ferns also grow as vines into taller portions of trees, and fires climb the ferns in "fire ladders" to scorch portions of the trees that are not naturally resistant to fire.[52]

Several animal species have been introduced to Everglades waterways. Many tropical fish are released, the most detrimental being the blue tilapia (*Oreochromis aureus*), which builds large nests in shallow waters. Tilapia also consume vegetation which would normally be used by young native fishes for cover and protection.[53]

Reptiles have a particular affinity for the South Florida ecosystem. Virtually all lizards appearing in the Everglades have been introduced, such as the brown anole (*Anolis sagrei*) and the tropical house gecko (*Hemidactylus mabouia*). The herbivorous green iguana (*Iguana iguana*) can reproduce rapidly in wilderness habitats. However, the reptile that has earned media attention for its size and potential to harm children and domestic pets is the Burmese python (*Python molurus bivittatus*), which has spread quickly throughout the area. The python can grow up to 20 feet (6.1 m) long and competes with alligators for the top of the food chain.[54]

Though exotic birds such as parrots and parakeets are also found in the Everglades, their impact is negligible. Conversely, perhaps the animal that causes the most damage to native wildlife is the domestic or feral cat. Across the U.S., cats are responsible for approximately a billion bird deaths annually. They are estimated to number 640 per square mile; cats living in suburban areas have devastating effects on migratory birds and marsh rabbits.[55]

[edit] Homestead Air Force Base

Hurricane Andrew struck Miami in 1992, with catastrophic damage to Homestead Air Force Base in Homestead. A plan to rejuvenate the property in 1993 and convert it into a commercial airport was met with enthusiasm from local municipal and commercial entities hoping to recoup \$480 million and 11,000 jobs lost in the local community by the destruction and subsequent closing of the base.[56] On March 31, 1994, the base was designated as a reserve base, functioning only part-time.[57] A cursory environmental study performed by the Air Force was deemed insufficient by local conservation groups, who threatened to sue in order to halt the acquisition when estimates of 650 flights a day were projected. Groups had previously been alarmed in 1990 by the inclusion of Homestead Air Force Base on a list of the U.S. Government's most polluted properties.[58] Their concerns also included noise, and the inevitable collisions with birds using the mangrove forests as rookeries. The air force base is located between Everglades National Park and Biscayne National Park, giving it the potential to cause harm to both. In 2000, Secretary of the Interior Bruce Babbitt and the director of the U.S. Environmental Protection Agency expressed their opposition to the project, despite other Clinton Administration agencies previously working to ensure the base would be turned over to local agencies quickly and smoothly as "a model of base disposal".[59][60] Although attempts were made to make the base more environmentally friendly, in 2001 local commercial interests promoting the airport lost federal support.

[edit] Comprehensive Everglades Restoration Plan

[edit] Sustainable South Florida

Despite the successes of the Everglades Forever Act and the decreases in mercury levels, the focus intensified on the Everglades in the 1990s as quality of life in the South Florida metropolitan areas diminished. It was becoming clear that urban populations were consuming increasingly unsustainable levels of natural resources. A report entitled "The Governor's Commission for a



Sustainable South Florida", submitted to Lawton Chiles in 1995, identified the problems the state and municipal governments were facing. The report remarked that the degradation of the natural quality of the Everglades, Florida Bay, and other bodies of water in South Florida would cause a significant decrease in tourism (12,000 jobs and \$200 million annually) and income from compromised commercial fishing (3,300 jobs and \$52 million annually).[61] The report noted that past abuses and neglect of the environment had brought the region to "a precipitous juncture" where the inhabitants of South Florida faced health hazards in polluted air and water; furthermore, crowded and unsafe urban conditions hurt the reputation of the state. It noted that though the population had increased by 90% over the previous two decades, registered vehicles had increased by 166%.[61] On the quality and availability of water, the report stated, "[The] frequent water shortages ... create the irony of a natural system dying of thirst in a subtropical environment with over 53 inches of rain per year".[61]

Restoration of the Everglades, however, briefly became a bipartisan cause in national politics. A controversial penny-a-pound (2 cent/kg) tax on sugar was proposed to fund some of the necessary changes to be made to help decrease phosphorus and make other improvements to water. State voters were asked to support the tax, and environmentalists paid \$15 million to encourage the issue. Sugar lobbyists responded with \$24 million in advertising to discourage it and succeeded; it became the most expensive ballot issue in state history.[62] How restoration might be funded became a political battleground and seemed to stall without resolution. However, in the 1996 election year, Republican senator Bob Dole proposed that Congress give the State of Florida \$200 million to acquire land for the Everglades. Democratic Vice President Al Gore promised the federal government would purchase 100,000 acres (400 km<sup>2</sup>) of land in the EAA to turn it over for restoration. Politicking reduced the number to 50,000 acres (200 km<sup>2</sup>), but both Dole's and Gore's gestures were approved by Congress.[63]

[edit] Central and South Florida Project Restudy

As part of the Water Resources Development Act of 1992, Congress authorized an evaluation of the effectiveness of the Central and Southern Florida Flood Control Project. A report known as the "Restudy", written by the U.S. Army Corps of Engineers and the South Florida Water Management District, was submitted to Congress in 1999. It cited indicators of harm to the system: a 50% reduction in the original Everglades, diminished water storage, harmful timing of water release, an 85 to 90% decrease in wading bird populations over the past 50 years, and the decline of output from commercial fisheries. Bodies of water including Lake Okeechobee, the Caloosahatchee River, St. Lucie estuary, Lake Worth Lagoon, Biscayne Bay, Florida Bay, and the Everglades reflected drastic water level changes, hypersalinity, and dramatic changes in marine and freshwater ecosystems. The Restudy noted the overall decline in water quality over the past 50 years was caused by loss of wetlands that act as filters for polluted water.[64] It predicted that without intervention the entire South Florida ecosystem would deteriorate. Canals took roughly 170 billion US gallons (640 Gl) of water to the Atlantic Ocean or Gulf of Mexico daily, so there was no opportunity for water storage, yet flooding was still a problem.[65] Without changes to the current system, the Restudy predicted water restrictions would be necessary every other year, and annually in some locations. It also warned that revising some portions of the project without dedicating efforts to an overall comprehensive plan would be insufficient and probably detrimental.[66]

After evaluating ten plans, the Restudy recommended a comprehensive strategy that would cost \$7.8 billion over 20 years. The plan advised taking the following actions:

Create surface water storage reservoirs to capture 1,500,000 acre feet (1.9 km<sup>3</sup>) of water in several locations taking up 181,300 acres (734 km<sup>2</sup>).[67]

Create water preserve areas between Miami-Dade and Palm Beach and the eastern Everglades to treat runoff water.[67]

Manage Lake Okeechobee as an ecological resource to avoid the drastic rise and fall of water levels in the lake that are harmful to aquatic plant and animal

life and disturb the lake sediments.[67]

Improve water deliveries to estuaries to reduce the rapid discharge of excess water to the Caloosahatchee and St. Lucie estuaries that upset nutrient balances and cause lesions on fish. Stormwater discharge would be sent instead to reservoirs.[68]

Increase underground water storage to hold 16 billion US gallons (61Â G1) a day in wells, or reservoirs in the Floridan Aquifer, to be used later in dry periods, in a method called Aquifer Storage and Recovery (ASR).[68]

Construct treatment wetlands as Stormwater Treatment Areas throughout 35,600 acres (144Â km2), that would decrease the amount of pollutants in the environment.[68]

Improve water deliveries to the Everglades by increasing them at a rate of approximately 26% into Shark River Slough.[68]

Remove barriers to sheetflow by destroying or removing 240 miles (390Â km) of canals and levees, specifically removing the Miami Canal and reconstructing the Tamiami Trail from a highway to culverts and bridges to allow sheetflow to return to a more natural rate of water flow into Everglades National Park.[69]

Store water in quarries and reuse wastewater by employing existing quarries to supply the South Florida metropolitan area as well as Florida Bay and the Everglades. Construct two wastewater treatment plants capable of discharging 22 billion US gallons (83Â G1) a day to recharge the Biscayne Aquifer.[69]

The implementation of all of the advised actions, the report stated, would "result in the recovery of healthy, sustainable ecosystems throughout south Florida".[70] The report admitted that it did not have all the answers, though no plan could.[71] However, it predicted that it would restore the "essential defining features of the pre-drainage wetlands over large portions of the remaining system", that populations of all animals would increase, and animal distribution patterns would return to their natural states.[71] Critics expressed concern over some unused technology; scientists were unsure if the quarries would hold as much water as was being suggested, and whether the water would harbor harmful bacteria from the quarries. Overtaxing the aquifers was another concernâ ~it was not a technique that had been previously attempted.[72] Though it was optimistic, the Restudy noted,

It is important to understand that the 'restored' Everglades of the future will be different from any version of the Everglades that has existed in the past. While it certainly will be vastly superior to the current ecosystem, it will not completely match the pre-drainage system. This is not possible, in light of the irreversible physical changes that have made (sic) to the ecosystem. It will be an Everglades that is smaller and somewhat differently arranged than the historic ecosystem. But it will be a successfully restored Everglades, because it will have recovered those hydrological and biological patterns which defined the original Everglades, and which made it unique among the worldâ s wetland systems. It will become a place that kindles the wildness and richness of the former Everglades.[73]

The report was the result of many cooperating agencies that often had conflicting goals. An initial draft was submitted to Everglades National Park management who asserted not enough water would be released to the park quickly enoughâ ~that the priority went to delivering water to urban areas. When they threatened to refuse to support it, the plan was rewritten to provide more water to the park. However, the Miccosukee Indians have a reservation in between the park and water control devices, and they threatened to sue to ensure their tribal lands and a \$50Â million casino would not be flooded.[74] Other special interests were also concerned that businesses and residents would take second priority after nature. The Everglades, however, proved to be a bipartisan cause. The Comprehensive Everglades Restoration Plan (CERP) was authorized by the Water Resources Development Act of 2000 and signed into law by President Bill Clinton on December 11, 2000. It approved the immediate use of \$1.3Â billion for implementation to be split by the federal government and

other sources.[75]

[edit] Implementation

The State of Florida reports that it has spent more than \$2Â billion on the various projects since CERP was signed. More than 36,000 acres (150Â km2) of Stormwater Treatment Areas (STA) have been constructed to filter 2,500 short tons (2,300Â t) of phosphorus from Everglades waters. An STA covering 17,000 acres (69Â km2) was constructed in 2004, making it the largest manmade wetland in the world. Fifty-five percent of the land necessary for restoration, totaling 210,167 acres (850.5Â km2), has been purchased by the State of Florida. A plan named "Acceler8", to hasten the construction and funding of the project, was put into place, spurring the start of six of eight construction projects, including that of three large reservoirs.[76]

A changing economy, too, hurt the plan. It passed in a year with a record budget surplus, but the climate changed sharply after the terrorist attacks of 2001. Some state officials say the plan, which involves dozens of complex engineering projects, also got bogged down in federal bureaucracy, a victim of "analysis paralysis."

The New York Times, November 2007

Despite the bipartisan goodwill and declarations of the importance of the Everglades, the region still remains in danger. Political maneuvering continues to impede CERP: sugar lobbyists promoted a bill in the Florida legislature in 2003 that increased the acceptable amount of phosphorus in Everglades waterways from 10Â ppb to 15Â ppb and extended the deadline for the mandated decrease by 20Â years.[77] A compromise of 2016 was eventually reached. Environmental organizations express concern that attempts to speed up some of the construction through Acceler8 are politically motivated; the six projects Acceler8 focuses on do not provide more water to natural areas in desperate need of it, but rather to projects in populated areas bordering the Everglades, suggesting that water is being diverted to make room for more people in an already overtaxed environment.[78] Though Congress promised half the funds for restoration, after the War in Iraq began and two of CERP's major supporters in Congress retired, the federal role in CERP was left unfulfilled. According to a story in The New York Times, state officials say the restoration is lost in a maze of "federal bureaucracy, a victim of 'analysis paralysis' ".[79] In 2007, the release of \$2Â billion for Everglades restoration was approved by Congress, overriding President George W. Bush's veto of the entire Water Development Project the money was a part of. Bush's rare veto went against the wishes of Florida Republicans, including his brother, Governor Jeb Bush. A lack of subsequent action by the Congress prompted Governor Charlie Crist to travel to Washington D.C. in February 2008 and inquire about the promised funds.[80] By June 2008, the federal government had spent only \$400Â million of the \$7.8Â billion legislated.[81] Carl Hiaasen characterized George W. Bush's attitude toward the environment as "long-standing indifference" in June 2008, exemplified when Bush stated he would not intervene to change the Environmental Protection Agency's (EPA) policy allowing the release of water polluted with fertilizers and phosphorus into the Everglades.[82]

[edit] Reassessment of CERP

Florida still receives a thousand new residents daily and lands slated for restoration and wetland recovery are often bought and sold before the state has a chance to bid on them. The competitive pricing of real estate also drives it beyond the purchasing ability of the state.[83]Â Because the State of Florida is assisting with purchasing lands and funding construction, some of the programs under CERP are vulnerable to state budget cuts.[84][85] In June 2008 Governor Crist announced that the State of Florida will buy U.S. Sugar for \$1.7Â

billion. The idea came when sugar lobbyists were trying to persuade Crist to relax restriction of U.S. Sugar's practice of pumping phosphorus-laden water into the Everglades. According to one of the lobbyists who characterized it as a "duh moment", Crist said, "If sugar is polluting the Everglades, and we're paying to clean the Everglades, why don't we just get rid of sugar?"[62] The largest producer of cane sugar in the U.S. will continue operations for six years, and when ownership transfers to Florida, 187,000 acres (760Â km2) of the Everglades will remain undeveloped to allow it to be restored to its pre-drainage state.[86]

In September 2008 the National Research Council (NRC), a nonprofit agency providing science and policy advice to the federal government,[87] submitted a report on the progress of CERP. The report noted "scant progress" in restoration because of problems in budgeting, planning, and bureaucracy.[88] The NRC report called the Everglades one of the "world's treasured ecosystems" that is being further endangered by lack of progress: "Ongoing delay in Everglades restoration has not only postponed improvementsâ ~it has allowed ecological decline to continue". It cited the shrinking tree islands, and the negative population growth of the endangered *Rostrhamus sociabilis* or Everglades snail kite, and *Ammodramus maritimus mirabilis*, the Cape Sable seaside sparrow. The lack of water reaching Everglades National Park was characterized as "one of the most discouraging stories" in implementation of the plan.[88] The NRC recommended improving planning on the state and federal levels, evaluating each CERP project annually, and further acquisition of land for restoration. Everglades restoration was earmarked \$96 million in federal funds as part of the American Recovery and Reinvestment Act of 2009 with the intention of providing civil service and construction jobs while simultaneously implementing the legislated repair projects.[89]

In January 2010, work began on the C-111 canal, built in the 1960s to drain irrigated farmland, to reconstruct it to keep from diverting water from Everglades National Park. Two other projects focusing on restoration are also scheduled to start in 2010.[90] Governor Crist announced the same month that \$50 million would be earmarked for Everglades restoration.[91] In April of the same year, a federal district court judge sharply criticized both state and federal failures to meet deadlines, describing the cleanup efforts as being slowed by "glacial delay" and government neglect of environmental law enforcement "incomprehensible".[92]

[edit] See also

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[edit] Further reading

*Albertosaurus* (pron.: /ˈɒlᵻrtᵻsᵻrᵻs/; meaning "Alberta lizard") is a genus of tyrannosaurid theropod dinosaur that lived in western North America during the Late Cretaceous Period, about 70 million years ago. The type species, *A. sarcophagus*, was apparently restricted in range to the modern-day Canadian province of Alberta, after which the genus is named. Scientists disagree on the content of the genus, with some recognizing *Gorgosaurus libratus* as a second species.

As a tyrannosaurid, *Albertosaurus* was a bipedal predator with tiny, two-fingered hands and a massive head with dozens of large, sharp teeth. It may have been at the top of the food chain in its local ecosystem. Although relatively large for a theropod, *Albertosaurus* was much smaller than its more famous relative *Tyrannosaurus*, probably weighing less than 2 metric tons.

Since the first discovery in 1884, fossils of more than thirty individuals have been recovered, providing scientists with a more detailed knowledge of *Albertosaurus* anatomy than is available for most other tyrannosaurids. The discovery of 26 individuals at one site provides evidence of pack behaviour and allows studies of ontogeny and population biology which are impossible with lesser-known dinosaurs.

[edit] Description

*Albertosaurus* was smaller than some other tyrannosaurids, such as *Tarbosaurus* and *Tyrannosaurus*. Typical adults of *Albertosaurus* measured up to 9 metres (30 ft) long,[1][2] while rare individuals of great age could grow to over 10 metres (33 ft) in length.[3] Several independent mass estimates, obtained by different methods, suggest that an adult *Albertosaurus* weighed between 1.3 tonnes (1.4 short tons)[4] and 1.7 tonnes (1.9 tons).[5]

All tyrannosaurids, including *Albertosaurus*, shared a similar body appearance. Typically for a theropod, *Albertosaurus* was bipedal and balanced the heavy head and torso with a long tail. However, tyrannosaurid forelimbs were extremely small for their body size and retained only two digits. The hind limbs were long and ended in a four-toed foot. The first digit, called the hallux, was short and only the other three contacted the ground, with the third (middle) digit longer than the rest.[2] *Albertosaurus* may have been able to reach walking speeds of 14–21 kilometres per hour (8–13 miles per hour).[6] At least for the younger individuals, a high running speed is plausible.[7]

[edit] Skull and teeth

The massive skull of *Albertosaurus*, perched on a short, S-shaped neck, was approximately 1 metre (3.3 ft) long in the largest adults.[8] Wide openings in the skull (fenestrae) reduced the weight of the head while also providing space for muscle attachment and sensory organs. Its long jaws contained, both sides combined, 58 or more banana-shaped teeth; larger tyrannosaurids possessed fewer teeth, *Gorgosaurus* at least sixty-two. Unlike most theropods, *Albertosaurus* and other tyrannosaurids were heterodont, with teeth of different forms depending on their position in the mouth. The premaxillary teeth at the tip of the upper jaw, four per side, were much smaller than the rest, more closely packed, and D-shaped in cross section.[2] Like with *Tyrannosaurus*, the maxillary (cheek) teeth of *Albertosaurus* were adapted in general form to resist lateral forces exerted by a struggling prey. The bite force of *Albertosaurus* was less formidable however, the maximum force, by the hind teeth, reaching 3413 Newton.[9] Above the eyes were short bony crests that may have been brightly coloured in life and used in courtship to attract a mate.[10]

William Abler observed in 2001 that *Albertosaurus* tooth serrations are so thin as to functionally be a crack in the tooth.[11] However, at the base of this crack is a round void called an ampulla which would have functioned to distribute force over a larger surface area, hindering the ability of the "crack" formed by the serration to propagate through the tooth.[11] An



examination of other ancient predators, a phytosaur and Dimetrodon found similarly crack-like serrations, but no adaptations for preventing crack propagation.[11] Tyrannosaurid teeth were used as holdfasts for pulling meat off a body, rather than knife-like cutting functions.[11] Tooth wear patterns hint that complex head shaking behaviours may have been involved in tyrannosaur feeding.[11] When a tyrannosaur would have pulled back on a piece of meat, the force would tend to push the tip of tooth toward the front of the mouth and the anchored root would experience tension on the posterior side and compression from the front.[11] This would typically incline the tooth to crack formation on the posterior side of the tooth, but the ampullae at the base of the already crack-like serrations would tend to diffuse potential crack-forming forces.[11] This form resembles techniques used by guitar makers to "impart alternating regions of flexibility and rigidity to a stick of wood." [11] The use of a drill to create an "ampulla" of sorts and prevent the propagation of cracks through an important material is also used to protect airplane surfaces.[11] Abler demonstrated that a plexiglass bar with kerfs and drilled holes was more than 25% stronger than one with only regularly placed incisions.[11]

[edit] Classification and systematics

Albertosaurus is a member of the theropod family Tyrannosauridae, in the subfamily Albertosaurinae. Its closest relative is the slightly older Gorgosaurus libratus (sometimes called Albertosaurus libratus; see below).[12] These two species are the only described albertosaurines; other undescribed species may exist.[13] Thomas Holtz found Appalachiosaurus to be an albertosaurine in 2004,[2] but his more recent unpublished work locates it just outside Tyrannosauridae,[14] in agreement with other authors.[15]

The other major subfamily of tyrannosaurids is the Tyrannosaurinae, including Daspletosaurus, Tarbosaurus and Tyrannosaurus. Compared with these robust tyrannosaurines, albertosaurines had slender builds, with proportionately smaller skulls and longer bones of the lower leg (tibia) and feet (metatarsals and phalanges).[8][12]

[edit] Discovery and naming

[edit] Naming

Albertosaurus was named by Henry Fairfield Osborn in a one-page note at the end of his 1905 description of Tyrannosaurus rex.[16]:265 The name honours Alberta, the Canadian province established the same year, in which the first remains were found. The generic name also incorporates the Greek term ἰλίζαυρος /sauros ("lizard"), the most common suffix in dinosaur names. The type species is Albertosaurus sarcophagus; the specific name is derived from Ancient Greek ἰλίζαρκος ἰλίζαρκος (sarkophagos) meaning "flesh-eating" and having the same etymology as the funeral container with which it shares its name: a combination of the Greek words ἰλίζαρξ /sarx ("flesh") and ἰλίζαφειν /phagein ("to eat").[16] More than thirty specimens of all ages are known to science.[3][13]

[edit] Early discoveries

The type specimen is a partial skull, collected in the summer of 1884 from an outcrop of the Horseshoe Canyon Formation alongside the Red Deer River, in Alberta. This specimen, found on June 9, 1884, was recovered by an expedition of the Geological Survey of Canada, led by the famous geologist Joseph Burr Tyrrell. Due to a lack of specialised equipment the almost complete skull could only be partially secured. In 1889, Tyrrell's colleague Thomas Chesmer Weston found an incomplete smaller skull associated with some skeletal material at a location nearby.[17] The two skulls were assigned to the preexisting species Laelaps incrassatus by Edward Drinker Cope in 1892,[18] although the name Laelaps was preoccupied by a genus of mite and had been changed to Dryptosaurus in 1877 by Othniel Charles Marsh. Cope refused to recognize the new name created by his archrival Marsh, however, Lawrence Lambe instead of Laelaps incrassatus used the name Dryptosaurus incrassatus when he described the remains in detail in 1903 and 1904,[19][20] a combination first coined by Oliver Perry Hay in 1902.[21] Shortly later, Osborn pointed out that D. incrassatus was based on generic tyrannosaurid teeth, so the two Horseshoe Canyon skulls could not be confidently referred to that species. The Horseshoe

Canyon skulls also differed markedly from the remains of *D. aquilunguis*, type species of *Dryptosaurus*, so Osborn created the new name *Albertosaurus sarcophagus* for them in 1905. He did not describe the remains in any great detail, citing Lambe's complete description the year before.[16] Both specimens (the holotype CMN 5600 and the paratype CMN 5601) are stored in the Canadian Museum of Nature in Ottawa. By the early twenty-first century some concerns had arisen that, due to the damaged state of the holotype, *Albertosaurus* might be a *nomen dubium*, a "dubious name" that could only be used for the type specimen itself because other fossils could not reliably be assigned to it. However, in 2010 Thomas Carr established that the holotype, the paratype and comparable later finds all shared a single common unique trait or autapomorphy: the possession of an enlarged pneumatic opening in the back rim of the side of the palatine bone, proving that *Albertosaurus* was a valid taxon.[22]

[edit] Dry Island bonebed

On August 11, 1910, American paleontologist Barnum Brown discovered the remains of a large group of *Albertosaurus* at another quarry alongside the Red Deer River. Because of the large number of bones and the limited time available, Brown's party did not collect every specimen, but made sure to collect remains from all of the individuals they could identify in the bonebed. Among the bones deposited in the American Museum of Natural History collections in New York City are seven sets of right metatarsals, along with two isolated toe bones that did not match any of the metatarsals in size. This indicated the presence of at least nine individuals in the quarry. The Royal Tyrrell Museum of Palaeontology rediscovered the bonebed in 1997 and resumed fieldwork at the site, which is now located inside Dry Island Buffalo Jump Provincial Park.[7] Further excavation from 1997 to 2005 turned up the remains of thirteen more individuals of various ages, including a diminutive two-year-old and a very old individual estimated at over 10 metres (33 ft) in length. None of these individuals are known from complete skeletons, and most are represented by remains in both museums.[3][4] Excavations continued until 2008, when the minimum number of individuals present had been established at twelve, on the basis of preserved elements that occur only once in a skeleton, and at twenty-six if mirrored elements were counted when differing in size due to ontogeny. A total of 1128 *Albertosaurus* bones had been secured, the largest concentration of large theropod fossils known from the Cretaceous.[23]

[edit] *Gorgosaurus libratus*

In 1913, paleontologist Charles H. Sternberg recovered another tyrannosaurid skeleton from the slightly older Dinosaur Park Formation in Alberta. Lawrence Lambe named this dinosaur *Gorgosaurus libratus* in 1914.[24] Other specimens were later found in Alberta and the US state of Montana. Finding, largely due to a lack of good *Albertosaurus* skull material, no significant differences to separate the two taxa, Dale Russell declared the name *Gorgosaurus* a junior synonym of *Albertosaurus*, which had been named first, and *G. libratus* was renamed *Albertosaurus libratus* in 1970. A species distinction was maintained because of the age difference. This addition extended the temporal range of the genus *Albertosaurus* backwards by several million years and its geographic range southwards by hundreds of kilometres.[1]

In 2003, Philip J. Currie, benefiting from much more extensive finds and a general increase in anatomical knowledge of theropods, compared several tyrannosaurid skulls and came to the conclusion that the two species are more distinct than previously thought. The decision to use one or two genera is rather arbitrary, as the two species are sister taxa, more closely related to each other than to any other species. Recognizing this, Currie nevertheless recommended that *Albertosaurus* and *Gorgosaurus* be retained as separate genera, as he concluded that they were no more similar than *Daspletosaurus* and *Tyrannosaurus*, which are almost always separated. In addition, several albertosaurine specimens have been recovered from Alaska and New Mexico, and Currie suggested that the *Albertosaurus*-*Gorgosaurus* situation may be clarified once these are described fully.[13] Most authors have followed Currie's recommendation,[2][4][25] but some have not.[15]

[edit] Other discoveries

In 1911 Barnum Brown, during the second year of American Museum of Natural History operations in Alberta, uncovered a fragmentary partial *Albertosaurus* skull at the Red Deer River near Tolman Bridge, specimen AMNH 5222.[26]

William Parks described a new species in 1928, *Albertosaurus arctunguis*, based on a partial skeleton lacking the skull excavated by Gus Lindblad and Ralph Hornell near the Red Deer River in 1923,[27] but this species has been considered identical to *A. sarcophagus* since 1970.[1] Parks' specimen (ROM 807) is housed in the Royal Ontario Museum in Toronto.

Between 1926 and 1972, no *Albertosaurus* fossils were found at all but since the seventies there has been a steady increase in the known material. Apart from the Dry Island bonebed, six more skulls and skeletons have since been discovered in Alberta and are housed in various Canadian museums: specimens RTMP 81.010.001, found in 1978 by amateur paleontologist Maurice Stefanuk; RTMP 85.098.001, found by Stefanuk on 16 June 1985; RTMP 86.64.001 (December 1985); RTMP 86.205.001 (1986); RTMP 97.058.0001 (1996); and CMN 11315. Due to vandalism and accidents however, no undamaged and complete skulls could be secured among these finds.[17] Fossils have also been reported from the American states of Montana, New Mexico, and Wyoming, but these probably do not represent *A. sarcophagus* and may not even belong to the genus *Albertosaurus*. [2][13]

[edit] Other species

Apart from *A. sarcophagus*, *A. arctunguis* and *A. libratus*, several other species of *Albertosaurus* have been named. All of these are today seen as younger synonyms of other species or as *nomina dubia*, and are not assigned to *Albertosaurus*.

In 1930, Anatoly Nikolaevich Riabinin named *Albertosaurus pericolosus* based on a tooth from China, probably belonging to *Tarbosaurus*. [28] Friedrich von Huene renamed *Dryptosaurus incrassatus*, not considered a *nomen dubium* by him, to *Albertosaurus incrassatus* in 1932.[29] Because he had identified *Gorgosaurus* with *Albertosaurus*, Russell in 1970 also renamed *Gorgosaurus sternbergi* Matthew & Brown 1922 into a *Albertosaurus sternbergi* and *Gorgosaurus lancensis* Gilmore 1946 into a *Albertosaurus lancensis*. [1] The former species is today seen as a juvenile form of *Gorgosaurus libratus*, the latter as either identical to *Tyrannosaurus* or representing a separate genus *Nanotyrannus*. *Albertosaurus megagracilis* was in 1988 based by Gregory S. Paul on a small tyrannosaurid skeleton, specimen LACM 28345, from the Hell Creek Formation of Montana. [30] It was renamed *Dinotyrannus* in 1995,[31] but is now thought to represent a juvenile *Tyrannosaurus rex*. [8] Also in 1988, Paul renamed *Alectrosaurus olseni* Gilmore 1933 into a *Albertosaurus olseni*; [30] this has found no general acceptance. In 1989, *Gorgosaurus novojilovi* Maleev 1955 was by Bryn Mader and Robert Bradley [disambiguation needed] renamed into a *Albertosaurus novojilovi*; [32] today this is seen as a synonym of *Tarbosaurus*.

On two occasions species based on valid *Albertosaurus* material were reassigned to a different genus: in 1922 William Diller Matthew renamed *A. sarcophagus* into *Deinodon sarcophagus* [33] and in 1939 German paleontologist Oskar Kuhn renamed *A. arctunguis* into *Deinodon arctunguis*. [34]

[edit] Paleobiology

[edit] Growth pattern

Most age categories of *Albertosaurus* are represented in the fossil record. Using bone histology, the age of an individual animal at the time of death can often be determined, allowing growth rates to be estimated and compared with other species. The youngest known *Albertosaurus* is a two-year-old discovered in the Dry Island bonebed, which would have weighed about 50Â kilograms (110Â lb) and measured slightly more than 2Â metres (7Â ft) in length. The 10Â metre (33Â ft) specimen from the same quarry is the oldest and largest known, at 28 years of age. When specimens of intermediate age and size are plotted on a graph, an S-shaped growth curve results, with the most rapid growth occurring in a four-year period ending around the sixteenth year of life, a pattern also seen in other tyrannosaurids. The growth rate during this phase was 122Â kilograms

(268Â lb) per year, based on an adult 1.3Â tonnes (1.4Â short tons). Other studies have suggested higher adult weights; this would affect the magnitude of the growth rate but not the overall pattern. Tyrannosaurids similar in size to *Albertosaurus* had similar growth rates, although the much larger *Tyrannosaurus rex* grew almost five times faster (601Â kilograms [1325Â lb] per year) at its peak.[3] The end of the rapid growth phase suggests the onset of sexual maturity in *Albertosaurus*, although growth continued at a slower rate throughout the animals' lives.[3][4] Sexual maturation while still actively growing appears to be a shared trait among small[35] and large[36] dinosaurs as well as in large mammals such as humans and elephants.[36] This pattern of relatively early sexual maturation differs strikingly from the pattern in birds, which delay their sexual maturity until after they have finished growing.[25][36]

During growth, through thickening the tooth morphology changed so much that, had the association of young and adult skeletons on the Dry Island bonebed not proven they belonged to the same taxon, the teeth of juveniles would likely have been identified by statistical analysis as those of a different species.[37]

#### [edit] Life history

Most known *Albertosaurus* individuals were aged 14 years or more at the time of death. Juvenile animals are rarely found as fossils for several reasons, mainly preservation bias, where the smaller bones of younger animals were less likely to be preserved by fossilization than the larger bones of adults, and collection bias, where smaller fossils are less likely to be noticed by collectors in the field.[38] Young *Albertosaurus* are relatively large for juvenile animals, but their remains are still rare in the fossil record compared with adults. It has been suggested that this phenomenon is a consequence of life history, rather than bias, and that fossils of juvenile *Albertosaurus* are rare because they simply did not die as often as adults did.[3]

A hypothesis of *Albertosaurus* life history postulates that hatchlings died in large numbers, but have not been preserved in the fossil record due to their small size and fragile construction. After just two years, juveniles were larger than any other predator in the region aside from adult *Albertosaurus*, and more fleet of foot than most of their prey animals. This resulted in a dramatic decrease in their mortality rate and a corresponding rarity of fossil remains. Mortality rates doubled at age twelve, perhaps the result of the physiological demands of the rapid growth phase, and then doubled again with the onset of sexual maturity between the ages of fourteen and sixteen. This elevated mortality rate continued throughout adulthood, perhaps due to the high physiological demands of procreation, including stress and injuries received during intraspecific competition for mates and resources, and eventually, the ever-increasing effects of senescence. The higher mortality rate in adults may explain their more common preservation. Very large animals were rare because few individuals survived long enough to attain such sizes. High infant mortality rates, followed by reduced mortality among juveniles and a sudden increase in mortality after sexual maturity, with very few animals reaching maximum size, is a pattern observed in many modern large mammals, including elephants, African buffalo, and rhinoceros. The same pattern is also seen in other tyrannosaurids. The comparison with modern animals and other tyrannosaurids lends support to this life history hypothesis, but bias in the fossil record may still play a large role, especially since more than two-thirds of all *Albertosaurus* specimens are known from one locality.[3][25][39]

#### [edit] Pack behaviour

The Dry Island bonebed discovered by Barnum Brown and his crew contains the remains of 26 *Albertosaurus*, the most individuals found in one locality of any large Cretaceous theropod, and the second-most of any large theropod dinosaur behind the *Allosaurus* assemblage at the Cleveland Lloyd Dinosaur Quarry in Utah. The group seems to be composed of one very old adult; eight adults

between 17 and 23 years old; seven sub-adults undergoing their rapid growth phases at between 12 and 16 years old; and six juveniles between the ages of 2 and 11 years, who had not yet reached the growth phase.[3]

The near-absence of herbivore remains and the similar state of preservation common to the many individuals at the Albertosaurus bonebed quarry led Currie to conclude that the locality was not a predator trap like the La Brea Tar Pits in California, and that all of the preserved animals died at the same time. Currie claims this as evidence of pack behaviour.[7] Other scientists are skeptical, observing that the animals may have been driven together by drought, flood or for other reasons.[3][38][41]

There is plentiful evidence for gregarious behaviour among herbivorous dinosaurs, including ceratopsians and hadrosaurs.[42] However, only rarely are so many dinosaurian predators found at the same site. Small theropods like Deinonychus,[43] Coelophysis and Megapnosaurus (Syntarsus rhodesiensis)[44] have been found in aggregations, as have larger predators like Allosaurus and Mapusaurus.[45] There is some evidence of gregarious behaviour in other tyrannosaurids as well. Fragmentary remains of smaller individuals were found alongside "Sue," the Tyrannosaurus mounted in the Field Museum of Natural History in Chicago, and a bonebed in the Two Medicine Formation of Montana contains at least three specimens of Daspletosaurus, preserved alongside several hadrosaurs.[46] These findings may corroborate the evidence for social behaviour in Albertosaurus, although some or all of the above localities may represent temporary or unnatural aggregations.[7] Others have speculated that instead of social groups, at least some of these finds represent Komodo dragon-like mobbing of carcasses, where aggressive competition leads to some of the predators being killed and cannibalized.[38]

Currie also offers speculation on the pack-hunting habits of Albertosaurus. The leg proportions of the smaller individuals were comparable to those of ornithomimids, which were probably among the fastest dinosaurs. Younger Albertosaurus were probably equally fleet-footed, or at least faster than their prey. Currie hypothesized that the younger members of the pack may have been responsible for driving their prey towards the adults, who were larger and more powerful, but also slower.[7] Juveniles may also have had different lifestyles than adults, filling predator niches between the enormous adults and the smaller contemporaneous theropods, the largest of which were two orders of magnitude smaller than adult Albertosaurus in mass.[2] A similar situation is observed in modern Komodo dragons, with hatchlings beginning life as small insectivores before growing to become the dominant predators on their islands.[47] However, as the preservation of behaviour in the fossil record is exceedingly rare, these ideas cannot readily be tested. In 2010, Currie, though still favouring the hunting pack hypothesis, admitted that the concentration could have been brought about by other causes, such as a slowly rising water level during an extended flood.[48]

[edit] Paleopathology

In 2009, researchers hypothesized that smooth-edged holes found in the fossil jaws of tyrannosaurid dinosaurs such as Albertosaurus were caused by a parasite similar to Trichomonas gallinae which infects birds.[49] They suggested that tyrannosaurids transmitted the infection by biting each other, and that the infection impaired their ability to eat food.[49]

In 2001, Bruce Rothschild and others published a study examining evidence for stress fractures and tendon avulsions in theropod dinosaurs and the implications for their behavior. They found that only one of the 319 Albertosaurus foot bones checked for stress fractures actually had them and none of the four hand bones did. The scientists found that stress fractures were "significantly" less common in Albertosaurus than in the carnosaur Allosaurus.[50] ROM 807, the holotype of A. arctunguis (now referred to as A. sarcophagus), had a 2.5 by 3.5 cm deep hole in the iliac blade, although the describer of the species did not recognize this as pathological. The specimen also contains some exostosis on the fourth left metatarsal. Two of the five Albertosaurus sarcophagus specimens with humeri in 1970 were reported by Dale

Russel as having pathological damage to them.[51]

In 2010, the health of the Dry Island Albertosaurus assembly was reported upon. Most specimens showed no sign of disease. On three phalanges of the foot strange bony spurs, consisting of abnormal ossifications of the tendons, so-called enthesophytes, were present, their cause unknown. Two ribs and a belly-rib showed signs of breaking and healing. One adult specimen had a left lower jaw showing a puncture wound and both healed and unhealed bite marks. The low number of abnormalities compares favourably with the health condition of a Majungasaurus population of which it in 2007 was established that 19% of individuals showed bone pathologies.[52]

[edit] Paleoecology

All identifiable fossils of *Albertosaurus sarcophagus* are known from the upper Horseshoe Canyon Formation in Alberta. These younger units of this geologic formation date to the early Maastrichtian stage of the Late Cretaceous Period, 70 to 68 Ma (million years ago). Immediately below this formation is the Bearpaw Shale, a marine formation representing a section of the Western Interior Seaway. The seaway was receding as the climate cooled and sea levels subsided towards the end of the Cretaceous, exposing land that had previously been underwater. It was not a smooth process, however, and the seaway would periodically rise to cover parts of the region throughout Horseshoe Canyon times before finally receding altogether in the years after. Due to the changing sea levels, many different environments are represented in the Horseshoe Canyon Formation, including offshore and near-shore marine habitats and coastal habitats like lagoons, estuaries and tidal flats. Numerous coal seams represent ancient peat swamps. Like most of the other vertebrate fossils from the formation, *Albertosaurus* remains are found in deposits laid down in the deltas and floodplains of large rivers during the later half of Horseshoe Canyon times.[53]

The fauna of the Horseshoe Canyon Formation is well-known, as vertebrate fossils, including those of dinosaurs, are quite common. Sharks, rays, sturgeons, bowfins, gars and the gar-like *Aspidorhynchus* made up the fish fauna. Mammals included multituberculates and the marsupial *Didelphodon*. The saltwater plesiosaur *Leurospondylus* has been found in marine sediments in the Horseshoe Canyon, while freshwater environments were populated by turtles, *Champsosaurus*, and crocodilians like *Leidyosuchus* and *Stangerochampsia*. Dinosaurs dominate the fauna, especially hadrosaurs, which make up half of all dinosaurs known, including the genera *Edmontosaurus*, *Saurolophus* and *Hypacrosaurus*. Ceratopsians and ornithomimids were also very common, together making up another third of the known fauna. Along with much rarer ankylosaurians and pachycephalosaurs, all of these animals would have been prey for a diverse array of carnivorous theropods, including troodontids, dromaeosaurids, and caenagnathids.[53][54] Intermingled with the *Albertosaurus* remains of the Dry Island bonebed, the bones of the small theropod *Albertonykus* were found.[55] Adult *Albertosaurus* were the apex predators in this environment, with intermediate niches possibly filled by juvenile albertosaurs.[53]

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AMNH 5226 (pictures of a series of tail vertebrae included)  
Bureau of Land Management, New Mexico State Office. Operation Dino-Lift. Summarizes the excavation and transport by helicopter of a possible Albertosaurus skeleton; however, per Carr & Williamson (2010), specimen may later have been assigned to Bistahieversor.  
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Arthur (Or the Decline and Fall of the British Empire) is the seventh studio album by English rock band The Kinks, released in October 1969. Kinks frontman Ray Davies constructed the concept album as the soundtrack to a Granada Television play and developed the storyline with novelist Julian Mitchell; however, the television programme was cancelled and never produced. The rough plot revolved around Arthur Morgan, a carpet-layer, who was based on Ray Davies' brother-in-law Arthur Anning. A mono version was released in the UK, but not in the US. It is now available on the 2011 deluxe-edition re-issue.

Arthur was met with almost unanimous acclaim upon release. It received generous coverage in the US rock press, with articles running in underground magazines such as *Fusion* and *The Village Voice*. It garnered back-to-back reviews by Mike Daly and Greil Marcus in *Rolling Stone* magazine's lead section; Daly rated it as "the Kinks' finest hour", and Marcus went so far as to call it "the best British album of 1969".[1] Reviews in the UK were also positive. Although it received a mixed review in *New Musical Express*, *Disc & Music Echo* praised the album's musical integrity, and *Melody Maker* called it "Ray Davies' finest hour ... beautifully British to the core".[2]

The album, although not very successful commercially, was a return to the charts in the US for The Kinks.[3] Their critically well-received previous effort, *The Kinks Are the Village Green Preservation Society*, failed to chart in any country upon its release in 1968, with total US sales estimated at under 25,000 copies.[4] The Kinks returned to the *Billboard* charts in 1969 after a two year absence, with the lead single from the record, "Victoria", peaking at number 62.[5] The album itself reached number 50 on the *Record World* charts, and number 105 on *Billboard*, their highest position since 1965. It failed to chart in Britain. Arthur paved the way for the massive success of their 1970 comeback album *Lola Versus Powerman and the Moneygoround, Part One* and its accompanying US and UK Top 5 hit "Lola".[6]

[edit] Background

British production company Granada TV approached Ray Davies in early January 1969, expressing interest in developing a movie or play for television. Davies was to collaborate with writer Julian Mitchell on the "experimental" programme,[7] with a soundtrack by The Kinks to be released on an accompanying LP.[7] Agreements were finalised on 8 January, but the project was not revealed until a press release on 10 March. Separately, The Kinks began work on the

programme's companion record, entitled *Arthur (Or the Decline and Fall of the British Empire)*. Development of *Arthur* occurred during a rough period for the band, due to the commercial failure of their previous album *The Kinks Are the Village Green Preservation Society* and the subsequent single, "Plastic Man", as well as the departure of founding member and bassist Pete Quaife.[8] In early 1969, Quaife had told the band he was quitting,[9] though the other members did not take the remark seriously. When an article in the *New Musical Express* mentioned Maple Oak, the band that he had formed without the rest of The Kinks' knowledge,[9][10] Davies unsuccessfully asked Quaife to return for the upcoming sessions of *Arthur*. [11] As a replacement, Davies called up bassist John Dalton, who had previously filled in for Quaife.[11][12]

Davies travelled to United Recording Studios in Los Angeles, California on 11 April 1969, to produce American pop band The Turtles' LP *Turtle Soup* with engineer Chuck Britz.[13] While in Los Angeles, Davies helped negotiate an end to the concert ban placed on The Kinks by the American Federation of Musicians in 1965.[13] Although neither The Kinks nor the union gave a specific reason for the ban, at the time it was widely attributed to their rowdy on-stage behaviour.[14] After negotiations with Davies, the Federation relented, opening up an opportunity for the group to return to touring in America. Once the main sessions for the Turtles LP were completed, Davies returned to England. While Davies was abroad, the other members of the band had been rehearsing and practising for the upcoming album, as well as lead guitarist Dave Davies' solo album, nicknamed *A Hole in the Sock* of.[7][13] When Ray returned, The Kinks regrouped at his house in Borehamwood, Hertfordshire, to rehearse the upcoming album *Arthur*. [13]

[edit] Recording

The group turned to the recording proper on 1 May 1969.[13] The first tracks worked on were "Drivin'", intended as their next single release, and "Mindless Child Of Motherhood", written by Dave Davies (the latter would eventually be used as the B-side to "Drivin'", and was not included on the LP). The Kinks began a two-week series of focused sessions on 5 May, laying down an early version of the entire *Arthur* album. Recording was interrupted when The Kinks travelled to Beirut, Lebanon on 17 May to play three dates at the Melkart Hotel;[15] sessions for *Arthur* resumed the day after their return, and most of the recording for the album was finished by the end of the month.[15] Mixing and dubbing began in early June, with arranger Lew Warburton handling string overdubs.[16] The Kinks played a few small gigs in England throughout the remainder of the month, but devoted most of their time to finishing Dave Davies' solo album.[16]

Writing for the TV play progressed through May and June, and on 15 June mixing for Dave Davies' solo LP was completed (tapes for this record were eventually delivered to Pye and Reprise Records, although it never saw official release).[15] A press release announced that the *Arthur* LP was scheduled for a late July release.[15] As Davies and Mitchell completed their script, the *Arthur* TV play began to crystallise, and British filmmaker Leslie Woodhead was assigned the role of director. By early September production was scheduled to begin, with a planned broadcast of late September, but these plans were continually delayed.[17] As problems with the TV play got progressively worse~and, consequently, distracted The Kinks from completing the post-production of the album~the release dates for both projects were pushed further and further back.[7][15] In early October Ray Davies moved from Borehamwood back to his old family home on Fortis Green Road, in Muswell Hill, and travelled to Los Angeles, where he deposited the tapes at Reprise for *Arthur*'s American release.[18] The album's release date was finally set for 10 October,[18] and The Kinks began gearing up for an upcoming US tour to support the album, for which they would depart on 17 October.[19] Shooting for the TV play was eventually set for 1 December. Roy Stonehouse was hired as a designer, and the casting was completed; however, the show was cancelled at the last minute when the producer was unable to secure financial backing.[20] Davies and Mitchell were frustrated at an entire year's work wasted~Doug Hinman stated

that Davies witnessed "his grand artistic visions once again dashed by bureaucracy and internal politics." [21]

[edit] Release

Arthur (Or the Decline and Fall of the British Empire) was released in the US and UK on 10 October 1969, in both mono and stereo versions. [2] The album set the stage for The Kinks' return to touring the United States in late 1969, [14] and paved the way for even greater commercial success with the hit song "Lola" in 1970. [6]

[edit] Singles and chart performance

While the sessions for Arthur (Or the Decline and Fall of the British Empire) were nearing completion in June 1969, the track "Drivin'" was released as a single in the UK, backed with "Mindless Child of Motherhood". For the first time since their breakthrough in 1964, a Kinks single failed to make an impression on the UK charts [23] ~ Johnny Rogan notes that "This was the first of two pilot singles for ... Arthur and its failure did not augur well." [24] The group followed with another single in September, "Shangri-La", which again failed to chart in the UK. As with Village Green, the album itself failed to chart when released in October. [23]

In the US, "Victoria" was chosen as the lead single, backed with the album track "Brainwashed", and was released the same week as the LP. The single proved to be relatively successful, and reached number 62 on the Billboard Hot 100 ~ their highest position since their Top 20 hit "Sunny Afternoon" in 1966. The success of the single led to its release in the UK; backed with "Mr. Churchill Says", it reached a peak of number 30. [25] Arthur itself was a moderate commercial success in the US, where it peaked at number 105 (the highest for a Kinks album since 1965) [25] and remained on the charts for 20 weeks. [5]

[edit] Promotion

Reprise Records, The Kinks' US label, devised an elaborate, multi-levelled promotional campaign for Arthur in early 1969. The most famous branch of the programme involved a promo package entitled God Save The Kinks. The set featured various items, including a consumer's guide to the band's albums, a bag of "grass" from the "Daviesland village green", and an LP entitled Then, Now and Inbetween. [19] The set was accompanied by a positive letter from Hal Halverstadt of creative services at Warner/Reprise, part of which read, "... [We are led] to believe that The Kinks may not have had it at all ... The Kinks are to be supported, encouraged, cheered. And saved." [19] The campaign was officially launched on 3 July, at a meeting between Ray Davies and Reprise executives in Burbank, California. [26] Reprise considered seeding false stories in the press to create an "outlaw" image for the group as part of the campaign, including pieces about marijuana possession and income tax evasion. [27] Ray called the idea "mad", and the programme was dropped. Several pieces, however, were used in the press kit for Arthur's release, with titles like "English Pop Group Arrested on Rape Rap". [27]

[edit] Packaging and liner notes

Artwork for Arthur was created by Bob Lawrie. [28] The album was packaged in a gatefold sleeve, and included a shaped insert depicting Queen Victoria (holding a house containing Arthur Morgan), with lyrics on the reverse. Liner notes in the UK were written by Geoffrey Cannon and Julian Mitchell; in the US, notes by rock critic John Mendelsohn replaced Cannon's. [29]

[edit] Critical response

The album was critically acclaimed at the time of release, especially in the US rock press. [30] It was favourably compared to contemporary works, namely Tommy by The Who, released earlier in the year. [30] In Rolling Stone magazine, Arthur was spotlighted in its lead section, with back-to-back reviews by Mike Daly and Greil Marcus. [27] Daly called it "an album that is a masterpiece on every level: Ray Davies' finest hour, the Kinks' supreme achievement." [1] Marcus also praised the record, and said: "Less ambitious than Tommy, and far more musical ... Arthur is by all odds the best British album of 1969. It shows that Pete Townshend still has worlds to conquer and that The Beatles have a lot

of catching up to do." [27] A review by Sal Imam ran in Boston's Fusion magazine read that "If Tommy was the greatest rock opera, then Arthur most surely is the greatest rock musical." [27] [30] Writing in his Consumer Guide column of The Village Voice, Robert Christgau gave the record a positive review, saying, although Ray Davies' lyrics could get "preachy at times", that the album featured "excellent music and production". [31]

Reception in the UK was not as warm, although reviews were still generally positive. [30] Disc & Music Echo commented that "Arthur works as a complete score because it is basic and simple and pleasing to the ear, and powerfully conjures up pictures in the eye." [2] Melody Maker seconded Mike Daly's comments in Rolling Stone, again calling it "Ray Davies' finest hour", and adding that it was "beautifully British to the core." [2] Doug Hinman would later comment on the album's reception in Britain: "In the British music press there [was] less celebration, and coverage [was] relatively routine, though everyone saw the rock opera angle." [30]

[edit] Recent criticism

Today the album receives generally positive reviews. Stephen Thomas Erlewine of Allmusic stated that Arthur was "one of the most effective concept albums in rock history, as well as one of the best and most influential British pop records of its era," [32] and in 2003 Matt Golden of Stylus called it "the best rock opera ever". [22] Adrian Denning rated the album "[a] fine ... set of Kinks song[s]" with "absolutely no filler". [34] Georgiy Starostin gave Arthur a positive review and maximum 10 out of 10 as an overall rating. [36] Starostin appraised it as The Kinks' best record, and also pointed out that the melodies, though simple, were "unbelievably catchy, funny and sincere, angry and raving at times, emotional and mystic at other times." [36] Switch magazine included Arthur on their "100 Best Albums of the 20th Century" in 1999, and in 2003 Mojo featured the album on their list of the "Top 50 Most Eccentric Albums". [37]

[edit] Story and theme

The story is partially inspired by the Davies brothers' older sister Rose, who emigrated to Australia in 1964 with her husband Arthur Anning. [39] Her departure devastated Ray Davies, and it inspired him to write the song "Rosie Won't You Please Come Home", included on the 1966 album Face to Face. [39] The lead character in the album, the fictional Arthur Morgan, modeled after Arthur Anning, is a carpet layer whose family's plight in the opportunity-poor setting of post-war England is depicted. [28] [39] Writer Julian Mitchell detailed the story line and characters in depth, explaining in the liner notes for the album's LP release:

"Arthur Morgan ... lives in a London suburb in a house called Shangri-La, with a garden and a car and a wife called Rose and a son called Derek who's married to Liz, and they have these two very nice kids, Terry and Marilyn. Derek and Liz and Terry and Marilyn are emigrating to Australia. Arthur did have another son, called Eddie. He was named for Arthur's brother, who was killed in the battle of the Somme. Arthur's Eddie was killed, too, in Korea." [28]

Davies would later comment in his autobiography, X-Ray, that Arthur Anning later "told me that he ... knew it [Arthur] had been partly inspired by him ... [it] reminded him of home ... I told Arthur that I felt guilty for using him as a subject for a song, but he shrugged off my apology, saying that he was flattered." [40] With an underlying theme of nostalgia, [41] the songs describe the England that Arthur once knew [22] ("Victoria", "Young and Innocent Days"), the promise of life in Australia for one of his sons ("Australia"), the emptiness of his superficially comfortable life in his home ("Shangri-La"), the resolve of the British people during the Second World War ("Mr. Churchill Says"), the privations that marked the austerity period after the war ("She's Bought a Hat Like Princess Marina"), and the death of his brother in World War I ("Yes Sir, No Sir", "Some Mother's Son"). [32] [39]

[edit] Track listing

All songs written by Ray Davies, except when noted.

Side 1  
 "Victoria"Â  â  ^  3:40  
 "Yes Sir, No Sir"Â  â  ^  3:46  
 "Some Mother's Son"Â  â  ^  3:25  
 "Drivin'"Â  â  ^  3:21  
 "Brainwashed"Â  â  ^  2:34  
 "Australia"Â  â  ^  6:46  
 Side 2  
 "Shangri-La"Â  â  ^  5:20  
 "Mr. Churchill Says"Â  â  ^  4:42  
 "She's Bought a Hat Like Princess Marina"Â  â  ^  3:07  
 "Young and Innocent Days"Â  â  ^  3:21  
 "Nothing to Say"Â  â  ^  3:08  
 "Arthur"Â  â  ^  5:27  
 Bonus tracks (Castle 1998, Sanctuary 2004)  
 "Plastic Man" (Mono mix)Â  â  ^  3:04  
 "King Kong" (Mono mix)Â  â  ^  3:23  
 "Drivin'" (Mono mix)Â  â  ^  3:12  
 "Mindless Child of Motherhood" (Mono mix) (Dave Davies)Â  â  ^  3:16  
 "This Man He Weeps Tonight" (Mono mix) (Dave Davies)Â  â  ^  2:42  
 "Plastic Man" (Alternate stereo version)Â  â  ^  3:04  
 "Mindless Child of Motherhood" (Stereo mix) (Dave Davies)Â  â  ^  3:16  
 "This Man He Weeps Tonight" (Stereo mix)\* (Dave Davies)Â  â  ^  2:42  
 "She's Bought a Hat Like Princess Marina" (Mono mix)Â  â  ^  3:07  
 "Mr. Shoemaker's Daughter"[a 1](Dave Davies)Â  â  ^  3:08  
 \*A broken stereo version (due to a mastering error) was included in Castle  
 Records' 1998 release. This was fixed in subsequent reissues[42]  
 [edit] Personnel  
 The Kinks  
 Production  
 Lew WarburtonÂ  â  ^  horn and string arrangements  
 Andrew HendriksenÂ  â  ^  engineering  
 Brian HumphriesÂ  â  ^  engineering on "Drivin'"  
 Bob LawrieÂ  â  ^  album art  
 Austin SnellerÂ  â  ^  credited as "album 'tester'"[28]  
 [edit] Chart tables  
 [edit] Singles  
 Year  
 Title  
 Peak chart positions  
 UK  
 US  
 NL  
 1969  
 "Plastic Man"[a 2]  
 28[23]  
 â  ~  
 17[5]  
 "Drivin'"  
 â  ~  
 â  ~  
 â  ~  
 "Shangri-la"  
 â  ~  
 â  ~  
 27[5]  
 "Victoria"  
 30[25]  
 62[25]  
 â  ~

"â ~" denotes the release failed to chart.

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^ a b Alterman 1969  
^ a b c d e Hinman 2004, pp.â 126â ^130  
^ a b Hinman 2004, p.â 129  
^ Hinman 2004, p.â 131  
^ a b Hinman 2004, pp.â 130â ^135  
^ a b c Savage 1984, p.â 110  
^ Savage 1984, p.â 114  
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^ Rogan 1998, p.â 21  
^ a b c d Rogan 1998, pp.â 20â ^23  
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^ a b c d e Hinman 2004, p.â 132  
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[edit] See also

[edit] External links

Wulfhere (died 675) was King of Mercia from 658 until 675 AD. He was the first Christian king of all of Mercia, though it is not known when or how he converted from Anglo-Saxon paganism. His accession marked the end of Oswiu of Northumbria's overlordship of southern England, and Wulfhere extended his influence over much of that region. His campaigns against the West Saxons led to Mercian control of much of the Thames valley. He conquered the Isle of Wight and the Meon valley and gave them to King Æthelwealh of the South Saxons. He also had influence in Surrey, Essex, and Kent. He married Eormenhild, the daughter of King Eorcenberht of Kent.

Wulfhere's father, Penda, was killed in 655 at the Battle of Winwaed, fighting against Oswiu of Northumbria. Penda's son Peada became king under Oswiu's overlordship but was murdered a year later. Wulfhere came to the throne when Mercian nobles organized a revolt against Northumbrian rule in 658 and drove out Oswiu's governors.

By 670, when Oswiu died, Wulfhere was the most powerful king in southern Britain. He was effectively the overlord of Britain south of the Humber from the early 660s, although not overlord of Northumbria as his father had been. In 674, he challenged Oswiu's son Ecgfrith of Northumbria, but was defeated. He died, probably of disease, in 675. Wulfhere was succeeded as King of Mercia by his brother, Æthelred. Stephen of Ripon's Life of Wilfrid describes Wulfhere as "a man of proud mind, and insatiable will".[1]

[edit] Mercia in the seventh century



England in the early 7th century was ruled almost entirely by the Anglo-Saxon peoples who had come to Britain from northwestern Europe, starting in the early 5th century. The monk Bede, who wrote in the 8th century, considered the Mercians to be descended from the Angles, one of the invading groups; the Saxons and Jutes settled in the south of Britain, while the Angles settled in the north.[2] Little is known about the origins of the kingdom of Mercia, in what is now the English midlands, but according to genealogies preserved in the Anglo-Saxon Chronicle and the Anglian collection the early kings were descended from Icel; the dynasty is therefore known as the Iclingas.[3] The earliest Mercian king about whom definite historical information has survived is Penda of Mercia, Wulfhere's father.[4]

According to Bede's *Historia ecclesiastica gentis Anglorum*, a history of the English church, there were seven early Anglo-Saxon rulers who held imperium, or overlordship, over the other kingdoms.[5] The fifth of these was Edwin of Northumbria, who was killed at the battle of Hatfield Chase by a combined force including Cadwallon, a British king of Gwynedd, and Penda. At the time of this victory, Penda was probably not yet king of Mercia. His children included two future kings of Mercia: Wulfhere and Æthelred.[6]

After Edwin's death, Northumbria briefly fell apart into its two constituent kingdoms. Within a year Oswald killed Cadwallon and reunited the kingdoms, and subsequently re-established Northumbrian hegemony over the south of England.[7] However, on 5 August 642, Penda killed Oswald at the battle of Maserfield, probably at Oswestry in the northwest midlands.[8] Penda is not recorded as overlord of the other southern Anglo-Saxon kings, but he became the most powerful of the Anglo-Saxon kings after he defeated Oswald.[9] On Oswald's death, Northumbria was divided again: Oswald's son Oswiu succeeded to the throne of Bernicia, and Osric's son Oswine to Deira, the southern of the two kingdoms.[10]

The main source for this period is Bede's *History*, completed in about 731. Despite its focus on the history of the church, this work also provides valuable information about the early pagan kingdoms. For other kingdoms than his native Northumbria, such as Wessex and Kent, Bede had an informant within the ecclesiastical establishment who supplied him with additional information. This does not seem to have been the case with Mercia, about which Bede is less informative than about other kingdoms.[11] Further sources for this period include the Anglo-Saxon Chronicle, compiled at the end of the 9th century in Wessex. The Chronicle's anonymous scribe appears to have incorporated much information recorded in earlier periods.[12]

[edit] Ancestry

Wulfhere was the son of Penda of Mercia. Penda's queen, Cynewise, is named by Bede, who does not mention her children; no other wives of Penda are known and so it is likely but not certain that she was Wulfhere's mother.[13][14] The Anglo-Saxon Chronicle gives Penda's age as fifty in 626, and credits him with a thirty-year reign, but this would put Penda at eighty years old at the time of his death, which is generally thought unlikely as two of his sons (Wulfhere and Æthelred) are recorded as being young when he was killed. It is thought at least as likely that Penda was 50 years old at his death, rather than at his accession.[6][15] Wulfhere's date of birth is unknown, but Bede describes him as a youth at the time of his accession in 658, so it is likely he was in his middle teens at that time; Penda would then have been in his thirties at the time Wulfhere was born.[16]

Nothing is known of Wulfhere's childhood. He had two brothers, Peada and Æthelred, and two sisters, Cyneburh and Cyneswith;[17][18] it is also possible that Merewalh, king of the Magonsæt, was Wulfhere's brother.[19] He married Eormenhild of Kent; no date is recorded for the marriage and there is no record of any children in the earliest sources, though Coenred, who was king of Mercia from 704 to 709, is recorded in John of Worcester's 12th century chronicle as Wulfhere's son.[20] Another possible child is Berhtwald, a subking who is recorded as a nephew of Æthelred,[21] and a third child, Werburh, is recorded in an 11th century manuscript as a daughter of Wulfhere.[22] An 11th-century

history of St. Peter's Monastery in Gloucester names two other women, Eadburh and Eafe, as queens of Wulfhere, but neither claim is plausible.[23]

[edit] Accession and overlordship

In 655 Penda besieged Oswiu of Northumbria at Iudeu, the location of which is unknown but which may have been Stirling, in Scotland. Penda took Oswiu's son, Ecgrif, as hostage, and Oswiu paid tribute, in the form of treasure, to secure Penda's departure. On the way back to Mercia, Oswiu overtook Penda and on 15 November 655 Oswiu and Penda fought on the banks of the (unidentified) river Winwaed.[25] Penda was killed and beheaded by Oswiu, who divided Mercia into northern and southern halves.[26] The northern portion was kept under direct Northumbrian control; the southern kingdom was given to Penda's son Peada, who had married Oswiu's daughter Ealhflæd ca 653.[27]

Peada did not remain king long. He was murdered at Easter in 656, perhaps with the connivance of his wife, Oswiu's daughter.[28] Oswiu then ruled all Mercia himself. Bede lists Oswiu as the seventh and last king to hold imperium (or bretwalda in the language of the Anglo-Saxon Chronicle) over the other Anglo-Saxon kingdoms.[5] Overlordship was a common relationship between kingdoms at this time, often taking the form of a lesser king under the domination of a stronger one. Oswiu went further than this, however, and installed his own governors in Mercia after the deaths of Penda and Peada. This attempt to establish close control of Mercia failed in 658 when three Mercian leaders, Immin, Eafa and Eadbert, rebelled against the Northumbrians. Bede reports that they had kept Wulfhere in hiding, and when the revolt succeeded Wulfhere became king.[29] It has been suggested that the Mercian revolt succeeded because Oswiu may have been occupied with fighting in Pictland, in northern Britain. His nephew the Pictish king Talorgan, son of Eanfrith, had died in 657.[30]

How much direct control Oswiu exerted over the southern kingdoms during his imperium is unclear. Bede describes Oswiu's friendship and influence over Sigebert of the East Saxons,[31] but generally the pattern in the southeast is of more local domination, with Oswiu's influence unlikely to have been particularly strong.[27] Wulfhere appears to have taken over Oswiu's position in many instances.[32] Bede does not list him as one of the rulers who exercised imperium, but modern historians consider that the rise to primacy of the kingdom of Mercia began in his reign. He seems to have been the effective overlord of Britain south of the Humber from the early 660s, though not overlord of Northumbria as his father had been.[33]

A document called the Tribal Hidage may date from Wulfhere's reign. Drawn up before many smaller groups of peoples were absorbed into the larger kingdoms, such as Mercia, it records the peoples of Anglo-Saxon England, along with an assessment in hides, a unit of land. The Tribal Hidage is difficult to date precisely; it may have been written down in Wulfhere's reign, but other suggested origins include the reign of Offa of Mercia, or Edwin or Oswiu of Northumbria.[34][35]

[edit] A convert king

Britain had been Christianized under the Romans, but the incoming Anglo-Saxons practiced their indigenous religion (Anglo-Saxon paganism) and the church in Great Britain was limited to the surviving British kingdoms in Scotland and Wales, and the kingdom of Dumnonia in the southwest of England. Missionaries from Rome began converting the Anglo-Saxons to Christianity at the end of the 6th century, and this process was well under way in Penda's reign, though Penda himself remained pagan throughout his life.[36] Records survive of the baptism of other kings at this time—Cynegils of Wessex was baptized in about 640,[37] for example, and Edwin of Northumbria was converted in the mid 620s.[38] However, later kings, such as Cædwalla of Wessex, who ruled in the 680s, are recorded as pagan at their accession.[39]

Bede writes that after Wulfhere became king: "Free under their own king, they [the Mercians] gave willing allegiance to Christ their true king, so that they might win his eternal kingdom in heaven".[14] While Wulfhere's father had refused to convert to Christianity, and Peada had apparently converted in order

to marry Oswiu's daughter, the date and the circumstances of Wulfhere's conversion are unknown. It has been suggested that he adopted Christianity as part of a settlement with Oswiu.[40] Bede records that two years before Penda's death, his son Peada converted to Christianity, influenced partly by Oswiu's son Ealhfrith, who had married Peada's sister Cyneburh. Peada brought a Christian mission into Mercia, and it is possible that this was when Wulfhere became a Christian.[41] Wulfhere's marriage to Eormenhild of Kent would have brought Mercia into close contact with the Christian kingdoms of Kent and Merovingian Gaul, which were connected by kinship and trade. The political and economic benefits of the marriage may therefore also have been a factor in Wulfhere's Christianization of his kingdom.[42][43]

Wulfhere's relationship with Bishop Wilfrid is recorded in Stephen of Ripon's Life of Wilfrid. During the years 667-69, while Wilfrid was at Ripon, Wulfhere frequently invited him to come to Mercia when there was need of the services of a bishop. According to Stephen, Wulfhere rewarded Wilfrid with "many tracts of land", in which Wilfrid "soon established minsters for servants of God".[44]

According to the Anglo-Saxon Chronicle, Wulfhere endowed a major monastery at Medeshamstede, in modern Peterborough. The monastery had initially been endowed by Peada; for the dedication of Wulfhere's gift both Archbishop Deusdedit (died 664), and Bishop Jaruman (held office from 663), were present. The endowment was signed by Wulfhere and Oswiu, and by Sigehere and Sæbbi, the Kings of Essex.[45]

[edit] West Saxons, South Saxons and Hwicce

In 661, Wulfhere is recorded in the Chronicle as harrying Ashdown, in West Saxon territory. The Gewisse, thought to be the original group from which the West Saxons came, appear to have originally settled in the upper Thames valley, and what records survive of the 6th century show them active in that region. The Mercian resurgence under Wulfhere placed them under severe pressure. Also in the early 660s, the West Saxon see of Dorchester, in the same area, was divided, and a new bishopric set up at Winchester. This decision was probably a reaction to the advance of the Mercians into the traditional heartland of the West Saxons, leaving Dorchester dangerously close to the border. Within a few years, the Dorchester see was abandoned;[46] the exact date is not known, but it was probably in the mid 660s.[47]

In addition to the attack on Ashdown, Wulfhere raided the Isle of Wight in 661. He subsequently gave both the island and the territory of the Meonware, which lay along the river Meon, on the mainland north of the Isle of Wight, to his godson King Æthelwealh of the South Saxons. It seems likely that the ruling dynasty on the island found these arrangements acceptable to some degree, since the West Saxons, under Cædwalla, exterminated the whole family when they launched their own attack on the island in 686.[48][49] After the conquest of the Isle of Wight, Wulfhere ordered the priest Eoppa to provide baptism to the inhabitants. According to the Chronicle, this was the first time Christian baptism had reached the island.[50]

In the early 670s, Cenwealh of Wessex died, and perhaps as a result of the stress caused by Wulfhere's military activity the West Saxon kingdom fragmented and came to be ruled by underkings, according to Bede.[51] Eventually these underkings were defeated and the kingdom reunited, probably by Cædwalla but possibly by Centwine. A decade after Wulfhere's death, the West Saxons under Cædwalla began an aggressive expansion to the east, reversing much of the Mercian advance.[52]

In addition to being Wulfhere's godson, King Æthelwealh of the South Saxons had a connection to the Mercians via marriage. His wife was Queen Eafe, the daughter of Eanfrith of the Hwicce, a tribe whose territory lay to the southwest of Mercia. The Hwicce had their own royal family, but it appears that at this date they were already subordinate to Wulfhere: the marriage between Æthelwealh and Eafe may well have taken place at Wulfhere's court, since it is known Æthelwealh was converted there.[53] The kingdom of the Hwicce is sometimes regarded as a creation of Penda's, but it is equally likely that the kingdom existed independently of Mercia, and that Penda and Wulfhere's

increasing influence in the area represented an extension of Mercian power rather than the creation of a separate entity.[54][55]

[edit] East Anglia and the East Saxons

In 664, Æthelwald of East Anglia died, and was succeeded by Ealdwulf, who reigned for fifty years. Almost nothing is known of Mercian relations with East Anglia during this time; East Anglia had previously been dominated by Northumbria, but there is no evidence that this continued after Wulfhere's accession. Swithelm of the East Saxons also died in 664; he was succeeded by his two sons, Sigehere and Sæbbi, and Bede describes their accession as "rulers... under Wulfhere, king of the Mercians".[42] A plague the same year caused Sigehere and his people to recant their Christianity, and according to Bede, Wulfhere sent Jaruman, the bishop of Lichfield, to reconvert the East Saxons. Jaruman was not the first bishop of Lichfield; Bede mentions a predecessor, Trumhere, but nothing is known about Trumhere's activities or who appointed him.[56]

It is apparent from these events that Oswiu's influence in the south had waned by this time, if not before, and that Wulfhere now dominated the area. This becomes even clearer in the next few years, as some time between 665 and 668 Wulfhere sold the see of London to Wine, who had been expelled from his West Saxon bishopric by Cenwealh. London fell within the East Saxons' territory in that period.[32] From the archaeological evidence, it appears to be about this time that the Middle Saxon settlement in London began to expand significantly; the centre of Anglo-Saxon London was not at the old Roman centre, but about a mile west of that, near what is now the location of the Strand. Wulfhere may have been in control of the city when this expansion began.[57]

[edit] Kent, Surrey and Lindsey

Eorcenberht was the king of Kent at Wulfhere's accession, and the two families became connected when Wulfhere married Eorcenberht's daughter Eormenhild.[58] In 664 Eorcenberht's son Egbert succeeded to the Kentish throne. The situation in Kent at Egbert's death in 673 is not clearly recorded. It appears that a year passed before Hlothhere, Egbert's brother, became king. Wulfhere may have had an interest in the succession, as through his marriage to Eormenhild he was the uncle of Egbert's two sons, Eadric and Wihtred. It has been speculated that Wulfhere acted as the effective ruler of Kent in the interregnum between Egbert's death and Hlothhere's accession.[49] Another Mercian connection to Kent was through Merewalh, the king of the Magonsættes, and hence a subking under Wulfhere. Merewalh, who may have been Wulfhere's brother, was married to Hlothhere's sister, Eormenburh.[19]

Surrey is not recorded as ever having been an independent kingdom, but was at least a province that was under the control of different neighbours at different times. It was ruled by Egbert until the early 670s, when a charter shows Wulfhere confirming a grant made to Bishop Eorcenwald by Frithuwold, a sub-king in Surrey, which may have extended north into modern Buckinghamshire.[59][60] Frithuwold himself was probably married to Wilburh, Wulfhere's sister.[59] The charter, made from Thame, is dated between 673 and 675, and it was probably Egbert's death that triggered Wulfhere's intervention. A witness named Frithuric is recorded on a charter in the reign of Wulfhere's successor, Æthelred, making a grant to the monastery of Peterborough, and the alliteration common in Anglo-Saxon dynasties has led to speculation that the two men may have both come from a Middle Anglian dynasty, with Wulfhere perhaps having placed Frithuwold on the throne of Surrey. The charter is witnessed by three other subkings, named Osric, Wigheard, and Æthelwold; their kingdoms are not identified but the charter mentions Sonning, a province in what is now eastern Berkshire, and it may be that one of these subkings was a ruler of the Sunningas, the people of that province. This would in turn imply Wulfhere's domination of that province by that time.[49]

Wulfhere's influence among the Lindesfara, whose territory, Lindsey, lay in what is now Lincolnshire, is known from information about episcopal authority. At least one of the Mercian bishops of Lichfield is known to have exercised authority there: Wynfrith, who became bishop on Chad's death in 672.[42][59] In

addition it is known that Wulfhere gave land at Barrow upon Humber, in Lindsey, to Chad, for a monastery.[61] It is possible that Chad also had authority there as bishop, probably no later than 669.[42] It may be that the political basis for Mercian episcopal control of the Lindesfara was laid early in Wulfhere's reign, under Trumhere and Jaruman, the two bishops who preceded Chad.[42]

[edit] Defeat and death

When Wulfhere attacked Oswiu's son Ecgfrith in 674, he did so from a position of strength. Stephen of Ripon's *Life of Wilfrid* says that Wulfhere "stirred up all the southern nations against [Northumbria]". Bede does not report the fighting, nor is it mentioned in the *Anglo-Saxon Chronicle*, but according to Stephen, Ecgfrith defeated Wulfhere, forcing him to surrender Lindsey, and to pay tribute.[62]

Wulfhere survived the defeat but evidently lost some degree of control over the south as a result; in 675, Æscwine, one of the kings of the West Saxons, fought him at Biedanheafde. It is not known where this battle was, or who was the victor. Henry of Huntingdon, a 12th-century historian who had access to versions of the *Anglo-Saxon Chronicle* now lost,[63] believed that Mercians had been the victors in a "terrible battle" and remarks upon Wulfhere having inherited "the valour of his father and grandfather".[64] Kirby, however, presumes Æscwine was sufficiently successful to break Wulfhere's hold over Wessex.[65]

Wulfhere died later in 675. The cause of death, according to Henry of Huntingdon, was disease.[64] He would have been in his mid-thirties. His widow, Eormenhild, is thought to have later become the abbess of Ely.[66] Æthelred, Wulfhere's brother, succeeded to the throne and reigned for nearly thirty years. Æthelred recovered Lindsey from the Northumbrians a few years after his accession, but he was generally unable to maintain the domination of the south achieved by Wulfhere.[65]

<sup>a</sup> Colgrave, *Life of Bishop Wilfred*, c. 20.

<sup>a</sup> Bede, *HE*, I, 15, p. 63.

<sup>a</sup> Yorke, Barbara, "The Origins of Mercia" in Brown and Farr, *Mercia*, pp. 15â<sup>16</sup>

<sup>a</sup> Barbara Yorke, "The Origins of Mercia" in Brown and Farr, *Mercia*, pp. 18â<sup>19</sup>

<sup>a</sup> b Bede, *HE*, II, 5, p. 111.

<sup>a</sup> b Yorke, *Kings and Kingdoms*, pp. 103â<sup>4</sup>

<sup>a</sup> Kirby, *Earliest English Kings*, p. 83.

<sup>a</sup> Kirby, *Earliest English Kings*, pp. 88â<sup>90</sup>

<sup>a</sup> Yorke, *Kings and Kingdoms*, p. 105

<sup>a</sup> Yorke, *Kings and Kingdoms*, p. 78

<sup>a</sup> Yorke, *Kings and Kingdoms*, p. 100

<sup>a</sup> Simon Keynes, "Anglo-Saxon Chronicle", in *Blackwell Encyclopedia*, p. 35

<sup>a</sup> Stafford, Pauline, "Political Women in Mercia" in Brown and Farr, *Mercia*, p. 36

<sup>a</sup> b Bede, *HE*, III, 24, pp. 183â<sup>5</sup>.

<sup>a</sup> Kirby, *Earliest English Kings*, p. 82.

<sup>a</sup> Kirby, *Earliest English Kings*, p. 113

<sup>a</sup> Kirby, *Earliest English Kings*, p. 93

<sup>a</sup> Swanton, *Anglo-Saxon Chronicle*, sub anno 656, p. 29

<sup>a</sup> b Yorke, p. 107, accepts the account in the *Life of St Mildburh*, which makes Merewalh and Wulfhere brothers, as genuine. Kirby, p. 93, expresses doubts.

<sup>a</sup> Kirby, *Earliest English Kings*, p. 128

<sup>a</sup> Yorke, *Kings and Kingdoms*, p. 108

<sup>a</sup> Jane Roberts, "Hagiography and Literature: The Case of Guthlac of Crowland" in Brown and Farr, *Mercia*, p. 84

<sup>a</sup> For details see Baker and Holt, *Urban Growth*, p. 18. The history is the *Historia et Cartularium Monasterii Sancti Petri Gloucesteri*, which incorporates material from as early as the late 11th century.

<sup>a</sup> See Higham, *English Empire*, p. 149, figure 7; M. Lapidge (ed.), p. 517, map 9; Zaluckyj, *Mercia*, p. 16

^ The Went, a tributary of the Don, has been suggested as a candidate; see e.g. Kirby, *Earliest English Kings*, pp. 94â ^95; other suggestions include an unspecified tributary of the Humber; see e.g. Swanton, *Anglo-Saxon Chronicle*, p. 29 n. 11.

^ Kirby, *Earliest English Kings*, pp. 94â ^95

^ a b Kirby, *Earliest English Kings*, pp.96â ^7

^ Kirby, *Earliest English Kings*, p. 96; Bede, *HE*, III, 24.

^ Bede, *HE*, III, 25; p. 183.

^ Higham, *Convert Kings*, p. 245.

^ Bede, *HE* III, 22, p. 178.

^ a b Kirby, *Earliest English Kings*, pp. 114â ^5

^ See, for example, Higham, *Convert Kings*, pp. 249&â ^50; Keynes; Yorke, pp. 157â ^9; Williams, *Kingship and Government*, pp. 20â ^3.

^ Higham, *English Empire*, p. 99.

^ Peter Featherstone, "The Tribal Hidage and the Ealdormen of Mercia" in Brown and Farr, *Mercia*, p. 29

^ Campbell, "The First Christian Kings", in Campbell, *The Anglo-Saxons*, pp. 45â ^6.

^ Kirby, *The Earliest English Kings*, pp. 48â ^50.

^ Kirby, *The Earliest English Kings*, p. 78.

^ Kirby, *The Earliest English Kings*, p. 118.

^ Higham, *Convert Kings*, p. 68.

^ Bede, *HE*, III, 21, pp. 177â ^8.

^ a b c d e Kirby, *The Earliest English Kings*, p.Â 114.

^ Zaluckyj, *Mercia*, p. 37.

^ Blair, *The Church in Anglo-Saxon Society*, p. 92.

^ *Anglo-Saxon Chronicle*, sub anno 656; Zaluckyj, p. 38.

^ Yorke, *Kings and Kingdoms*, p. 136.

^ Kirby, *The Earliest English Kings*, pp. 58â ^9.

^ Bede, *HE*, IV, 13, pp. 225â ^7.

^ a b c Kirby, *Earliest English Kings*, pp. 115&â ^6

^ Swanton, *Anglo-Saxon Chronicle*, sub anno 661, pp. 33â ^4.

^ Kirby, *The Earliest English Kings*, pp. 52â ^3.

^ For the situation at Wulfhere's death, see Kirby, *The Earliest English Kings*, pp.& 115â ^6; for Cwædwalla see *ibid.* pp. 118â ^21.

^ Kirby, *The Earliest English Kings*, pp. 11â ^12.

^ Kirby, *The Earliest English Kings*, pp. 8â ^9.

^ Yorke, *Kings and Kingdoms*, pp. 108â ^9.

^ Bede, *HE*, III, 30, pp. 200â ^1.

^ Robert Cowie, "Mercian London" in Brown and Farr, *Mercia*, pp. 198â ^9

^ Kirby, *Earliest English Kings*, p. 43

^ a b c Williams, *Kingship and Government* p. 21.

^ Whitelock, *English Historical Documents*, p. 440.

^ Simon Keynes, "Wulfhere", in *Blackwell Encyclopedia*, p. 490

^ Colgrave, *Life of Bishop Wilfred*, c. 20; Kirby, *Earliest English Kings*, p.Â 116; Williams, *Kingship and Government*, p. 23.

^ Diana E. Greenway, "Henry of Huntingdon", in Lapidge et al., *Blackwell Encyclopedia of Anglo-Saxon England*, pp. 232â ^3.

^ a b Henry of Huntingdon, sub anno 670.

^ a b Kirby, *Earliest English Kings*, pp. 116â ^7.

^ Yorke, *Kings and Kingdoms*, p. 70.

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## Persondata

Name

Wulfhere of Mercia

Alternative names

Short description

King of Mercia

Date of birth

Place of birth

Date of death

675

Place of death

Erie

City

Flag

Seal

Official name: City of Erie

Nickname: The Flagship City,

The Gem City, The Bay City, The Lake City

Country

United States

State

Pennsylvania

County

Erie

## Location

Perry Square

Â -Â coordinates

42Â°7â 246.42â 3N 80Â°5â 26.77â 3Wî»¿ / î»¿42.1295611Â°N 80.0852139Â°Wî»¿ / 42.1295611; -80.08

Highest point

Â -Â elevation

733 ft (223 m)

Area

28.0 sq mi (73 km2)

Â -Â land

22.0 sq mi (57 km2)

Â -Â water

6.0 sq mi (16 km2)

Â -Â metro

802 sq mi (2,077 km2)

Population

101,807 (US: 275th)Â (2011)

Â -Â metro

280,985 (US: 164th) Erie MetroÂ (2011)

Density

4,631.7 / sq mi (1,788 / km2)

Founded

April 18, 1795[1]

Â -Â Incorporated

April 14, 1851

Mayor

Joseph E. Sinnott

Timezone

EST (UTC-4)

Â -Â summer (DST)

EDT (UTC-5)

ZIP Codes

16501â ^16512, 16514â ^16515, 16522, 16530â ^16534, 16538, 16541, 16544, 16546, 16550, 16553â ^16554, 16563, 16565

Area code

814, proposed 582

Website: [www.erie.pa.us](http://www.erie.pa.us)

Erie (pron.: /Ë ÉªÉ ri/) is a city located in northwestern Pennsylvania in the United States. Named for the lake and the Native American tribe that resided along its southern shore, Erie is the state's fourth-largest city (after Philadelphia, Pittsburgh and Allentown), with a population of 102,000.[2] Erie's Metropolitan Area consists of approximately 280,000 residents and an Urbanized Area population of approximately 195,000. The city is the seat of government for Erie County. Erie is the principal city of the Erie, PA Metropolitan Statistical Area.

Erie is near Buffalo, New York, Cleveland, Ohio, and Pittsburgh, Pennsylvania. Once teeming with heavy industry, Erie's manufacturing sector remains prominent in the local economy, though service industries, healthcare, higher education, and tourism are emerging as greater economic drivers. Millions visit Erie for recreation at Presque Isle State Park, as well as attractions like casino and horse racetrack named for the state park.

Erie is known as the Flagship City because of its status as the home port of Oliver Hazard Perry's flagship Niagara.[3] The city has also been called the Gem City because of the "sparkling" lake.[3] Erie won the All-America City Award in 1972.

[edit] History

The six nations of the Iroquois Confederacy, which included the Senecas, originally occupied the lands in what is now Erie. Europeans first arrived in the region when the French constructed Fort Presque Isle near present-day Erie in 1753, as part of their effort to defend New France against the encroaching



British. The name of the fort refers to that piece of land that juts into Lake Erie, now called Presque Isle State Park, with the French word "presque-isle" meaning peninsula (literally "almost an island"). When the fort was abandoned by the French in 1760, it was their last post west of Niagara. The British occupied the fort at Presque Isle that same year, three years before the end of the French and Indian War.[4]

Present-day Erie is situated in what was the disputed Erie Triangle, a triangle of land that was claimed by the states of New York, Pennsylvania, Connecticut (as part of its Western Reserve), and Massachusetts. It officially became part of Pennsylvania on March 3, 1792, after Connecticut, Massachusetts and New York relinquished their claims to the federal government, which in turn sold the land to Pennsylvania for 75¢ cents per acre or a total of \$151,640.25 in Continental currency. The Iroquois released the land to Pennsylvania in January 1789 for payments of \$2,000 from Pennsylvania and \$1,200 from the federal government. The Seneca Nation separately settled land claims against Pennsylvania in February 1791 for the sum of \$800.[5]

The General Assembly of Pennsylvania commissioned the surveying of land near Presque Isle through an act passed on April 18, 1795. Andrew Ellicott, who completed Pierre Charles L'Enfant's survey of Washington, D.C. and helped resolve the boundary between Pennsylvania and New York, arrived to begin the survey and lay out the plan for the city in June 1795. Initial settlement of the area began that year.[5][6] Lt. Colonel Seth Reed and his family moved to the Erie area from Geneva, New York, and before that from Uxbridge, Massachusetts, and became the first European settlers of Erie, settling at what became known as "Presque Isle".

To wrest control of the Great Lakes from the British during the War of 1812, President James Madison ordered the construction of a naval fleet at Erie. Noted shipbuilders Daniel Dobbins of Erie and Noah Brown of New York led construction of four schooner-rigged gunboats and two brigs. Commodore Oliver Hazard Perry arrived from Rhode Island and led the squadron to success in the historic Battle of Lake Erie.[7]

Erie was an important shipbuilding, fishing, and railroad hub in the mid-19th century. The city was the site where three sets of track gauges met. While the delays required to unload and load passengers and cargo were a problem for commerce and travel, they provided much needed local jobs in Erie. When a national standardized gauge was proposed, those jobs, and the importance of the rail hub itself, were put in jeopardy. The citizens of Erie, led by the mayor, set fire to bridges, ripped up track and rioted to attempt to stop the standardization in an event known as the Erie Gauge War.[8]

On August 3, 1915, the Mill Creek flooded downtown Erie when a culvert, blocked by debris, gave out.[9] A four block reservoir, caused by torrential downpours, had formed behind it. The resulting deluge destroyed 225 houses and killed 36 people.[9] After the flood, Mayor Miles B. Kitts had the Mill Creek diverted to a 22 by 19 feet (6.7 m × 5.8 m), concrete tube that travels for over 2 miles (3.2 km) under the city, before emptying into to Presque Isle Bay on the city's lower east side.

Erie's importance gradually faded during the second half of 20th Century as the age of lake trade, commercial fishing, and American manufacturing dominance drew to a close.[10] Downtown Erie continued to grow for most of the 20th century, before taking a major population downturn in the 1970s.[10] With the advent of the automobile age, thousands of residents left Erie for suburbs such as Millcreek Township, which now has over 50,000 people.[10]

Erie has won the All-America City Award only once, in 1972, and was a finalist in 1961, 1994, 1995 and 2009.[11][12]

[edit] Geography

Erie is situated at 42°6′25″N 80°4′23″W﻿ / ﻿42.11444°N 80.07611°W﻿ / 42.114507; -80.07611 (42.114507, -80.076213),[13] directly between Cleveland, Ohio, Buffalo, New York, and Pittsburgh, Pennsylvania on the south-central shores of Lake Erie. Erie's bedrock is Devonian shale and siltstone, overlain by glacial tills and stratified drift. Stream drainage in Erie flows northward into Lake

Erie, then through Lake Ontario, the St. Lawrence River, and out to the Atlantic Ocean. South of Erie is a drainage divide, where most of the streams south of this divide in western Pennsylvania flow in a southward direction into the Allegheny or Ohio rivers.[14]

According to the United States Census Bureau, the city has a total area of 28.0 square miles (73Â km2) with 22.0 square miles (57Â km2) being land and the remaining (21.54%) being water. Erie is home to Presque Isle State Park (known to the locals as "The Peninsula"), a peninsula that juts into Lake Erie and has 7 miles (11Â km) of public beaches, wetlands, and fishing sites.

Erie is laid out in a grid surrounding Perry Square in the downtown area.[15] The downtown buildings are separated from the waterfront by the Bayfront Parkway.[15] The tallest structure in Erie is St. Peter Cathedral at 265 feet (81Â m) and the tallest building is the Renaissance Centre at 198 feet (60Â m) tall. Erie has generally small ethnic neighborhoods including Little Italy. South of 38th Street, the grid gives way to curvilinear roads of post-1970 suburban development. Millcreek Township and upper Peach Street in Summit Township include the Erie metropolitan area's newer developments.

Most of the cityscape includes renovated and refurbished factory buildings, mid-rise housing, single family homes, and office buildings. Erie's waterfront includes the Burger King Amphitheater and surrounding parkland, which hosts numerous festivals. The Bayfront Convention Center is on Sassafras Pier next to Dobbins Landing. The Bicentennial Tower is centrally located in the skyline when viewed from Presque Isle State Park, with the high-rise and mid-rise buildings flanking the higher ground behind and to the east and west sides. On the east end of the waterfront, the Erie Maritime Museum and the city's main library, and third largest in Pennsylvania, host the Niagara. Docks and marinas fill the freshwater shoreline in between.

[edit] Climate

The climate of Erie is typical of the Great Lakes. Erie is located in the snow belt that stretches from Cleveland to Syracuse and Watertown; accordingly, its winters are typically cold, with heavy lake effect snow, but also with occasional stretches of mild weather that cause accumulated snow to melt. Erie lies in the humid continental zone (Köppen Dfa).[16] The city experiences a full range of weather events, including snow, ice, rain, thunderstorms and fog.

Erie is 6th on the list of snowiest places in the United States, averaging 78.7 inches (200Â cm).[17] For the winter of 2010â 2011, Erie received 107.4 inches (273Â cm) of snow with the first accumulation of the season falling on NovemberÂ 26.[18] The adverse winter conditions caused USAir Flight 499 to overrun the runway at Erie International Airport in 1986, as well as causing whiteouts that were responsible for a 50Â car pile-up on Interstate 90.[19][20] Climate data for Erie, Pennsylvania (Erie International Airport), 1981â 2010 normals

Month

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Year

Average high Â°F (Â°C)

33.7

(0.9)

35.6

(2.0)  
43.8  
(6.6)  
56.1  
(13.4)  
66.6  
(19.2)  
75.7  
(24.3)  
79.9  
(26.6)  
78.7  
(25.9)  
72.0  
(22.2)  
60.8  
(16.0)  
49.9  
(9.9)  
38.3  
(3.5)

57.6

(14.2)

Average low  $^{\circ}\text{F}$  ( $^{\circ}\text{C}$ )

21.0

( $\hat{\text{a}}$  '6.1)

21.4

( $\hat{\text{a}}$  '5.9)

27.7

( $\hat{\text{a}}$  '2.4)

38.3

(3.5)

48.4

(9.1)

58.6

(14.8)

63.7

(17.6)

62.7

(17.1)

56.0

(13.3)

45.5

(7.5)

36.8

(2.7)

26.8

( $\hat{\text{a}}$  '2.9)

42.2

(5.7)

Precipitation inches (mm)

2.94

(74.7)

2.39

(60.7)

2.95

(74.9)

3.33

(84.6)

3.44

(87.4)  
3.76  
(95.5)  
3.54  
(89.9)  
3.46  
(87.9)  
4.61  
(117.1)  
4.05  
(102.9)  
3.93  
(99.8)  
3.83  
(97.3)  
42.21  
(1,072.1)  
Snowfall inches (cm)  
29.8  
(75.7)  
18.1  
(46)  
13.8  
(35.1)  
3.1  
(7.9)  
0  
(0)  
0  
(0)  
0  
(0)  
0  
(0)  
0  
(0)  
0  
(0)  
.2  
(0.5)  
8.5  
(21.6)  
27.2  
(69.1)  
100.8  
(256)  
Avg. precipitation days ( $\hat{=}$   $\geq$  0.01 in)  
19.6  
15.0  
14.3  
13.9  
12.8  
11.1  
10.2  
10.3  
11.1  
13.4  
15.5  
19.2  
166.4  
Avg. snowy days ( $\hat{=}$   $\geq$  0.1 in)  
16.6

11.9

7.7

2.8

0

0

0

0

0

.2

4.4

13.3

56.9

Source: NOAA [21]

[edit] Demographics and religion

Erie

Pennsylvania

United States

Total population

101,786

12,702,379

308,745,538

PopulationÂ ±, 2000â ^2010

â ´1.9%

+3.4%

+9.7%

Population density

4,631.7Â /sqÂ mi (1,788.3Â /km2)

283.4Â /sqÂ mi (109.4Â /km2)

87.3Â /sqÂ mi (33.7Â /km2)

Median household income (1999)

\$28,387

\$34,619

\$41,994

Bachelor's degree or higher

17.4%

22.4%

24.4%

Foreign born

5.8%

5.0%

11.0%

White (non-Hispanic)

75.0%

81.9%

72.4%

Black

19.7%

10.8%

12.6%

Hispanic (any race)

6.9%

5.7%

16.3%

Asian

1.5%

2.7%

4.8%

As of the 2010 United States Census, there were 101,786Â people, 40,913Â

households, and 22,915 families residing in the city. There were 44,790 housing units at an average vacancy rate of 8 percent. Erie has long been declining in population due to the departure of factories and dependent businesses.[22] The city has lost approximately 40,000 people since the early 1960s, allowing Allentown to claim the position as Pennsylvania's third-largest city behind Philadelphia and Pittsburgh.

#### Historical populations

##### Census

Pop.

%±

1800

81

â ~

1810

394

386.4%

1820

635

61.2%

1830

1,465

130.7%

1840

3,412

132.9%

1850

5,858

71.7%

1860

9,419

60.8%

1870

19,646

108.6%

1880

27,737

41.2%

1890

40,634

46.5%

1900

52,733

29.8%

1910

66,525

26.2%

1920

93,372

40.4%

1930

115,967

24.2%

1940

116,955

0.9%

1950

130,803

11.8%

1960

138,440

5.8%  
1970  
129,231  
â '6.7%  
1980  
119,123  
â '7.8%  
1990  
108,718  
â '8.7%  
2000  
103,717  
â '4.6%  
2010  
101,786  
â '1.9%  
Est. 2011  
101,807  
0%

U.S. Decennial Census2011 estimate

Erie's population was spread evenly among all age groups, with the median being 34. About 13% of families and 19% of the population were below the poverty line. Most of the people who reside in Erie are of European descent.[23]

Since the mid 1990s, the International Institute of Erie (IIE), founded in 1919, has helped with the resettlement of refugees from Bosnia, Eritrea, Ghana, Iraq, Kosovo, Liberia, Nepal, Somalia, Sudan, the former Soviet Union, and Vietnam. The inclusion of refugees in Erie's community augments religious diversity and prompts community events such as cultural festivals.[24]

In the early 20th century, Erie had a significant Russian immigrant community, many of whom worked in the shipbuilding plants along the bayfront. Unusual for a Great Lakes city, a substantial number of these Russian immigrants were Priestless (Bespopovtsy) Old Believers. In 1983, most of this community united with the Russian Orthodox Church Outside of Russia, and became Priested Old Ritualists.[25] Even today, the gold-domed Church of the Nativity,[26] on the bayfront near the former heart of the Russian community, is an Old Ritualist church, home to famed Icon painter Fr. Theodore Jurewicz.[27] Bishop Daniel of Erie, of the Russian Orthodox Church Outside Russia, is based in Erie and is the Vicar President of the Synod of Bishops for the Old Ritualists.[28][unreliable source?]

Erie has a Jewish community that is over 150Â years old. Temple Anshe Hessed, a member of the Union for Reform Judaism, is served by its spiritual leader, Rabbi John L. Bush.[29] Erie is home to the Roman Catholic Diocese of Erie, covering 13Â countiesâ ~at 9,936 square miles (25,734Â km2), it is the largest in the state. Its diocesan seat is the Saint Peter Cathedral in Erie, which has a 265 feet (81Â m) central tower flanked by two 150 feet (46Â m) towers. Lawrence Thomas Persico is Bishop of Erie, since October 1, 2012; Donald Trautman is Bishop Emeritus of the diocese.[30]

According to the Association of Religion Date Archives,[31] Erie County had a total population of 280,843Â people in 2000, of which 103,333 claimed affiliation with the Catholic Church, 40,301 with mainline Protestant houses of worship, and 12,980 with evangelical Protestant churches.

[edit] Economy

Erie is the Commonwealth of Pennsylvania's primary access point to Lake Erie, the Great Lakes, and the Saint Lawrence Seaway. The city emerged as a maritime center after the American Revolution, then as a railroad hub during the great American westward expansion. Erie became an important city for iron and steel manufacturing during the Industrial Revolution and thrived well into the 20th century with big industry.

While only diesel-electric locomotive building remains from the ranks of the

large manufacturers in the early 21st century, a more diverse mix of mid-sized industries has emerged. This broader economic base includes not only smaller and more agile steel and plastic plants, but also a vigorous service sector: health, insurance and tourism. As of December 2010[update], Erie's unemployment rate was 8.9 percent, as compared to rates for Pennsylvania and the United States at 8.5 and 9.4 percent, respectively.[32]

Erie is the corporate headquarters of GE Transportation, the Erie Insurance Group, and Marquette Savings Bank. Lord Corporation was founded and has major operations in Erie.[33] Along with GE and Erie Insurance, major employers in the county, and consequently, the city include the County, State and Federal governments, as well as the Erie City School District.[34]

Over 10 percent of the USA's plastics are manufactured or finished in Erie-based plastics plants.[3] Erie is an emerging center for biofuels and environmental research, producing over 45 million U.S. gallons of biofuel a year.[35] Tourism plays an increasingly important role in the local economy with over 4 million people visiting Presque Isle State Park and other attractions. Shoppers from Ohio, New York, and the Canadian province of Ontario frequent the Millcreek Mall and Peach Street stores and attractions as a result of Pennsylvania's tax exemption on clothing.

Both Hamot Medical Center and Saint Vincent Health System are also major employers in Erie.[34] On February 1, 2011, Hamot merged with the University of Pittsburgh Medical Center and became UPMC Hamot.[36] The United States Department of Veterans Affairs operates the Erie Veterans Affairs Medical Center on East 38th Street. The Shriners International operates Shriners Hospital for Children in Erie since 1927.

[edit] Utilities

The Erie Water Works, which was incorporated in 1865 as the Erie Water and Gas Company, includes a reservoir, two water treatment plants, and an elaborate water works and pipe network that provides water for most of the city and suburbs. Penelec, a subsidiary of FirstEnergy, supplies electricity to the region, as well as the Northwestern Pennsylvania Rural Electric Cooperative. Time Warner Cable became the region's cable television provider, after taking over Adelphia, and also provides digital phone and high-speed internet to the region. Local telephone and high speed internet service is also provided by Verizon.

Sewage service in Erie is provided by the Erie Sewer Authority, and many outlying townships have partnerships with the Sewer Authority for service. The Authority cleans about 30 to 40 million US gallons (150,000 m<sup>3</sup>) of wastewater every day.[37]

The time and temperature number in Erie is 452-6311 and was originally discontinued by Verizon in October 2008 before being restarted by a private individual two years later.[38] The city of Erie and northwest Pennsylvania is located in area code 814. On December 16, 2010, the Pennsylvania Public Utility Commission (PUC) voted to split the area code, which was to take effect February 1, 2012.[39] The North American Numbering Plan decided that northwest Pennsylvania would receive the new code of 582. A local grassroots coalition began organizing an opposition to the plan, and generated numerous petitions for reconsideration. The PUC immediately voted to review their decision and ordered additional public input hearings and technical conferences as a response to the strong public outcry.[40] In January 2011 the PUC announced that it was placing the entire area code split plan on hold as NEUSTAR pushed the projected exhaustion date back two years to 2015.[41]

[edit] Arts and culture

Erie is home to several professional and amateur performing-arts groups. The most significant is the Erie Philharmonic, in continuous existence since 1913 (with the exception of an interregnum during World War II). This group of professional musicians also has a full chorus and a Junior Philharmonic division that tours the area.

The Lake Erie Ballet is a professional company that performs well-known programs throughout the year.[42] The Erie Civic Music Association attracts,



sponsors, and books performances by professional musicians, singers, entertainers, and ensembles from around the world.[43]

The Erie Art Museum is the city's main art gallery, located in the Old Customshouse on State Street. Its collection has an emphasis on folk art and modern art and it hosts a popular blues and jazz concert series. The Erie Art Museum also works on public art projects in an effort to revitalize and improve the city. In 2000, the Erie Art Museum created a project entitled GoFish, similar to CowParade. 95 fiberglass fish were decorated by Erie artists and placed throughout the city. Patrons paid \$3,000 for a fish and the proceeds went to Gannon University's Scholarship Fund and the Erie Public Art Endowment Fund.[44] The Erie Art Museum created a similar public art project in 2004 that involved frogs rather than fish.[45] In 2012, the Erie Art Museum began a project to create forty artistic and functional bike racks, designed and created by local artists.[46] The Museum's intentions are to add color and interest to downtown Erie and to promote bicycling, encouraging healthy lifestyles and environmental awareness.[47]

Downtown Erie's historic and ornate Warner Theatre hosts a range of performances. Renovated in the 1980s and again in 2007,[48] the Warner is the hub of Erie's Civic Center. The downtown area is the home of the Erie Playhouse, one of the leading community theaters in the country, and the third oldest community theater in the U.S. .[49] The local Great Lakes Film Association (GLFA), which hosts the annual autumn Great Lakes Independent Film Festival, was founded in 2002.[50] Since 2007, the annual Roar on the Shore motorcycle rally has taken place in Erie.

Along West 6th Street is Millionaires Row, a collection of 19th century Victorian mansions. The John Hill House is one of the notable residences. The Erie Land Light stands at the foot of Lighthouse Street.[51] The lighthouse was built in 1818 and replaced in 1867.

The Bicentennial Tower, on Dobbins Landing at the foot of State Street, was built in 1995â ^96 to celebrate the city's bicentennial. It is 187 feet (57Â m) tall and gives a panoramic view of Lake Erie and downtown. The Blasco Library and Erie Maritime Museum are its neighbors to the east. Presque Isle Downs opened on February 28, 2007, and was the fourth slots parlor in the state and the first in Western Pennsylvania.[52]Table games opening at the casino on July 8, 2010.[53]

Erie has also been the location for many movies, including the hometown for fictional band "The Wonders" in That Thing You Do! featuring Tom Hanks. It is also mentioned in the film Wall Street as the location of the fictional company Anacott Steel.

Erie is the hometown of Train lead singer, Patrick Monahan. Erie is also the hometown of Marc Brown, the author and illustrator of Arthur books and TV series.

Erie is served by Erie Times-News, the city's only daily newspaper. The Nielsen Company ranks Erie as 144 out of the 210Â largest television market in the United States, as of the 2010â ^2011 report.[54] The market is served by stations affiliated with major American networks including WICU-TV (NBC), WJET-TV (ABC), WFXP (FOX), WSEE-TV (CBS), and WSEE-DT2 (CW). WQLN is a member of Public Broadcasting Service and also broadcasts in London, Ontario. Cable companies available for Erie include Time Warner Cable, DirecTV, and Dish Network. Erie is also served by several AM and FM radio stations based in the city, and dozens of other stations are received from elsewhere.

[edit] Sports

Erie plays host to a number of semi-pro and professional sports teams. The Erie SeaWolves play AA baseball in the Eastern League as an affiliate of the Detroit Tigers. The Erie Otters play hockey in the Ontario Hockey League. The Erie Explosion is a member of the Continental Indoor Football League. The Erie Illusion is a member of the Women's Football Alliance. The Erie BayHawks are a member of the NBA Development League. Football and hockey games are played at Erie Insurance Arena, while Minor League Baseball games are held at Jerry Uht Park.

Gannon University, Mercyhurst University, Edinboro University, and Penn State Behrend have active NCAA collegiate sports programs. The local high schools compete in PIAA District 10 sporting events. Additionally, Cathedral Preparatory School hosts the annual high school basketball tournament featuring top national teams; called the Burger King Classic since 2010. Scholastic and intramural sports are held at school and park facilities around the city. The Mercyhurst Ice Center and Erie Veterans Memorial Stadium are two of the many sports arenas and stadiums available in and around the city.

The Lake Erie Speedway, a 3 1/8-mile (0.6 km) NASCAR sanctioned race track is located in Greenfield Township. Horse racing is found at the Presque Isle Downs and Casino in nearby Summit Township.

#### [edit] Recreation

Erie's location along the shores of Lake Erie provides a plethora of outdoor activities throughout the year. The region's largest attraction is Presque Isle State Park, drawing over four million visitors a year.[55] The region grows grapes and produces the third largest amount of wine in the United States.[2]

Downtown Erie is surrounded by Presque Isle State Park, a National Natural Landmark.[55] The Seaway Trail runs through downtown Erie along the lakefront. The Tom Ridge Environmental Center, at the foot of Presque Isle, features 7,000 square feet (650 m<sup>2</sup>) of exhibit space.[56]

Other tourist destinations include the Bayfront Convention Center; the Bicentennial Tower that overlooks Lake Erie; Dobbins Landing, a pier in downtown Erie; the Erie Land Light, and the Erie Maritime Museum, the home port of the Niagara. The 2,600,000-square-foot (240,000 m<sup>2</sup>) Millcreek Mall, one of the largest shopping malls in the United States, is located on Peach Street in nearby Millcreek Township.[57] The indoor waterpark Splash Lagoon, in Summit Township, is the largest indoor waterpark on the East Coast and third largest in the United States.[49] Waldameer Park, located at the base of Presque Isle, is the fourth oldest amusement park in Pennsylvania, and the tenth oldest in the United States.[58]

#### [edit] Government

The city of Erie is incorporated as a 3rd class city under Pennsylvania law.[59] Incorporated under an "optional charter", the city is governed by a mayor-council government. The government consists of a mayor, treasurer, controller and a seven-member city council. All of whom are elected to four-year terms, with the terms of the council designed to be overlapping.[59] The mayor is chief executive; the city council prepares legislation and conducts oversight. The city council meets in Mario S. Bagnoni Council Chambers at City Hall. Joseph E. Sinnott (D) is the mayor of the city of Erie and was first elected in 2005. Susan DiVecchio (D) is the city treasurer and Casimir J. Kwitowski (D) is the city controller.[60] As of January 2, 2013, the Erie City Council consists of:[61]

Jim Winarski (D), 2013 Council President  
David Brennan (D)  
John Evans (R)  
Jessica Horan-Kunco (D)  
Curtis Jones, Jr. (D)  
Robert Merski (D)  
Melvin Witherspoon (D)

In exchange for tax revenue, the city provides its residents with police and fire protection. For separate quarterly payments, the city provides garbage, recycling, water and sewer services. The Erie Police Department provides law enforcement in the city and currently has a complement of 173 sworn personnel under the direct supervision of Chief of Police Stephen Franklin. The City of Erie Fire Department is a full-time career fire department and employs around 150 uniformed personnel. These employee's are under the direct supervision of Chief Tony Pol. The City currently operates out of six fire houses and protects approximately 20 square miles (52 km<sup>2</sup>). The city has six engines, two towers and one water rescue unit. The city provides mutual aid to fire departments of Millcreek Township, Summit Township and East County.

Erie is the largest city in Pennsylvania's 3rd congressional district and is currently represented in Congress by Republican Mike Kelly, who was elected in 2010. Republican Jane M. Earll of the 49th District has represented Erie in the Pennsylvania State Senate since 1997. Senator Earll declined to run for a fifth term in 2012 and will be succeeded by Democrat Sean D. Wiley. The city of Erie is split by the 1st and 2nd Districts of the Pennsylvania House of Representatives and is represented by Democrats Patrick Harkins and Florindo Fabrizio, respectively.[62]

[edit] Education

Erie Public Schools enroll 12,527 students in primary and secondary grades.[63] The district has 23 public schools including elementary, middle, high, and one charter school. Other than public schools, the city is home to more than 40 private schools and academies. Bethel Christian School is in Erie.

The City of Erie is served by four city high schools, Central Tech High School, East High School, Northwest Pennsylvania Collegiate Academy, Strong Vincent High School, three Catholic high schools Cathedral Preparatory School, Mercyhurst Preparatory School, Villa Maria Academy, and nearby McDowell High School and Iroquois High School in adjacent Millcreek Township and Lawrence Park Township, respectively.

Erie is home to several colleges and universities. Penn State Erie, The Behrend College is the largest Penn State branch campus, becoming a 4 year school in 1973. Lake Erie College of Osteopathic Medicine (LECOM), a large medical school, with branch campuses in Bradenton, Florida and Greensburg, Pennsylvania, has the largest enrollments of medical students in the country.[64]

Other notable colleges in the Erie area include Gannon University, a Catholic university, situated in downtown Erie. Another Catholic institution, Mercyhurst University, is in the southeast part of the city. Edinboro University of Pennsylvania, part of the state system of higher education, is in nearby Edinboro, Pennsylvania. Additionally, Allegheny College is located in Meadville, south of Erie.

Ranking Erie city and county officials, as well as officials of the Erie School District, began looking into the need for a community college in the Erie area in 2006.[65] As of January 2008, county officials and representatives of Penn State-Behrend, Mercyhurst and Gannon were in serious discussions expected to lead to the creation of Northwest Pennsylvania Community College by September 2009. Besides accreditation issues, officials must resolve whether to use local four-year educational institutions or to build a separate site in Summit Township for community college classes.[66]

Erie is also home of the Barber National Institute and its Elizabeth Lee Black School, which provides services and education for children and adults with mental disabilities. Erie is home to its main campus, and it provides services in Philadelphia and Pittsburgh.[67] The public libraries in Erie are part of the Erie County library system. The Raymond M. Blasco, M. D. Memorial Library, named for its benefactor, opened in 1996.[68] It is the third largest library in Pennsylvania.[69] It is connected to the Erie Maritime Museum, both of which are part of a bayfront improvement project that includes the Bayfront Convention Center and the Bicentennial Tower on Dobbins Landing.

[edit] Transportation

Erie is well connected to the Interstate Highway System. There are six "Erie exits" along Interstate 90, a major cross-country thoroughfare running from Boston to Seattle. Erie is the northern terminus of Interstate 79, which travels south to Pittsburgh and, ultimately, West Virginia. The western terminus for Interstate 86, also called the "Southern Tier Expressway," is at Interstate 90 between Erie and North East, Pennsylvania. Interstate 86 continues east through New York to Binghamton. The Bayfront Connector runs from Interstate 90 in Harborcreek to the Bayfront Parkway and downtown Erie, along the east side of the city, then connects to Interstate 79 on the west side of the city. Major thoroughfares in the city include 12th Street, 26th Street, 38th Street and Peach Street. Peach is also a part of U.S. Route 19, whose

northern terminus is in Erie and continues south eventually reaching the Gulf of Mexico. Other major routes running through Erie are Pennsylvania Route 5, known as the Seaway Trail and is made up of parts of 6th Street, 8th Street, 12th Street, and East Lake Road in the city, U.S. Route 20, which is 26th Street in the city. The city is divided between east and west by State Street.

The Erie Metropolitan Transit Authority (EMTA) operates the city's transit bus system, known as the 'e'. Buses run seven days a week in the city, with trips out to other parts of the county occurring a couple times a week. Intercity buses providing transportation between Buffalo, Cleveland and Pittsburgh are operated by Greyhound Lines. Service between Buffalo and Cleveland is also provided by Lakefront Lines. Both companies operate out of the Intermodal Transportation Center, which opened in 2002 at the foot of Holland Street.

The former "Water Level Route" of the New York Central Railroad travels directly through Erie. It is now the mainline for CSX freight trains. The mainline of the Norfolk Southern Railway, originally built by the Nickel Plate Railroad, also travels through Erie. At one time Norfolk Southern trains ran down the middle of 19th Street, but were removed in 2002.[70] Passenger rail service is provided by Amtrak's Lake Shore Limited out of Union Station at 14th and State Streets. The Lake Shore Limited stops twice dailyâ ~one eastbound towards New York City, and one westbound towards Chicago.

Erie International Airport / Tom Ridge Field (IATA code: ERI; IACO code: KERI) is located 5 miles (8.0Â km) west of the city and hosts general aviation, charter, and airline service. Destinations with non-stop flights out of Erie include Cleveland Hopkins International Airport via Continental Airlines, Philadelphia International Airport via US Airways and Detroit Metropolitan Wayne County Airport via Delta Air Lines. Erie International is in the midst of a \$80.5Â million runway extension. The extension is slated to increase the runway's length by 1,920 feet (590Â m), for a total runway length of 7,500 feet (2,300Â m), "to meet safety requirements" as well as allowing the airport to accommodate larger aircraft.[71]

The Port of Erie is located on Presque Isle Bay, a natural harbor formed by Presque Isle. It offers some of the finest port facilities for cargo shipping on the Great Lakes, with direct rail access. The Erieâ ^Western Pennsylvania Port Authority provides water-taxi service in the summer months between Dobbins Landing and Liberty Park in downtown Erie, and the Waterworks ferry landing on Presque Isle.[72]

[edit] Sister cities

Erie has four official sister cities as designated by Sister Cities International:

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#### [edit] External links

The 2007 Atlantic hurricane season was an active Atlantic hurricane season that produced 17Â tropical cyclones, 15Â tropical storms, sixÂ hurricanes, and twoÂ major hurricanes. It officially started on JuneÂ 1 and ended on NovemberÂ 30, dates which conventionally delimit the period during which most tropical cyclones form in the Atlantic Ocean. The first tropical cyclone, Subtropical Storm Andrea, developed on MayÂ 9, while the last storm, Tropical Storm Olga, dissipated on DecemberÂ 13. The most intense hurricane, Dean, is tied for the seventh most intense Atlantic hurricane ever recorded as well as the third most intense Atlantic hurricane at landfall. The season was one of only four on record for the Atlantic with more than one CategoryÂ 5 storm. It was the second on record in which an Atlantic hurricane, Felix, and an eastern Pacific hurricane, Henriette, made landfall on the same day. September had a record-tying eight storms, although the strengths and durations of most of the storms were low. Aside from hurricanes Dean and Felix, none of the storms in the season exceeded CategoryÂ 1 intensity.

Pre-season forecasts by the Colorado State University (CSU) called for 14Â named storms and 7Â hurricanes, of which three were expected to attain major hurricane status. The National Oceanic and Atmospheric Administration (NOAA) later issued its initial forecast, which predicted 13 to 17Â named storms, 7 to 10Â hurricanes and three to fiveÂ major hurricanes. After several revisions in the projected number of storms, NOAA and CSU lowered their forecasts by the middle of the season.

Several storms made landfall or directly affected land. Hurricanes Dean and Felix made landfall at CategoryÂ 5 intensity, causing severe damage in parts of Mexico and Central America, respectively. Both storm names, as well as Noel, the name of a hurricane that affected the Caribbean, were retired from the naming list of Atlantic hurricanes. The United States was affected by five cyclones, although the storms were generally weak; three tropical depressions and only one tropical storm, Gabrielle, and one hurricane, Humberto, made landfall in the country. Elsewhere, three storms directly affected Canada,





On June 19 the UK Met Office (UKMO) issued a forecast of 10 tropical storms in the July to November period with a 70 percent chance that the number would be in the range of 7 to 13.[5] On August 3, 2007, Klotzbach's team lowered its season estimate to 15 named storms, of which eight were to become hurricanes and four to become major hurricanes. Team members noted that conditions had become slightly less favorable for storms than earlier in the year. Sea surface temperature anomalies were cooler, and several Saharan Air Layer events had

suppressed development of tropical cyclones. El Niño-Southern Oscillation (ENSO) conditions were also noted to have been slightly cooler.[6]

On August 9, 2007, NOAA revised its season estimate slightly downwards to 13 to 16 named storms of which seven to nine were to be hurricanes and three to five major hurricanes. However, the agency reaffirmed its prediction of an above-average season, citing warmer-than-normal sea surface temperatures in parts of the Atlantic Ocean and Caribbean Sea and the likelihood of La Niña conditions during the peak of the season.[7]

[edit] Season activity

Overall, the season's activity was reflected with a cumulative accumulated cyclone energy (ACE) rating of 74.[8] ACE is, broadly speaking, a measure of the power of the hurricane multiplied by the length of time it existed, so storms that last a long time, as well as particularly strong hurricanes, have high ACEs. ACE is only calculated for full advisories on tropical systems at or exceeding 34 knots (39 mph, 63 km/h) or tropical storm strength. Subtropical cyclones, such as Andrea or the initial portions of Gabrielle, Jerry, and Olga, are excluded from the total.[9]

[edit] Storms

[edit] May ^ July

The first storm of the season, Subtropical Storm Andrea, formed out of a large extratropical cyclone off the coast of the United States on May 9, about 150 miles (240 km) northeast of Daytona Beach, Florida. Andrea was short-lived, dissipating on May 11. It was the first pre-season storm to develop since Tropical Storm Ana in April 2003 and the first Atlantic named storm in May since Tropical Storm Arlene in 1981. Six people drowned along the Southeast U.S. Coast, but property damage was minimal because the cyclone never made landfall.[10]

On June 1, Tropical Storm Barry developed from a trough of low pressure in the southeastern Gulf of Mexico. It accelerated to the northeast before reaching a peak intensity of 997 mbar and making landfall on Florida.[11] Barry dissipated on June 2.[12][13]

An area of low pressure formed near the Bahamas on July 28 and gradually began to organize while moving north-northeast. On July 30 it was classified as Tropical Depression Three and was named Tropical Storm Chantal shortly thereafter while south of Nova Scotia. The storm weakened on August 1 and made landfall on Newfoundland; it later tracked into the North Atlantic as an extratropical storm.[14]

[edit] August

On August 11, a tropical wave moved off the west coast of Africa, and, encountering favorable conditions, quickly spawned Tropical Depression Four, roughly 520 miles (835 km) west-southwest of Cape Verde.[15] The depression was upgraded to Tropical Storm Dean on August 14 and became the first hurricane of the season just two days after. Dean reached a peak intensity as a Category 5 on the Saffir-Simpson Hurricane Scale the strongest Atlantic hurricane since Hurricane Wilma and it was tied for the seventh most intense Atlantic storm of all time. The hurricane made landfall on the Yucatán Peninsula on August 21, causing severe damage and at least 44 deaths.[16]

Tropical Storm Erin formed on August 16 in the Gulf of Mexico from a persistent area of convection. Erin moved northwestward, attaining peak winds of 40 mph (64 km/h), before making landfall on the Texas coast. Early on August 19 after entering Oklahoma, the remnants of Erin suddenly re-intensified to maximum sustained winds of 60 mph (95 km/h) a short distance west of Oklahoma City.[17] Although it was generally weak, Erin caused heavy flooding and 16 deaths.[18]

An area of disturbed weather east of the Windward Islands was designated Tropical Depression Six on August 31. Early on September 1, it was named Tropical Storm Felix, and it was upgraded to a hurricane later that day.

Tracking generally westward, it rapidly intensified to Category 5, and after fluctuating in strength, made landfall on Nicaragua with 160 mph (260 km/h) winds. At least 133 deaths and more than \$50 million (2007 USD) in damage have been attributed to Felix.[19] With Felix, the 2007 Atlantic hurricane season became the only one of its kind known to include two hurricanes making landfall at Category 5.[20]

[edit] September

Tropical Storm Gabrielle originated from a cold front that moved off the U.S. East Coast on September 7, initially existing as a subtropical storm. By the next day, however, the system gained tropical characteristics, and Gabrielle reached peak winds of 60 mph (97 km/h) just before making landfall on the coast of North Carolina and turning northeast into the open waters of the Atlantic Ocean.[21]

A large tropical wave emerged off the coast of Africa on September 6 and moved westward across the Atlantic. Gradually, the associated convection organized, and it was named Tropical Storm Ingrid on September 12. Ingrid remained weak, staying at moderate tropical storm intensity its for its entire life; it never affected land.[22]

On September 12, an area of thunderstorm activity in the Gulf of Mexico organized into Tropical Depression Nine, about 60 mi (97 km) southeast of Matagorda, Texas. Within three hours of forming, it was named Tropical Storm Humberto, and it turned to the north-northeast before rapidly intensifying. A Hurricane Hunters aircraft found that Humberto had reached hurricane status while just 15 mi (24 km) offshore in the early hours of September 13 before making landfall at Category 1 strength.[23]

Tropical Depression Ten formed from the complex interaction between an upper-level low, a tropical wave that produced Tropical Storm Ingrid, and the tail end of a cold front. Initially classified as a subtropical depression, it attained tropical characteristics shortly before making landfall on the Florida Panhandle.[24]

On September 22, Subtropical Storm Jerry developed in the northern Atlantic. After about 48 hours it attained tropical characteristics, and it subsequently reached a peak intensity of 1,003 mbar. Jerry soon dissipated without affecting land.[25]

A large tropical wave associated with a large area of low pressure emerged off the coast of Africa on September 21. Tracking westward, it had developed sufficient convection to be designated as a tropical depression on September 24, and was upgraded to Tropical Storm Karen the next day. Though originally believed to have peaked at tropical storm status, post-season analysis revealed that it briefly attained Category 1 hurricane strength.[26]

A tropical wave emerged off the coast of Africa on September 11 and traversed the Atlantic, crossing the Yucatán Peninsula on September 21. On September 25 an associated low organized into a tropical depression in the southwest Gulf of Mexico. Further organization took place, and the depression was upgraded to Tropical Storm Lorenzo. Lorenzo peaked with winds of 80 mph (130 km/h) a minimal hurricane and made landfall near Tecolutla, Mexico.[27]

Tropical Storm Melissa formed on September 28 from a tropical wave that emerged into the Atlantic two days earlier. Certain factors prevented significant intensification, and Melissa failed to strengthen past a minimal tropical storm. Tracking northwestward, it dissipated on September 30.[28]

[edit] October ^December

A surface low pressure system formed on the tail end of a large area of disturbed weather that stretched from the Caribbean Sea into the western Atlantic. While 645 nmi (1,195 km) southeast of Bermuda the system was sufficiently organized to be declared a tropical depression on October 11. Failing to intensify, it dissipated the next day.[29]

During the evening of October 27 a low pressure system that had been slowly developing over the eastern Caribbean organization into Tropical Depression Sixteen. The next day, it was upgraded to Tropical Storm Noel and made landfall on Haiti on October 29. Noel meandered across the western Caribbean for the

next three days; the storm intensified into a hurricane on November 1. Tracking northward, it began its transition into an extratropical cyclone on November 2, becoming fully extratropical on November 4 while over Labrador. As a powerful extratropical cyclone, it crossed back into the Atlantic and began a track towards western Greenland.[30]

In the second week of December, after the official end of the hurricane season, a low developed east of the northernmost Lesser Antilles. On December 10 it was designated as Subtropical Storm Olga while north of Puerto Rico. The storm made landfall on December 11 on the eastern tip of the Dominican Republic and attained tropical characteristics while over land. By December 13, Olga had dissipated, having killed an estimated 40 people.[31]

[edit] Impact

The 2007 season was severe in terms of damage, mostly in the Caribbean. Collectively, storms caused more than 423 fatalities and about \$3 billion (2007 USD, \$3.36 billion 2013 USD) in damage.

In Hispaniola, Hurricane Dean killed 15 people and destroyed hundreds of homes.[32][33] Dean also left \$616 million (2007 USD, \$690 million 2013 USD) in damage on Martinique and \$154 million (2007 USD, \$173 million 2013 USD) on Guadeloupe.[34] Hurricane Felix took a similar path, although its effects were not severe; damage on Tobago was estimated at \$250,000 (2007 TTD; \$40,000 2007 USD, \$44.8 thousand 2013 USD).[35] Hurricane Noel caused severe damage throughout the region. Torrential rainfall and mudslides caused by the storm killed at least 87 people in the Dominican Republic and at least 73 in Haiti.[30] In addition, Tropical Storm Olga triggered flooding in the Dominican Republic, killing at least 37 people.[36][37]

Hurricane Felix made landfall just south of the border between Nicaragua and Honduras, in a region historically known as the Mosquito Coast, as a Category 5 hurricane with 160 mph (260 km/h) winds on September 4.[20] Residents of the region were reported to have been given little warning of the oncoming hurricane, which left many fishermen stranded at sea.[38] In all, Felix killed at least 130 people,[20] and damage in Nicaragua totaled C\$869.3 million (2007 NIO; \$46.7 million 2007 USD, \$52.3 thousand 2013 USD).[19] In Mexico, Hurricane Dean made landfall on the Yucatán Peninsula on August 21 as a Category 5 hurricane.[39] Throughout its track, Dean killed 44 people[40] and caused several billion dollars in damage.[16][41][42][43][44] Hurricane Lorenzo struck central Mexico to the south-southwest of Tuxpan as a Category 1 hurricane, causing an estimated \$1 billion (2007 MXN; \$92 million 2007 USD, \$103 million 2013 USD) in damage.[45] Lorenzo caused six deaths in Tuxpan and destroyed 169 houses in Puebla.[27]

During the season, five North Atlantic hurricanes affected the United States. However, these storms were relatively weak; three tropical depressions and one tropical storm and hurricane made landfall in the country, with their names being Gabrielle and Humberto. Subtropical Storm Andrea meandered off the Southeastern coast, producing 34 ft (10 m) waves on the coast of South Carolina.[46][47] Almost a month later, Tropical Storm Barry struck the state of Florida. The rainfall resulted in slick roads, which caused two traffic-related deaths, and a woman was killed after being injured by rough surf.[12][13] Tropical Storm Erin made landfall in Texas, flooding more than 40 homes and businesses. Along its path into the central states, Erin killed 16 people ~9 directly~ and left about \$25 million (2007 USD, \$28 million 2013 USD) in total damage.[18] In the second week of September, Tropical Storm Gabrielle moved ashore on North Carolina, causing moderate wind gusts and light rainfall, although minimal damage.[21] Shortly thereafter, Hurricane Humberto made landfall on High Island, Texas, with winds of about 90 mph (150 km/h). \$50 million (2007 USD, \$56 million 2013 USD) in damages were reported.[23] An unnamed tropical depression struck the coast of the Florida Panhandle about one week after Humberto dissipated. It caused no known deaths or serious injuries and just \$6.2 million in damage (2007 USD, \$6.95 million 2013 USD).[24]

Three tropical cyclones directly affected Canada, although the first, Tropical Storm Barry, caused no reported effects.[11] The next storm, Tropical Storm

Chantal, moved over the Avalon Peninsula of Newfoundland where flooding was observed.[14] Insured damage across the area totaled \$5.8Â million (2007Â CAD; \$5.5Â million 2007Â USD, \$6.16Â million 2013Â USD).[48] The most notable storm was Hurricane Noel, which generated winds of 130Â mph (210Â km/h) in the Wreckhouse region of Newfoundland and Labrador.[49]

[edit] Records and statistics

Only two major hurricanesâ ~storms of CategoryÂ 3 intensity or higherâ ~formed during the season, the least since the 1997 season, although tied with the 2006 and 2002 seasons. Named storms were active for 33.50Â days during the season, the lowest number of active days since the 1994 season. There were only 11.25Â days with active hurricanes, the lowest value since the 2002 season. Despite this, the number of days with major hurricanes was above the long-term average. Four named storms made landfall on the U.S. during the year, but damage from those storms totaled to only about \$82Â million (2007 USD); this was the least damage the U.S. saw from any Atlantic hurricane season since the 1990 season.[40] The season was one of only six Atlantic hurricane seasons to produce two CategoryÂ 5 equivalent hurricanes, the others being the 1932, 1933, 1960, 1961, and 2005 seasons. The two Category 5 hurricanes, Dean and Felix, had both reached CategoryÂ 5 strength on two separate occasions, the first time two Atlantic hurricanes have done so in a single season. This was also the first season during which two storms made landfall at CategoryÂ 5 intensity. When Hurricane Felix was upgraded to a CategoryÂ 5 storm on September 2, it became the eighth to form in this basin since 2000. This gave the decade more hurricanes of such strength than any other on record.[50]

Hurricane Dean was the first storm to make landfall as a CategoryÂ 5 hurricane in the Atlantic basin since Hurricane Andrew in 1992. A dropsonde in the eye of the storm estimated a central pressure of 905Â mbar, tying Dean with hurricanes Camille and Mitch for the seventh most intense Atlantic hurricane ever recorded. Dean was the third most intense landfalling Atlantic storm in history (after the Labor Day Hurricane of 1935 and Hurricane Gilbert of 1988).[16] When Tropical Depression Fourteen was upgraded to Tropical Storm Melissa on SeptemberÂ 29, it was the eighth named storm to form in the month of September. That tied a record for the most storms during September, which was first set in 2002.[51] Hurricane Humberto was the first hurricane to make landfall in Texas since Hurricane Claudette in 2003.[40]

[edit] Storm names

The names to the right were used for storms that formed in the Atlantic basin in 2007.[52] This is the same list used in the 2001 season except for Andrea, Ingrid, and Melissa, which replaced Allison, Iris, and Michelle, respectively and were first used in 2007. Names that were not assigned are marked in gray.

[edit] Retirement

On MayÂ 13, 2008, at the 30thÂ Session of the World Meteorological Organization's Regional AssociationÂ IV Hurricane Committee, the WMO retired the names Dean, Felix, and Noel from its rotating name lists. The names were replaced with Dorian, Fernand, and Nestor.[53]

[edit] Season effects

This is a table of the storms in the 2007 Atlantic hurricane season. It mentions all of the season's storms and their names, landfall(s), peak intensities, damages, and death totals. Deaths in parentheses are additional and indirect(an example of such being a traffic accident or landslide), but are still related to that storm. The damage and death totals in this list include impacts when the storm was a precursor wave or post-tropical low, and all of the damage figures are in 2007 USD.

2007 North Atlantic tropical cyclone statistics

Storm

name

Dates active

Storm category

at peak intensity

Max

wind(mph)  
Min.  
press.  
(mbar)  
Landfall(s)  
Damage  
(millionsUSD)  
Deaths  
Where  
When  
Wind  
(mph)  
Andrea  
May 9 - May 11  
Subtropical storm  
60  
1001  
none  
minimal  
0 (6)  
Barry  
June 1 - June 2  
Tropical storm  
60  
997  
Tampa Bay, Florida  
June 2  
35  
minimal  
1 (2)  
Chantal  
July 31 - August 1  
Tropical storm  
50  
997  
none  
>5.5  
0  
Dean  
August 13 - August 23  
Category 5 hurricane  
175  
905  
Costa Maya, Mexico  
August 21  
175  
1,500  
32 (12)  
Tecolutla, Veracruz  
August 22  
100  
Erin  
August 15 - August 17  
Tropical storm  
40  
1003  
San Jos  Island, Texas  
August 16  
35  
25

16  
Felix  
August 31 to September 5  
Category 5 hurricane  
175  
929  
Grenada  
September 1  
50  
780  
130 (3)  
Punta Gorda, Nicaragua  
September 4  
160  
Gabrielle  
September 8 to September 11  
Tropical storm  
60  
1004  
Cape Lookout, NC  
September 9  
60  
minimal  
none  
Ingrid  
September 12 to September 17  
Tropical storm  
45  
1002  
none  
none  
none  
Humberto  
September 12 to September 14  
Category 1 hurricane  
90  
985  
High Island, TX  
September 13  
90  
50  
1  
Ten  
September 21 to September 22  
Tropical depression  
35  
1005  
Fort Walton Beach, FL  
September 21  
30  
6.2  
none  
Jerry  
September 23 to September 24  
Tropical storm  
40  
1003  
none  
none  
none



Karen  
September 25 - September 29  
Category 1 hurricane  
75  
988  
none  
none  
none  
Lorenzo  
September 25 - September 28  
Category 1 hurricane  
80  
990  
Tecolutla, Veracruz  
September 28  
75  
92  
6  
Melissa  
September 28 - September 30  
Tropical storm  
40  
1005  
none  
none  
none  
Fifteen  
October 11 - October 12  
Tropical depression  
35  
1011  
none  
none  
none  
Noel  
October 28 - November 2  
Category 1 hurricane  
80  
980  
Jacmel, Haiti  
October 29  
50  
582  
163 (6)  
Guardalavaca, Cuba  
October 30  
60  
Andros, Bahamas  
November 1  
60  
Nassau, Bahamas  
November 1  
65  
Olga  
December 11 - December 12  
Tropical storm  
60  
1003  
Vega Baja, Puerto Rico  
December 11

45

45

45

Punta Cana, Dominican Republic

December 11

60

Season Aggregates

17 cyclones

May 9 – December 13

^

175

905

16 landfalls

~3,000

394 (29)

[edit] See also

^ The cumulative damage figures were obtained by summing the damage figures on the individual Tropical Cyclone Reports referenced throughout the article, with the exception of Hurricane Dean. Dean's damage figures were obtained by adding the per-country totals referenced in the Impact section of this article.

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[edit] External links

Tropical cyclones of the 2007 Atlantic hurricane season

Comet Hale    Bopp (formally designated C/1995    01) was perhaps the most widely observed comet of the 20th century and one of the brightest seen for many decades. It was visible to the naked eye for a record 18    months, twice as long as the previous record holder, the Great Comet of 1811.

Hale    Bopp was discovered on July 23, 1995, at a great distance from the Sun, raising expectations that the comet would brighten considerably by the time it passed close to Earth. Although predicting the brightness of comets with any degree of accuracy is very difficult, Hale    Bopp met or exceeded most predictions when it passed perihelion on April 1, 1997. The comet was dubbed the Great Comet of 1997.

[edit] Discovery

The comet was discovered on July 23, 1995 by two independent observers, Alan Hale and Thomas Bopp, both in the United States.[5]

Hale had spent many hundreds of hours searching for comets without success,

and was tracking known comets from his driveway in New Mexico when he chanced upon Hale-â Bopp just after midnight. The comet had an apparent magnitude of 10.5 and lay near the globular cluster M70 in the constellation of Sagittarius.[6] Hale first established that there was no other deep-sky object near M70, and then consulted a directory of known comets, finding that none were known to be in this area of the sky. Once he had established that the object was moving relative to the background stars, he emailed the Central Bureau for Astronomical Telegrams, the clearing house for astronomical discoveries.[7]

Bopp did not own a telescope. He was out with friends near Stanfield, Arizona observing star clusters and galaxies when he chanced across the comet while at the eyepiece of his friend's telescope. He realized he might have spotted something new when, like Hale, he checked his star maps to determine if any other deep-sky objects were known to be near M70, and found that there were none. He alerted the Central Bureau for Astronomical Telegrams through a Western Union telegram. Brian Marsden, who had run the bureau since 1968, laughed, "Nobody sends telegrams anymore. I mean, by the time that telegram got here, Alan Hale had already e-mailed us three times with updated coordinates." [8]

The following morning, it was confirmed that this was a new comet, and it was given the designation C/1995-â O1. The discovery was announced in International Astronomical Union circular 6187.[6][9]

The comet may have been observed by ancient Egyptians during the reign of pharaoh Pepi I (2332-â 2283 BC). In Pepi's pyramid in Saqqara is a text referring to an "nhh-star" as a companion of the pharaoh in the heavens, where "nhh" is the hieroglyph for long hair.[10]

[edit] Early observation

Hale-â Bopp's orbital position was calculated as 7.2-â astronomical units (AU) from the Sun, placing it between Jupiter and Saturn and by far the greatest distance from Earth at which a comet had been discovered by amateurs.[11][12] Most comets at this distance are extremely faint, and show no discernible activity, but Hale-â Bopp already had an observable coma.[6] An image taken at the Anglo-Australian Telescope in 1993 was found to show the then-unnoticed comet some 13-â AU from the Sun,[13] a distance at which most comets are essentially unobservable. (Halley's Comet was more than 100 times fainter at the same distance from the Sun.)[14] Analysis indicated later that its comet nucleus was 60-â±20-â kilometres in diameter, approximately six times the size of Halley.[1][15]

Its great distance and surprising activity indicated that comet Hale-â Bopp might become very bright indeed when it reached perihelion in 1997. However, comet scientists were wary -â comets can be extremely unpredictable, and many have large outbursts at great distance only to diminish in brightness later. Comet Kohoutek in 1973 had been touted as a 'comet of the century' and turned out to be unspectacular.[7]

[edit] Perihelion

Hale-â Bopp became visible to the naked eye in May 1996, and although its rate of brightening slowed considerably during the latter half of that year,[16] scientists were still cautiously optimistic that it would become very bright. It was too closely aligned with the Sun to be observable during December 1996, but when it reappeared in January 1997 it was already bright enough to be seen by anyone who looked for it, even from large cities with light-polluted skies.[17]

The Internet was a growing phenomenon at the time, and numerous websites that tracked the comet's progress and provided daily images from around the world became extremely popular. The Internet played a large role in encouraging the unprecedented public interest in comet Hale-â Bopp.[18]

As the comet approached the Sun, it continued to brighten, shining at 2nd-â magnitude in February, and showing a growing pair of tails, the blue gas tail pointing straight away from the Sun and the yellowish dust tail curving away along its orbit. On March 9, a solar eclipse in China, Mongolia and eastern Siberia allowed observers there to see the comet in the daytime.[19] Hale-â Bopp

had its closest approach to Earth on March 22, 1997 at a distance of 1.315 AU.[20]

As it passed perihelion on April 1, 1997 the comet developed into a spectacular sight. It shone brighter than any star in the sky except Sirius, and its dust tail stretched 40°-45 degrees across the sky.[21][22] The comet was visible well before the sky got fully dark each night, and while many great comets are very close to the Sun as they pass perihelion, comet Hale-Bopp was visible all night to northern hemisphere observers.[23]

[edit] After perihelion

After its perihelion passage, the comet moved into the southern celestial hemisphere, and its show was over as far as most of the northern hemisphere was concerned. The comet was much less impressive to southern hemisphere observers than it had been in the northern hemisphere, but southerners were able to see the comet gradually fade from view during the second half of 1997. The last naked-eye observations were reported in December 1997, which meant that the comet had remained visible without aid for 569 days, or about 18 and a half months.[16] The previous record had been set by the Great Comet of 1811, which was visible to the naked eye for about 9 months.[16]

The comet continued to fade as it receded, but is still being tracked by astronomers. In October 2007, 10 years after the perihelion and at distance of 25.7 AU from Sun, the comet was still active as indicated by the detection of the CO-driven coma.[24]Herschel Space Observatory images taken in 2010 suggest comet Hale-Bopp is covered in a fresh frost layer.[25] Hale-Bopp was again detected in December 2010 when it was 30.7AU from the Sun,[26] and again on 2012 Aug 7 when it was 33.2AU from the Sun.[27] Astronomers expect that the comet will remain observable with large telescopes until perhaps 2020, by which time it will be nearing 30th magnitude.[28] By this time it will become very difficult to distinguish the comet from the large numbers of distant galaxies of similar brightness.

[edit] Orbital changes

The comet likely made its last perihelion 4,200 years ago.[29] Its orbit is almost perpendicular to the plane of the ecliptic, which ensures that close approaches to planets are rare. However, in April 1996 the comet passed within 0.77 AU of Jupiter, close enough for its orbit to be affected by the planet's gravity.[29] The comet's orbit was shortened considerably to a period of roughly 2,533 years,[1] and it will next return to the inner Solar System around the year 4385.[4] Its greatest distance from the Sun (aphelion) will be about 370 AU,[1] reduced from about 525 AU.[30][31]

Over many orbits, the cumulative effect of gravitational perturbations on comets with high orbital inclinations and small perihelion distances is generally to reduce the perihelion distance to very small values. Hale-Bopp has about a 15% chance of eventually becoming a sungrazing comet through this process.[32]

It has been calculated that the previous visit by Hale-Bopp occurred in July 2215 BC.[30] The comet may have presented a similar sight to people then, as the estimated closest approach to Earth was 1.4 AU, but no records of it have survived. Hale-Bopp may have had a near collision with Jupiter in early June 2215 BC, which probably caused a dramatic change in its orbit, and 2215 BC may have been its first passage through the inner Solar System.[30]

The estimated probability of impacting Earth in future passages through the inner Solar System is remote, about  $2.5 \times 10^{-9}$  per orbit.[33] However, given that the comet nucleus is around 60 km in diameter,[1] the consequences of such an impact would be apocalyptic. A calculation given by Weissman[33] conservatively estimates the diameter at 35 km; an estimated density of 0.6 g/cm<sup>3</sup> then gives a cometary mass of  $1.3 \times 10^{19}$  g. An impact velocity of 52.5 km/s yields an impact energy of  $1.9 \times 10^{32}$  ergs, or 4.4 x 10<sup>9</sup> megatons, about 44 times the estimated energy of the K-T impact event.

[edit] Scientific results

Comet Hale-Bopp was observed intensively by astronomers during its perihelion passage, and several important advances in cometary science resulted from these

observations. The dust production rate of the comet was very high (up to  $2.0 \times 10^6$  kg/s), [34] which may have made the inner coma optically thick. [35] Based on the properties of the dust grains—high temperature, high albedo and strong  $10 \mu\text{m}$  silicate emission feature—the astronomers concluded the dust grains are smaller than observed in any other comet. [36]

Hale-Bopp showed the highest ever linear polarization detected for any comet. Such polarization is the result of solar radiation getting scattered by the dust particles in the coma of the comet and depends on the nature of the grains. It further confirms that the dust grains in the coma of comet Hale-Bopp were smaller than inferred in any other comet. [37]

[edit] Sodium tail

One of the most remarkable discoveries was that the comet had a third type of tail. In addition to the well-known gas and dust tails, Hale-Bopp also exhibited a faint sodium tail, only visible with powerful instruments with dedicated filters. Sodium emission had been previously observed in other comets, but had not been shown to come from a tail. Hale-Bopp's sodium tail consisted of neutral atoms (not ions), and extended to some 50 million kilometres in length. [38]

The source of the sodium appeared to be the inner coma, although not necessarily the nucleus. There are several possible mechanisms for generating a source of sodium atoms, including collisions between dust grains surrounding the nucleus, and 'sputtering' of sodium from dust grains by ultraviolet light. It is not yet established which mechanism is primarily responsible for creating Hale-Bopp's sodium tail, and the narrow [38] and diffuse [39] components of the tail may have different origins. [40]

While the comet's dust tail roughly followed the path of the comet's orbit and the gas tail pointed almost directly away from the Sun, the sodium tail appeared to lie between the two. This implies that the sodium atoms are driven away from the comet's head by radiation pressure. [38]

[edit] Deuterium abundance

The abundance of deuterium in comet Hale-Bopp in the form of heavy water was found to be about twice that of Earth's oceans. If Hale-Bopp's deuterium abundance is typical of all comets, this implies that although cometary impacts are thought to be the source of a significant amount of the water on Earth, they cannot be the only source. [41]

Deuterium was also detected in many other hydrogen compounds in the comet. The ratio of deuterium to normal hydrogen was found to vary from compound to compound, which astronomers believe suggests that cometary ices were formed in interstellar clouds, rather than in the solar nebula. Theoretical modelling of ice formation in interstellar clouds suggests that comet Hale-Bopp formed at temperatures of around  $25 \pm 45$  Kelvin. [41]

[edit] Organics

Spectroscopic observations of Hale-Bopp revealed the presence of many organic chemicals, several of which had never been detected in comets before. These complex molecules may exist within the cometary nucleus, or might be synthesised by reactions in the comet. [42]

[edit] Detection of argon

Hale-Bopp was the first comet where the noble gas argon was detected. [43] Noble gases are chemically inert and highly volatile, and since different noble elements have different sublimation temperatures, they can be used for probing the temperature histories of the cometary ices. Krypton has a sublimation temperature of  $16 \pm 20$  K and was found to be depleted more than 25 times relative to the solar abundance, [44] while argon with its higher sublimation temperature was enriched relative to the solar abundance. [43] Together these observations indicate that the interior of Hale-Bopp has always been colder than  $35 \pm 40$  K, but has at some point been warmer than 20 K. Unless the solar nebula was much colder and richer in argon than generally believed, this suggests that the comet formed beyond Neptune in the Kuiper belt region and then migrated outward to the Oort cloud. [43]

[edit] Rotation



Comet Haleâ ^Bopp's activity and outgassing were not spread uniformly over its nucleus, but instead came from several specific jets. Observations of the material streaming away from these jets[45] allowed astronomers to measure the rotation period of the comet, which was found to be about 11 hours 46 minutes.[46]

[edit] Binary nucleus question

In 1997 a paper was published that hypothesised the existence of a binary nucleus to fully explain the observed pattern of comet Haleâ ^Bopp's dust emission observed in October 1995. The paper was based on theoretical analysis, and did not claim an observational detection of the proposed satellite nucleus, but estimated that it would have a diameter of about 30Â km, with the main nucleus being about 70Â km across, and would orbit in about three days at a distance of about 180Â km.[47] This analysis was confirmed by observations in 1996 using Wide-Field Planetary Camera 2 of the Hubble Space Telescope which had taken images of the comet that revealed the satellite.[48]

Although observations using adaptive optics in late 1997 and early 1998 showed a double peak in the brightness of the nucleus,[49] controversy still exists over whether such observations can only be explained by a binary nucleus.[15] The discovery of the satellite was not confirmed by other observations.[50][51] Also, while comets have been observed to break up before,[52] no case has previously been found of a stable binary nucleus. Given the very small mass of this comet, the orbit of the binary nucleus would be easily disrupted by the gravity of the Sun and planets.

[edit] UFO claims

In November 1996 amateur astronomer Chuck Shramek of Houston, Texas took a CCD image of the comet, which showed a fuzzy, slightly elongated object nearby. When his computer sky-viewing program did not identify the star, Shramek called the Art Bell radio program Coast to Coast AM to announce that he had discovered a "Saturn-like object" following Haleâ ^Bopp. UFO enthusiasts, such as remote viewing proponent Courtney Brown, soon concluded that there was an alien spacecraft following the comet.[53]

Several astronomers, including Alan Hale,[54] claimed the object was simply an 8.5-magnitude star, SA0141894, which did not appear on Shramek's computer program because the user preferences were set incorrectly.[55] Later, Art Bell even claimed to have obtained an image of the object from an anonymous astrophysicist who was about to confirm its discovery. However, astronomers Olivier Hainaut and David J. Tholen of the University of Hawaii stated that the alleged photo was an altered copy of one of their own comet images.[56]

A few months later, in March 1997, the cult Heaven's Gate committed mass suicide with the intention of teleporting to a spaceship they believed was flying behind the comet.[57]

Nancy Lieder, a self-proclaimed contactee who claims to receive messages from aliens through an implant in her brain, stated that Haleâ ^Bopp was a fiction designed to distract the population from the coming arrival of "Nibiru" or "Planet X", a giant planet whose close passage would disrupt the Earth's rotation, causing global cataclysm.[58] Although Lieder's original date for the apocalypse, May 2003, has now passed, the imminent arrival of Nibiru is still predicted by various conspiracy websites, most of whom tie it to the 2012 phenomenon.[59] This also passed.

[edit] Legacy

Its lengthy period of visibility and extensive coverage in the media meant that Haleâ ^Bopp was probably the most-observed comet in history, making a far greater impact on the general public than the return of Halley's Comet in 1986, and certainly seen by a greater number of people than witnessed any of Halley's previous appearances. For instance, 69% of Americans had seen Haleâ ^Bopp by April 9, 1997.[60]

Haleâ ^Bopp was a record-breaking cometâ ~the farthest comet from the Sun discovered by amateurs,[20] with the largest well-measured cometary nucleus known after 95P/Chiron,[15] and it was visible to the naked eye for twice as long as the previous record-holder.[16] It was also brighter than magnitudeÂ 0

for eight weeks, longer than any other recorded comet.[20]

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[edit] External links

The Alaska Mental Health Enabling Act of 1956 (Public Law 84-830) was an Act of Congress passed to improve mental health care in the United States territory of Alaska. It became the focus of a major political controversy[1] after opponents nicknamed it the "Siberia Bill" and denounced it as being part of a communist plot to hospitalize and brainwash Americans. Campaigners asserted that it was part of an international Jewish, Roman Catholic or psychiatric conspiracy intended to establish United Nations-run concentration camps in the United States.

The legislation in its original form was sponsored by the Democratic Party, but after it ran into opposition, it was rescued by the conservative Republican Senator Barry Goldwater. Under Goldwater's sponsorship, a version of the legislation without the commitment provisions that were the target of intense opposition from a variety of far-right, anti-Communist and fringe religious groups was passed by the United States Senate.[2] The controversy still plays a prominent role in the Church of Scientology's account of its campaign against psychiatry.

The Act succeeded in its initial aim of establishing a mental health care system for Alaska, funded by income from lands allocated to a mental health trust. However, during the 1970s and early 1980s, Alaskan politicians systematically stripped the trust of its lands, transferring the most valuable land to private individuals and state agencies. The asset-stripping was eventually ruled to be illegal following several years of litigation, and a reconstituted mental health trust was established in the mid-1980s.

[edit] Background to the act

Alaska possessed no mental health treatment facilities prior to the passage of the 1956 Act. At the time of the Act's passage, Alaska was not a U.S. state, being constituted instead as a territory of the United States. The treatment of the mentally ill was governed by an agreement with the state of Oregon dating back to the turn of the 19th to 20th century. On June 6, 1900, the United States Congress enacted a law permitting the government of the then District of Alaska to provide mental health care for Alaskans. In 1904, a contract was signed with Morningside Hospital, privately owned and operated by Henry Waldo Coe in Portland, Oregon, under which Alaskan mental patients would be sent to the hospital for treatment.[3] A commitment regime was established under which a person said to be mentally ill was to be brought before a jury of six people,

who would rule him sane or insane. The patient was routinely sent to prison until his release or transfer to Portland; at no point in this ruling was a medical or psychiatric examination required.[4]

By the 1940s it was recognized that this arrangement was unsatisfactory. The American Medical Association conducted a series of studies in 1948, followed by a Department of the Interior study in 1950. They highlighted the deficiencies of the program: commitment procedures in Alaska were archaic, and the long trip to Portland had a negative effect on patients and their families. In addition, an audit of the hospital contract found that the Sanatorium Company, which owned the hospital, had been padding its expenses. This had enabled it to make an excess profit of \$69,000 per year (equivalent to over \$588,000 per year at 2007 prices).[3]

The studies recommended a comprehensive overhaul of the system, with the development of an in-state mental health program for Alaska. This proposal was widely supported by the public and politicians. At the start of 1956, in the second session of the 84th Congress, Representative Edith Green (D-Oregon) introduced the Alaska Mental Health Bill (H.R. 6376) in the House of Representatives. The bill had been written by Bob Bartlett, the Congressional Delegate from the Alaska Territory who later became a U.S. Senator.[2] Senator Richard L. Neuberger (D-Oregon) sponsored an equivalent bill, S. 2518, in the Senate.

[edit] Details of the bill

The Alaska Mental Health Bill's stated purpose was to "transfer from the Federal Government to the Territory of Alaska basic responsibility for the hospitalization, care and treatment of the mentally ill of Alaska." In connection with this goal, it aimed:

- to modernize procedures for such hospitalization (including commitment), care, and treatment and to authorize the Territory to modify or supersede such procedures;

- to assist in providing for the Territory necessary facilities for a comprehensive mental-health program in Alaska, including inpatient and outpatient facilities;

- to provide for a land grant to the Territory to assist in placing the program on a firm long-term basis; and

- to provide for a ten-year program, of grants-in-aid to the Territory to enable the Territory gradually to assume the full operating costs of the program.[5]

The bill provided for a cash grant of \$12.5 million (about \$94 million at 2007 prices) to be disbursed to the Alaskan government in a number of phases, to fund the construction of mental health facilities in the territory. To meet the ongoing costs of the program, the bill transferred one million acres (4,000 km<sup>2</sup>) of federally-owned land in Alaska to the ownership of the proposed new Alaska Mental Health Trust as a grant-in-aid ~the federal government owned about 99% of the land of Alaska at the time. The trust would then be able to use the assets of the transferred land (principally mineral and forestry rights) to obtain an ongoing revenue stream to fund the Alaskan mental health program. Similar provisions had applied in other US territories to support the provision of public facilities prior to the achievement of statehood.[4]

In addition, the bill granted the Governor of Alaska authority to enter into reciprocal mental health treatment agreements with the governors of other states. Alaskans who became mentally ill in the lower 48 states would be properly treated locally until they could be returned to Alaska; likewise, citizens of the lower 48 who fell mentally ill in Alaska would receive care there, before being returned to their home states.[4]

The bill was seen as entirely innocuous when it was introduced on January 16, 1956. It enjoyed bipartisan support, and on January 18 it was passed unanimously by the House of Representatives. It then fell to the Senate to consider the equivalent bill in the upper chamber, S. 2518, which was expected to have an equally untroubled passage following hearings scheduled to begin on February 20.[4]

[edit] Controversy

[edit] Sounding the alarm

In December 1955, a small anti-communist women's group in southern California, the American Public Relations Forum (APRF), issued an urgent call to arms in its monthly bulletin. It highlighted the proposed text of the Alaska Mental Health Bill, calling it "one that tops all of them". The bulletin writers commented: "We could not help remembering that Siberia is very near Alaska and since it is obvious no one needs such a large land grant, we were wondering if it could be an American Siberia." They said that the bill "takes away all of the rights of the American citizen to ask for a jury trial and protect him[self] from being railroaded to an asylum by a greedy relative or 'friend' or, as the Alaska bill states, 'an interested party'." [2]

The APRF had a history of opposing mental health legislation; earlier in 1955, it had played a key role in stalling the passage of three mental health bills in the California Assembly. It was part of a wider network of far-right organizations which opposed psychiatry and psychology as being pro-communist, anti-American, anti-Christian and pro-Jewish. [2] The Keep America Committee, another Californian "superpatriot" group, summed up the anti-mental health mood on the far right in a pamphlet issued in May 1955. Calling "mental hygiene" part of the "unholy three" of the "Communitistic World Government", it declared: "Mental Hygiene is a subtle and diabolical plan of the enemy to transform a free and intelligent people into a cringing horde of zombies". [6]

The APRF's membership overlapped with that of the much larger Minute Women of the U.S.A., a nationwide organization of militant anti-communist housewives which claimed up to 50,000 members across the United States. In mid-January 1956, Minute Woman Leigh F. Burkeland of Van Nuys, California issued a bulletin protesting against the bill. It was mimeographed by the California State Chapter of the Minute Women and mailed across the nation. On January 24, 1956, the strongly anti-Statist Santa Ana Register newspaper reprinted Burkeland's statement under the headline, "Now â ~ Siberia, U.S.A." Burkeland issued a lurid warning of what the future might hold if the Alaska Mental Health Bill was passed by the Senate:

Is it the purpose of H.R. 6376 to establish a concentration camp for political prisoners under the guise of treatment of mental cases? The answer, based on a study of the bill, indicates that it is entirely within the realm of possibility that we may be establishing in Alaska our own version of the Siberia slave camps run by the Russian government. â | This legislation, say its opponents, will place every resident of the United States at the mercy of the whims and fancies of any person with whom they might have a disagreement, causing a charge of 'mental illness' to be placed against them, with immediate deportation to SIBERIA, U.S.A! [7]

[edit] Fanning the flames

After the Santa Ana Register published its article, a nationwide network of activists began a vociferous campaign to torpedo the Alaska Mental Health Bill. The campaigners included, among other groups and individuals, the white supremacist Rev. Gerald L. K. Smith; Women for God and Country; the For America League; the Minute Women of the U.S.A.; the right-wing agitator Dan Smoot; the anti-Catholic former US Army Brigadier General Herbert C. Holdridge; and L. Ron Hubbard's Church of Scientology, which had been founded only two years earlier.

Increasingly strong statements were made by the bill's opponents through the course of the spring and summer of 1956. In his February 17 bulletin, Dan Smoot told his subscribers: "I do not doubt that the Alaska Mental Health Act was written by sincere, well-intentioned men. Nonetheless, it fits into a sinister pattern which has been forming ever since the United Nations was organized." [8] Dr. George A. Snyder of Hollywood sent a letter to all members of Congress in which he demanded an investigation of the Alaska Mental Health Bill's proponents for "elements of treason against the American people behind the front of the mental health program." The Keep America Committee of Los Angeles similarly called the proponents of the bill a "conspiratorial gang"

that ought to be "investigated, impeached, or at least removed from office" for treason.[2] Retired brigadier general Herbert C. Holdridge sent a public letter to President Dwight Eisenhower on March 12, in which he called the bill "a dastardly attempt to establish a concentration camp in the Alaskan wastes." He went on:

This bill establishes a weapon of violence against our citizenry far more wicked than anything ever known in recorded history â ~ far worse than the Siberian prison camps of the Czars or the Communists, or the violence of the Spanish Inquisition â | The plot of wickedness revealed in this bill fairly reeks of the evil odor of the black forces of the Jesuits who dominate the Vatican, and, through officiates in our Government, dominate our politics.[3]

For their part, America's professional health associations (notably the American Medical Association and American Psychiatric Association) came out in favour of the bill. There was some initial opposition from the Association of American Physicians and Surgeons, a small and extremely conservative body which opposed socialized medicine; Dr. L. S. Sprague of Tucson, Arizona said in its March 1956 newsletter that the bill widened the definition of mental health to cover "everything from falling hair to ingrown toenails." However, the association modified its position after it became clear that the AMA took the opposite view.[3]

By March 1956, it was being said in Washington, D.C. that the amount of correspondence on the bill exceeded anything seen since the previous high-water mark of public controversy, the Lend-Lease Act of 1941.[2] Numerous letter-writers protested to their Congressional representatives that the bill was "anti-religious" or that the land to be transferred to the Alaska Mental Health Trust would be fenced off and used as a concentration camp for the political enemies of various state governors.[9] The well-known broadcaster Fulton Lewis described how he had "received, literally, hundreds of letters protesting bitterly against the bill. I have had telephone calls to the same effect from California, Texas and other parts of the country. Members of Congress report identical reactions." [10] A letter printed in the Daily Oklahoman newspaper in May 1956 summed up many of the arguments made by opponents of the bill:

The advocates of world government, who regard patriotism as the symptom of a diseased mind, took a step closer to their goal of compulsory asylum 'cure' for opponents of UNESCO, when, on January 18, the U.S. House of Representatives passed the Alaska Mental Health Act.

The Act was prepared by the U.S. Department of Justice, Department of the Interior and the socialist-oriented Department of Health, Education and Welfare. It closely follows the Model Code, drafted by the American Psychiatric association, which has been working with the World Health Organization, a specialized agency of the United Nations â | All of you who don't want members of your family railroaded to an asylum had better start writing your senator, now.[11]

During February and March 1956, hearings were held before the Senate Subcommittee on Territories and Insular Affairs. Proponents and opponents of the bill faced off in a series of tense exchanges, with strong accusations being made against the people and groups involved in the bill's introduction. Stephanie Williams of the American Public Relations Forum said that the bill would enable Russia to reclaim its former Alaskan territory: "[it] contains nothing to prevent Russia from buying the entire million acres â ~ they already say Alaska belongs to them." [12]

Mrs. Ernest W. Howard of the Women's Patriotic Committee on National Defense castigated the slackness of Congress for not picking up on the bill's perceived dangers: "Those of us who have been in the study and research work of the United Nations, we feel that we are experts in this . . . you as Senators with



all the many commitments and the many requirements, are not able to go into all these things." John Kaspar, a White Citizens' Council organizer who had achieved notoriety for starting a race riot in Clinton, Tennessee, declared that "almost one hundred percent of all psychiatric therapy is Jewish and about eighty percent of psychiatrists are Jewish . . . one particular race is administering this particular thing." He argued that Jews were nationalists of another country who were attempting to "usurp American nationality." [4][6]

[edit] Passing the bill

The arguments of the bill's opponents attracted little support in the Senate. The Eisenhower administration, the Alaska territorial government and mainstream religious groups were all in favor of the bill. The Alaska Presbyterian Church gave the bill its unanimous support, issuing a statement declaring: "As Christian citizens of Alaska we believe this is a progressive measure for the care and treatment of the mentally ill of Alaska. We deplore the present antiquated methods of handling our mentally ill." It also urged the National Council of Churches to mobilize support for the bill.[13] An overwhelming majority of senators of both parties were also supportive. The bill's original author, Alaska Delegate Bob Bartlett, spoke for many of the bill's proponents when he expressed his bafflement at the response that it had received:

I am completely at a loss in attempting to fathom the reasons why certain individuals and certain groups have now started a letter-writing campaign â | to defeat the act. I am sure that if the letter writers would consult the facts, they would join with all others not only in hoping this act would become law but in working for its speedy passage and approval.[2]

Other senators expressed similar mystification at the agitation against the bill. Senator Henry M. Jackson of Washington stated that he was "at a loss" to see how the bill affected religion, as its opponents said.[9] Senator Alan Bible of Nevada, the acting chairman of the Subcommittee on Territories and Insular Affairs, told the bill's opponents that nothing in the proposed legislation would permit the removal of any non-Alaskan to the territory for confinement.[12]

Republican Senator Barry Goldwater of Arizona proposed an amended bill that removed the commitment procedures in title I of the House bill and stated that "Nothing in this title shall be construed to authorize the transfer to Alaska, pursuant to any agreement or otherwise, of any mentally ill person who is not a resident of Alaska." In effect, this eliminated the bill's most controversial elementâ ~the provision for the transfer of mental patients from the lower 48 states to Alaska.[4] The final recommendation of the Senate Committee on Interior and Insular Affairs followed Goldwater's lead that the bill be amended to strike all the controversial "detailed provisions for commitment, hospitalization, and care of the mentally ill of Alaska" included in title I of the original House bill. This amended proposal left only the transfer of responsibility for mental health care to the territory of Alaska and the establishment of land grants to support this care. The committee stressed that they were not invalidating the title I provisions of the original bill but that they had been misunderstood, a recurrent theme in supporters of the bill:

However, the proposed provisions were misunderstood by many persons in parts of the country other than Alaska. Partly as a result of this misunderstanding, but more because the members of the committee are convinced that the people of Alaska are fully capable of drafting their own laws for a mental health program for Alaska, the committee concluded that authority should be vested in them in this field comparable to that of the States and other Territories.[14]

Thus amended, the Senate bill (S. 2973) was passed unanimously by the Senate on July 20, after only ten minutes of debate.[2][3]

[edit] Aftermath

Following the passage of the act, an Alaska Mental Health Trust was set up to

administer the land and grants appropriated to fund the Alaskan mental health program. During the 1970s, the issue of the trust's land became increasingly controversial, with the state coming under increasing pressure to develop the land for private and recreational use. In 1978, the Alaska Legislature passed a law to abolish the trust and transfer the most valuable parcels of lands to private individuals and the government.[15] By 1982, 40,000 acres (160Â km<sup>2</sup>) had been conveyed to municipalities, 50,000 acres (200Â km<sup>2</sup>) transferred to individuals, and slightly over 350,000 acres (1,400Â km<sup>2</sup>) designated as forests, parks or wildlife areas. Around 35 percent of the land trust remained unencumbered and in state ownership.[16]

The loss of the land and the revenue earned from it had a severe effect on mental health care in the state.[citation needed] In 1982, Alaska resident Vern Weiss filed a lawsuit on behalf of his son, who required mental health services that were not available in Alaska. The case of Weiss v State of Alaska eventually became a class action lawsuit involving a range of mental health care groups. The Alaska Supreme Court ruled in 1985 that the abolition of the trust had been illegal and ordered it to be reconstituted. However, as much of the original land had been transferred away, the parties had to undergo a long and complex series of negotiations to resolve the situation. A final settlement was reached in 1994 in which the trust was reconstituted with 500,000 acres (2,000Â km<sup>2</sup>) of original trust land, 500,000 acres (2,000Â km<sup>2</sup>) of replacement land, and \$200 million to replace lost income and assets.[16]

[edit] Scientology and the Alaska Mental Health Bill

The Alaska Mental Health Bill plays a major part in the Church of Scientology's account of its campaign against psychiatry. The Church participated in the campaign against the Bill and still refers to it as the "Siberia Bill". Scientology may also have provided an important piece of the "evidence" which the anti-bill campaigners used â ~ a booklet titled Brain-Washing: A Synthesis of the Russian Textbook on Psychopolitics, which has been widely attributed to the anonymous authorship of L. Ron Hubbard (see Brainwashing Manual).

[edit] Scientology position

The church's official website asserts that the bill was "psychiatry's attempt to establish a million-acre (4,000 km<sup>2</sup>) Siberia-type camp for mental health patients in Alaska, far from the prying eyes of civil libertarians"[17] which "presumably ... was far enough away from the well-traveled roads of the world to allow psychiatrists to conduct their mind control and other experiments on a captive population, unhindered by the glare of publicity." [18] It would give psychiatrists the power to ensure that "Any man, woman or child could be seized and sent without trial to Alaska, deprived of human and civil rights and detained forever, all without trial or examination." [19] According to the Church's Freedom Magazine:

the bill came to the attention of Scientologists in 1956, only two years after the Church of Scientology had been established. â | Scientologists responded with a campaign to inform the public of the very real threat to personal liberties and freedom of speech posed by the measure. If passed, it would have created a potential "gulag" where political undesirables could be dumped and simply forgotten. The hope of creating this psychiatric slave state was shattered by Scientologists. Refusing to allow vested interests to destroy the right of every citizen to freely speak his opinions without fear of retaliation they instituted a huge grassroots letter campaign. This alerted the Senate to public opposition and testimony was presented at Senate Committee hearings on the bill. Ultimately, except for granting a small amount of money for Alaska to continue "treating" its few existing mental patients, the Senate rejected the Siberia bill and it was never heard of again.[20]

Church officials have stated their belief that the American Psychiatric Association intensified its "interest in destroying Dianetics and Scientology organizations ... when the Church of Scientology actively opposed a bill whose

introduction in Congress had been secure by the APA. ... The APA was well aware of who was behind the massive response that defeated the legislation, and they never forgot, as can be seen from some of the attacks its members generated." [21]

[edit] Miscavige on Nightline

Similarly, David Miscavige, the church's leader, in 1992 told Ted Koppel in an interview on the Nightline program:

I don't know if you're aware that there was a plan in 1955 in this country, Ted, to repeat what was done in Russia. There was going to be a Siberia, U.S.A. set up on a million acres (4,000 km<sup>2</sup>) in Alaska to send mental patients. They were going to lessen the commitment laws, you could basically get into an argument with somebody and be sent up there. This sounds very odd. Nobody's ever heard about it. That's in no small part thanks to the Church of Scientology. I must say, though, that when that bill was killed in Congress, the war was on with psychiatry where they declared war on us â | It was a major, major, major flap for the psychiatrists when it got voted down, because then the slogan around the country began, 'Siberia U.S.A.,' and it was really the first time that psychiatry had been denigrated publicly, that they weren't the science that they had been promoting themselves to be. And they took it upon themselves then to start dealing with anybody who would oppose them. [22]

[edit] Conspiracy theories

In Ron's Journal 67, Hubbard identified "the people behind the Siberia Bill", who he asserted were

less than twelve men. They are members of the Bank of England and other higher financial circles. They own and control newspaper chains, and they are, oddly enough, directors in all the mental health groups in the world which have sprung up. Now these chaps are very interesting fellows: They have fantastically corrupt backgrounds; illegitimate children; government graft; a very unsavory lot. And they apparently, sometime in the rather distant past, had determined on a course of action. Being in control of most of the gold supplies of the planet, they entered upon a program of bringing every government to bankruptcy and under their thumb, so that no government would be able to act politically without their permission. [23]

According to David Miscavige, the bill was the product of a conspiracy by the American Psychiatric Association. In a public address in 1995, he told Scientologists that it was "in 1955 that the agents for the American Psychiatric Association met on Capitol Hill to ram home the infamous Siberia Bill, calling for a secret concentration camp in the wastes of Alaska." It was "here that Mr. Hubbard, as the leader of a new and dynamic religious movement, knocked that Siberia Bill right out of the ring â ~ inflicting a blow they would never forget." [24] The assertion that Scientologists defeated the bill is made frequently in Scientology literature. [25] In fact, the original version of the bill with the offending Title I commitment provisions only passed the House of Representatives; it was subsequently amended in conference to strike the commitment portion and retain the transfer of responsibility for mental health care. The revised bill passed easily without further changes. [14]

[edit] Contemporary publications

Contemporary Church publications suggest that although Hubbard was tracking progress of the bill at least as early as February 1956, Scientology did not become involved in the controversy until the start of March 1956, over two months after the American Public Relations Forum had first publicized the bill. A March "Professional Auditor's Bulletin" issued by Hubbard, who was staying in Dublin at the time, includes a telegram from his Washington-based son L. Ron Hubbard, Jr. and two other Scientologists alerting him to the upcoming February Senate hearings:

HOUSE BILL 6376 PASSED JANUARY 18TH STOP GOES SENATE NEXT WEEK STOP BILL PERMITS ADMISSION OF PERSON TO MENTAL INSTITUTION BY WRITTEN APPLICATION OF

INTERESTED PERSON BEFORE JUDICIAL PROCEEDINGS ARE HELD STOP DISPENSES WITH REQUIREMENT THAT PATIENT BE PRESENT AT HEARING STOP ANYONE CAN BE EXCLUDED FROM HEARING STOP BILL PERTAINS TO ALASKA AT MOMENT STOP BILL SETS UP ONE MILLION ACRES SIBERIAL [sic] IN ALASKA FOR INSTITUTIONS STOP LETTER AND BILL FOLLOW STOP WHAT ACTION YOU WANT TAKEN.[26]

Although the church says that Scientologists led the opposition to the bill, the Congressional Record's account of the Senate hearings into the bill does not mention the church. A contemporary review of the opposition to the bill likewise attributes the lead role elsewhere and to right-wing groups, rather than the "civil liberties" organizations cited by the church:

Only a few organized groups got behind the hue and cry. Most influential was the libertarian Association of Physicians and Surgeons, and Dan Smoot's newsletter. Right-wing groups bombarded Congress with protests and demands for hearings.[27]

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 ^ See e.g. 1) "Dianetics Services and Books by L. Ron Hubbard", Church of Scientology International: "In November 1956, shortly after Scientologists had worked to prevent and successfully prevented the passage of a "Siberia Bill" in the USA". Retrieved 2007-02-19.  
 2) "Introduction to The Planned Revolution - On Psychiatric Subversion - L. Ron Hubbard Humanitarian: Freedom Fighter", Church of Scientology International: "[it] was the Scientologists that stopped the notorious Siberia Bill in 1956." Retrieved 2007-02-19.  
 3) "New Mental Health Initiative Forwards Psychiatry's Brave New World of Totalitarian Rule to Diagnose at Will", Citizens Commission on Human Rights International: "The bill had already passed the House of Representatives before the grassroots efforts of thousands of alarmed citizens helped to defeat the bill in the Senate." Retrieved 2007-02-19.  
 4) "Some Say 'People's minds should be controlled' - We Disagree", Church of Scientology International: "SCIENTOLOGISTS became outspoken critics of these abuses of the helpless and, by the mid-1950s, we mobilized to defeat what was dubbed "The Siberia Bill." ... A less-than-alert Congress passed the bill unanimously in January 1956, but a massive campaign by SCIENTOLOGISTS and civil rights groups ultimately stopped it cold." Retrieved 2007-02-19.  
 ^ Cited by Hubbard, in *Professional Auditor's Bulletin* No. 74, March 6, 1956  
 ^ Audrey Herbert, "Alaska Mental Health Bill Fight Recounted", *Lima News* (Lima, Ohio), October 29, 1956.

[edit] External links

Thurisind

King of the Gepids

Reign

c. 548 – 560

Died

c. 560

Predecessor

Elemund

Successor

Cunimund

Offspring

CunimundTurismod

Thurisind (Latin: Turisindus, died c. 560) was king of the Gepids, an East Germanic Gothic people, from c. 548 to 560. He was the penultimate Gepid king, and succeeded King Elemund by staging a coup d'état and forcing the king's son into exile. Thurisind's kingdom, known as Gepidia, was located in Central Europe and had its centre in Sirmium, a former Roman city on the Sava River (now the town of Sremska Mitrovica, Serbia).

His reign was marked by multiple wars with the Lombards, a Germanic people who had arrived in the former Roman province of Pannonia under the leadership of their king, Audoin. Thurisind also had to face the hostility of the Byzantine Empire, which was resentful of the Gepid takeover of Sirmium and anxious to diminish Gepid power in the Pannonian Basin, a plain covering most of modern Hungary and partly including the bordering states. The Byzantines' plans to reduce the Gepids' power took effect when Audoin decisively defeated Thurisind in 551 or 552. The Byzantine Emperor Justinian forced a peace accord on both leaders so that equilibrium in the Pannonian Basin could be sustained.

Thurisind lost his eldest son, Turismod, in the Battle of Asfeld, during which the prince was killed by Alboin, son of Audoin. In about 560, Thurisind died and was succeeded by his remaining son Cunimund, who was killed by Alboin in 567. Cunimund's death marked the end of the Gepid Kingdom and the beginning of the conquest of their territories by the Lombards' allies, the Avars, a nomadic people migrating from the Eurasian Steppe.

[edit] Early sources

Of the four early medieval sources relevant to Thurisind that survive,[1] the only one providing independent evidence of the king, accounts of Justinian's wars, and a detailed account of the relations between Gepids and Lombards and their kings is *De Bellis* (550s), the most important work of Procopius.[2][3] Considered the greatest historian of the 6th century, Procopius was a Greek writer born in Caesarea in Palestine in 527.[4] The Lombardâ ^Gepid wars are well described in Procopius' work, as the conflict played an important part in the Byzantine plans to invade Italy by a land route.[5]

Less relevant is the other 6th-century source, Jordanes' *Romana*. Of Gothic ancestry, Jordanes served as a notarius for a Byzantine Master of the Soldiers before entering into the ranks of the Catholic clergy and writing his two surviving books, the *Romana* and the *Getica*. The latter is a summary of Gothic history, while the lesser known *Romana* is an abridged account of Roman history written in 551 or 552. According to James O'Donnell, the two works share a pessimistic view of human life in which all secular accomplishments are insignificant compared to religious goals.[6][7] Jordanes does not explicitly mention Thurisind in the *Romana*, but speaks of the third Lombardâ ^Gepid War, in which Thurisind participated, in the last passages of the work.[8]

Paul the Deacon was the most important Italian writer of the 8th century.[9] Born in the 720s or 730s, he came from a noble Lombard family from Friuli. He entered the clergy early, and eventually became a monk of the monastery of Monte Cassino. His most famous work is the *Historia Langobardorum*, a history of the Lombard nation. Written after 787, it is a continuation of his previous major historical work, the *Historia Romana*, which was based on the *Breviarium* of Eutropius, with six books added describing historical events up to Justinian's empire.[9][10] Both of these works mention Thurisind and the third Lombardâ ^Gepid War, which represent the only overlap between the *Historia Langobardorum* and the *Historia Romana*. Both books also mention the duel between the kings' sons, an event which is absent in Procopius' writing and is thought to have originated through oral tradition.[11] Similarly, the meeting between Thurisind and Audoin's son at the former's court derives from an oral source.[12]

[edit] Rise to power

The Gepids were a major East Germanic people in what is now eastern Hungary, western Romania, and northern Serbia. Although the details of his early life are not known, Thurisind is believed to have risen to power in about 548.[13] After the death of Elemund, the previous king, he seized the throne in a coup d'Ã©tat and forced Elemund's son Ostrogotha into exile.[14] Ostrogotha and his followers found refuge among the Gepids' neighbours and enemies, the Lombards, another Germanic people who had just settled in the western part of the Pannonian Basin.[15][16] The Gepids had inhabited parts of the basin since the 3rd century. They reached prominence in the 5th century when, under King Ardaric, they played a key role in destroying the Hunnic Empire. Ardaric and his people benefited more than anybody else from this victory, gaining the former Roman province of Dacia.[17]

In 504 the Gepids' power was significantly reduced by the Ostrogoths, who cut short their expansion into the Danubian plains. The Gepids restricted themselves to the eastern part of the Pannonian Basin; this was to form the core of Thurisind's dominions, just as it had under the previous Gepid kings.[18][19] By the early 6th century, the Gepid nobility converted to Arian Christianity, while most of the Gepids remained pagans.[20]

According to the scholar IstvÃ¡n BonÃ¡i, Thurisind's rise to power is a typical example of the conflicts among the leading families for the kingship that

plagued Gepidia in the 6th century and made it difficult to maintain the succession within the king's family. To contain these obstacles Thurisind made Turismod, his oldest son, commander of the Gepid forces in Sirmium, an important position that made Turismod the king's heir apparent (in early Germanic custom the eldest son was not necessarily the first in line of succession). After Turismod died, his younger brother Cunimund became commander in Sirmium and thus heir apparent.[21]

[edit] First war with the Lombards

On becoming king in 548, Thurisind immediately found himself in a difficult situation. Sometime during 546[22]â ^548,[23][24][25] the Byzantine Empire had conspired to convince the Lombards under Audoin to move into Pannonia (modern Hungary), a former Roman province bordering the Danube river. Justinian hoped this would keep open the land route from the Balkans to Italy while containing the Gepids, who he considered a serious menace to Byzantine interests on the Balkan frontier. The Gothic War between the Ostrogoths and the Byzantines had been raging on the Italian peninsula since 535; Justinian wanted to be able to rush troops to Italy if they were needed.[26][27]

According to the contemporary Procopius in the *De Bello Gothico* (the section of the *De Bellis* regarding the Gothic War),[28] Justinian resented the takeover by the Gepids of the formerly Roman city of Sirmium in 537, which may have been voluntarily surrendered by the Ostrogoths to create difficulties for the Byzantines. The Ostrogoths were also occupied with the war in Italy and sought to retain their possessions in the peninsula. Sirmium's takeover was followed in 539 by a bloody confrontation between the Gepids and the Byzantines that had cost the latter the life of Calluc, their Master of the Soldiers, and also the loss to the Gepids of Dacia ripensis (Serbia) and Singidunum (Belgrade). Because of this, Justinian ended the alliance that had bonded the Gepids and Byzantines, and had ceased paying tributes to the Gepids, finding an enemy to set them against in the Lombards.[29][30][31][32]

The build-up towards a war involving Lombards, Gepids, and Byzantines started possibly in 548 or 549,[22] with Audoin and Thurisind each sending an embassy to Justinian's court at Constantinople, in attempts to obtain military support from Justinian or at least, in the case of Thurisind, to get a pledge of neutrality. To sway Justinian, Thurisind's envoys reminded him of their long tradition of alliance and promised to fight against Byzantium's enemies. However, the emperor sided with the Lombards; he made them formal allies and promised to provide troops against the Gepids. From Justinian's perspective, this war was of major importance in the larger context of the Gothic War, because possession of Pannonia was strategically necessary to keep open land communications between Italy and the Balkans.[33]

Historians debate as to when the conflict started. Proposed dates for the first war are either 547[34] or 549.[24][33] At the same time as the two peoples took the field, a 10,000-strong Byzantine horse army under the command of John, the *magister militum* of Illyricum, marched against the Gepids. Before John's arrival, Thurisind offered a truce to Audoin that was accepted. As a result, when the Byzantines arrived, the war had already ended, but not before they had clashed with the Gepids' Herulian allies.[24][35][36] To seal the truce, Audoin demanded that Thurisind should give up Ildigis, a pretender to the Lombard crown who lived as a guest at his court. Thurisind refused, but he did force Ildigis to leave the Gepids and search for another refuge.[34][36]

[edit] Second Lombardâ ^Gepid War and tensions with Justinian

"So the Gepaedes and the Lombards advanced in full force against each other, both being fully prepared for war. And the commanders were, on the side of the Gepaedes, Thorisin, and on that of the Lombards, AuduinÂ ... But that fright which is called panic suddenly fell upon both armies and carried the men all backward in a flight which had no real cause, only the commanders being left where they were with a small number of men." [37]

Procopius *De Bello Gothico*, Book IV, Ch. 18

In either 549[34] or 550,[22][36] the Gepids and Lombards again marched against each other but, according to Procopius, both armies panicked and no

battle took place. As a result, a new war was avoided and Thurisind accepted Audoin's request for a two-year truce.[34][36][38] According to István Bon, the panic may be linked to a natural phenomenon: a lunar eclipse took place on June 25/26, 549.[35]

Confronted by an openly hostile Byzantine Empire, and faced with the eventuality that the war with the Lombards would be renewed at the truce's expiration, Thurisind searched for new allies as a way to pressure Justinian. He found assistance from the Kutrigurs, who he ferried across the Danube into the Byzantine Illyricum in 550[39] or 551,[40] before the truce expired and probably before the Gepids were ready to precipitate a new conflict.[40][41] In retrospect, it may be they arrived too late instead of too early, if the agreement had been made with the Second Lombard-Gepid War in mind.[35]

Faced with the Kutrigur invasion, Justinian activated his alliance against the invaders, mobilizing the neighbouring Utigurs, who in turn asked for help from the allied Crimean Tetraxites. The latter invaded the Kutrigur homeland, taking advantage of the fact that many warriors were employed at that moment in the Balkans. Informed of the attack, the Kutrigurs were forced to leave the Balkans to defend their homeland on the north-western shore of the Black Sea.[40][41][42]

Thurisind protected and promoted another enemy of Byzantium, the Sclaveni. As with the Kutrigurs, Thurisind used his control of the Danube to ferry Slavic raiders to and from Byzantine territory, and obtained payment from them in the process.[39][40]

[edit] Third Lombard-Gepid War

Justinian's plans to send expeditionary forces against the Ostrogoths in Italy were repeatedly hampered by Thurisind's initiatives. For example, Narses' army left Constantinople in April 551 for Salona, with hopes of finally defeating the Goths, but found itself blocked at Philippopolis (Plovdiv) by the Kutrigurs.[43][44]

This brought Justinian to search for an accord with Thurisind to stop the trans-Danubian raids, and the latter was more than happy to accept. Thurisind's envoys asked for an alliance like the one bonding Byzantines and Lombards. In addition to strengthening the alliance, they demanded, and got, 12 senators to swear to uphold the treaty.[44] After this, in 551, 400 Gepids were sent to fight in Narses' army, which was sent to Italy-a modest army compared to the 5,500 Lombards sent by Audoin and the thousands of Heruli.[45][46]

When the truce expired in 552, Thurisind and Audoin again took to the field, and this time the clash was unavoidable. Audoin had reached an agreement with Justinian by which the Byzantines promised to send him military support in exchange for the 5,500 Lombards sent to help the Byzantine general Narses in the Emperor's war in Italy.[38][45]

The two-year truce was now close to expiry and the Lombards asked the Byzantines to respect the alliance which had been established between them. The Emperor found an excuse to break the new alliance with the Gepids by claiming they had again ferried Slav raiders. He put together an army with renowned commanders in its ranks such as Germanus' sons Justin and Justinian, Aratius, the Herulian Stuarta, and Amalafrid, brother-in-law of Audoin. A revolt that erupted in Ulpiana diverted the bulk of the army; only a force under Amalafrid reached the battlefield.[47]

Scholars debate when the third Lombard-Gepid War started; it is agreed that it took place two years after the second war. The possible dates are either 551[34][48] or 552.[22][45] The 551 date is upheld by those who argue that since in 552 Audoin had already dispatched 5,500 of his warriors to Narses' Italian campaign, the third Lombard-Gepid War must have already ended by then; against this scholars such as Walter Pohl protest that this is in contradiction with Audoin's reproaches to Justinian on the few troops sent against the Gepids, despite his massive support to Narses.[33]

When the treaty expired, Audoin attacked the Gepids and Thurisind was crushed in the decisive battle of the Asfeld held west of Sirmium. The battle was mentioned by Jordanes in the Romana as one of the most bloody ever fought in



the region, with no fewer than 60,000 warriors killed.[49] The king's son Turismod also died, killed by Audoin's son Alboin in a duel that according to Paul the Deacon decided both the battle and the war. After the battle, the Gepids were never again able to play a formative role in the shaping of events.[22][38][45][50][51]

"The Gepidae ... strive to avenge the open insult ... The king leaping forth from the table thrust himself into their midst and restrained his people from anger and strife, threatening first to punish him who first engaged in fight, saying that it is a victory not pleasing to God when any one kills his guest in his own house. Thus at last the quarrel having been allayed, they now finished the banquet with joyful spirits. And Turisind, taking up the arms of Turismod his son, delivered them to Alboin and sent him back in peace and safety to his father's kingdom." [52]

Paul the Deacon *Historia Langobardorum*, Book I, Ch. 24

The Gepids' defeat caused a geopolitical shift in the Pannonian Basin, as it ended the danger represented by the Gepids to the Empire.[26] The Gepids' utter defeat could have meant the end of their kingdom and its conquest by the Lombards, but Justinian, wanting to maintain an equilibrium in the region, imposed an "eternal peace" that saved the Gepids; it was observed for ten years, surviving both Thurisind and Audoin. It may be on this occasion, and not before the war, that Lombards and Gepids sent troops to Narses as part of the peace treaty imposed by the Byzantines. In this interpretation, the small number of Gepid warriors sent could be explained with the heavy losses taken in the war and the resentment felt towards Justinian.[13][45][48][53][54] The Emperor also imposed some territorial concessions on Thurisind, obligating him to return Dacia ripensis and the territory of Singidunum.[55]

To reach a complete peace Thurisind had first to deal with Ildigis who had found hospitality at Thurisind's court. Audoin demanded yet again to have him turned in, and Justinian joined in the request. Thurisind, despite his reluctance to resume the war with both Audoin and Justinian, did not want to openly breach the rules of hospitality and thus tried to evade the request by demanding in his turn to have Ostrogotha given to him; in the end, to avoid both openly giving in and at the same time renewing the war, both kings murdered their respective guests but kept secret their involvement in the act.[15][22][56][57]

Thurisind features prominently in a tale told by Paul the Deacon set in 552, just after the death of the king's son Turismod and the end of the war.[58] The story, generally thought to track its origins to an heroic poem dedicated to Alboin,[59] revolves around the characters of Alboin and Thurisind: in accordance with a custom of the Lombards, to obtain the right to sit at his father's table, Alboin must ask for hospitality from a foreign king and have the latter arm him. To submit himself to this initiation, Alboin went with 40 companions to Thurisind's court.[60][61]

Thurisind, in observance of the laws of hospitality, received Alboin and his companions and organized a banquet in their honour, offering Alboin the place where his dead son habitually sat. Following a mockery by Turismod's brother Cunimund and Alboin's rejoinder, a clash was avoided by Thurisind's intervention, who restored the peace and sent Alboin away with Turismod's arms.[60][62] According to István Boná, who believes in the veracity of the story, the event may have taken place as described by Paul, but it also could reflect a secret peace condition imposed by Audoin on Thurisind under which the Gepid king had to arm his son's killer.[59]

Thurisind died around 560 and was succeeded by his son Cunimund, last king of the Gepids; under him Thurisind's people were annihilated in 567 by a joint coalition of the Lombards and the Avars, a Turkic nomad people that in 558 had migrated to Central Europe.[63] Cunimund was killed on the battlefield by the new Lombard King Alboin, and his daughter Rosamund was taken captive.[13][64]

^ Martindale 1992, s.v. Turisindus, pp. 1345-1346

^ Baldwin 1991, p. 1732

^ Bullough 1991, p. 109  
 ^ Tate 2004, pp.Â 857â ^858  
 ^ Pohl 2000, p. 143  
 ^ Martindale 1992, s.v. Iordanes (1), pp.Â 713â ^714  
 ^ O'Donnell 1982, pp.Â 223â ^240  
 ^ Bullough 1991, pp.Â 108â ^109  
 ^ a b Goffart 1988, p. 329  
 ^ Pizarro 2003, p. 70  
 ^ Bullough 1991, p. 108  
 ^ Goffart 1988, p. 387  
 ^ a b c BonÃ; 1976, p. 19  
 ^ Martindale 1992, s.v. Elemundus, p. 435  
 ^ a b Amory 2003, p. 431  
 ^ BonÃ; 2001, p. 214  
 ^ Capo 1992, p. 396  
 ^ Curta 2001, p. 191  
 ^ Todd 1995, pp.Â 235â ^236  
 ^ Christie 1998, p. 57  
 ^ BonÃ; 1976, p. 70  
 ^ a b c d e f Martindale 1992, s.v. Audoin, pp.Â 152â ^153  
 ^ Jarnut 1995, p. 19  
 ^ a b c Wolfram 1997, p. 283  
 ^ Schutz 2001, p. 79  
 ^ a b Sarantis 2006, pp.Â 17â ^18  
 ^ Jarnut 1995, pp.Â 18â ^19  
 ^ Procopius, De Bello Gothico, III:34, quoted in Pohl 1997, pp.Â 89â ^90  
 ^ Pohl 1997, p. 90  
 ^ BonÃ; 1976, pp.Â 17â ^18  
 ^ Martindale 1992, s.v. Calluc, p. 266  
 ^ BonÃ; 2001, p. 187  
 ^ a b c Pohl 1997, pp.Â 90â ^91  
 ^ a b c d e Jarnut 1995, p. 20  
 ^ a b c BonÃ; 1976, p. 18  
 ^ a b c d Pohl 1997, pp.Â 91â ^92  
 ^ Procopius 1962, p. 235  
 ^ a b c Wolfram 1997, pp.Â 283â ^284  
 ^ a b BonÃ; 2001, p. 188  
 ^ a b c d Pohl 1997, p. 93  
 ^ a b Mitchell 2006, p. 404  
 ^ Pohl 2005, p. 470  
 ^ Curta 2001, p. 86  
 ^ a b Pohl 1997, pp.Â 93â ^94  
 ^ a b c d e Christie 1998, p. 36  
 ^ Goffart 2006, p. 203  
 ^ Pohl 1997, p. 94  
 ^ a b Schutz 2001, p. 80  
 ^ Jordanes, Romana, 386â ^387, quoted in Maenchen-Helfen 1973, p. 148  
 ^ Paul, Historia Langobardorum, I:23, quoted in BonÃ; 1976, p. 7  
 ^ Todd 1995, p. 236  
 ^ Paul 1907, p. 45  
 ^ Jarnut 1995, pp.Â 20â ^21  
 ^ Curta 2001, p. 87  
 ^ BonÃ; 2001, p. 189  
 ^ Jarnut 1995, p. 21  
 ^ Pohl 1997, pp.Â 95â ^96  
 ^ Paul, Historia Langobardorum, I:24, quoted in BonÃ; 1976, pp.Â 7â ^8  
 ^ a b BonÃ; 1976, p. 12  
 ^ a b BonÃ; 1976, pp.Â 7â ^8  
 ^ Ausenda 1998, p. 433  
 ^ Martindale 1992, s.v. Alboin, pp.Â 38â ^40

^ Pritsak 1983, pp. 364-365  
^ Martindale 1992, s.v. *Cunimundus*, p. 364

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#### Persondata

Name  
 Thurisind  
 Alternative names  
 Short description  
 king of the Gepids  
 Date of birth  
 Place of birth  
 Date of death  
 560  
 Place of death

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The Avery Coonley School (ACS), commonly called Avery Coonley, is an independent, coeducational day school serving academically gifted students in preschool through eighth grade (approximately ages 3 to 14), and is located in Downers Grove, Illinois, U.S. The school was founded in 1906 to promote the progressive educational theories developed by John Dewey and other turn-of-the-20th-century philosophers, and was a nationally recognized model for progressive education well into the 1940s.[4] From 1943 to 1965, Avery Coonley was part of the National College of Education (now National-Louis University), serving as a living laboratory for teacher training and educational research. In the 1960s, ACS became a regional research center and a leadership hub for independent schools, and began to focus on the education of the gifted.

The school has occupied several structures in its history, including a small cottage on the Coonley Estate in Riverside, Illinois, and another building designed by Frank Lloyd Wright. It moved to Downers Grove in 1916 and became the Avery Coonley School in 1929, with a new 10.45-acre (4.23 ha) campus designed in the Prairie and Arts and Crafts styles, landscaped by Jens Jensen, who was known as "dean of the world's landscape architects." [5] The campus has been expanded several times since the 1980s to create more space for arts, technology, and classrooms. Avery Coonley was added to the National Register of Historic Places in 2007, citing the "long-lasting influence on schools throughout the country" [6] of the educational program and the design of the building and grounds.

The progressive legacy is still evident in the modern curriculum, which retains many traditions and educational activities dating back to the beginning of the school. Students work a minimum of one year above their current grade level, and explore broad themes allowing them to learn across subjects and engage in creative and collaborative projects, using instructional technology extensively. Opportunities to build on classroom studies are offered through a range of extracurricular activities. Admission is competitive and an IQ score of at least 120 is required. ACS is notable for its record of success in academic competitions at the state and national levels in mathematics, science, geography, and other subjects. ACS was recognized as a Blue Ribbon School by the United States Department of Education in 1988. Avery Coonley attracted national media attention in 1994 when the school was banned from competition in the Illinois State Science Fair after winning for the fourth year in a row. Although the decision was later reversed, the controversy was decried by the press as an example of the "dumbing down" [7] of education and the victory of self-esteem over excellence in schools.

[edit] History

[edit] Founding and Cottage School (1906–1916)

In 1906, Queene Ferry Coonley, wife of wealthy Riverside industrialist and publisher Avery Coonley, decided to start a kindergarten program to allow children younger than five years old to attend.[9] Queene Coonley was trained as a social worker and kindergarten teacher at the Detroit Normal School (now Wayne State University) and was impressed by the theories of Friedrich Froebel, who believed children's early education should be an extension of their lives at home.[10] Froebel's theories captured the three main principles of what John Dewey would later call the "kindergarten attitude", [11] which applied not just

to kindergartners but to children of all ages. Dewey wrote that the primary role of the school is to train children in cooperative living, the root of all learning is the activity of the child and not external material, and directing children's spontaneous impulses towards maintaining the collective life of the school is how they become prepared for adult life.[11] Convinced of these principles, Coonley sought to enroll her four-year-old daughter in the Riverside School, one of the few public kindergartens in the area, but was disappointed when the child was not eligible because she had not yet turned five.[9]

Coonley persuaded the director of the Riverside program, Lucia Burton Morse, and her assistant, Charlotte Krum, to help launch a new school. Morse and Krum had attended Elizabeth Harrison's Kindergarten College, which "championed the concept of kindergarten teaching in America and was one of the first teacher's colleges in the country to offer a four-year program culminating in the bachelor of education degree".[12][13] There they had studied the educational theories of John Dewey and others, who stood opposed to the more traditional pedagogical practices of the day, which saw education as the business of transmitting long-standing bodies of information to new generations and inculcating moral training based on rules and standards of conduct.[14] Their new progressive views of education emphasized an individualized approach to education and an integrated curriculum where children learned from experience and social interaction. According to Dewey, "it is a cardinal precept of the newer school of education that the beginning of instruction shall be made with the experience learners already have; that this experience and the capacities that have been developed during its course provide the starting point for all further learning." [15] These ideas laid the foundations of what would become the "progressive movement" in education. Coonley, Morse, and Krum brought these ideas with them to the new school, which Coonley described as "a Children's Community. Its purpose was not so much to teach what others had thought or grown-ups had done, but for the children themselves to do something." [16]

A small cottage on the Coonley estate served as the first school building, reflected by its original name, the Cottage School. The designer was Charles Whittlesey, who had apprenticed under Louis Sullivan. The estate's main building, the Avery Coonley House, designed by Frank Lloyd Wright, is now a National Historic Landmark.[18] Over the years, many of the estate's buildings would be pressed into use as classrooms and residences for teachers.[9] As new grades were added the school grew, and in 1911 Coonley commissioned Wright to design a larger space for the students. The new building was completed in 1912 and became known as the Coonley Playhouse,[19] and featured dozens of brightly colored art glass windows, evoking flags, balloons, and confetti in what Wright referred to as a "kinder-symphony". "Their bright primary colors and lively geometric designs make them some of Wright's most famous windows." [20]

Two years of kindergarten were offered, beginning at age four, and students progressed through to first grade with other students their age. The Cottage School was free to all students, and was supported both by Coonley's own resources and funds raised by the Kindergarten Education Association. The Association, of which Coonley was president, promoted new educational ideas and raised money to help support them. In 1915, John Dewey and his daughter Evelyn featured the Cottage School in their book, *The Schools of To-Morrow*, which examined how progressive schools around the country put new educational ideas into action.[21] They were especially struck by how prominently nature featured in school life, noting that "they have, for example, a rare bird that is as much a personality in school life as any of the children, and the children, having cared for him and watched his growth and habits, have become much more interested in wild birds. In the backyard is a goat, the best liked thing on the place, where the children have raised him from a little kid; and they still do all the work of caring for him." [22] The Deweys held the Cottage School as an example of training in good citizenship, commenting on its mock elections, self-government, and public service: "The school organized by the pupils into a

civic league has made itself responsible for the conditions of the streets in certain portions of town, and is not only cleaning up but trying to get the rest of the town interested in the problem." [23] The teaching of English was also noted, as it was not taught as a separate subject but as part of history lessons, journal-keeping, and other exercises. Dewey wrote, "The emphasis is put on helping the child to express his ideas; but such work provides ample opportunity for the required drill in the mechanics of writing." [24]

[edit] Junior Elementary School (1916â ~1929)

At the same time the Playhouse was built, Coonley agreed to build a kindergarten in the nearby town of Downers Grove, which did not have a public school. [25] Coonley purchased land on Grove Street and commissioned the architectural firm of Perkins, Fellows & Hamilton to design the building. The school, led by Lucia Morse, was launched as the Kindergarten Extension Association School in 1912. [9] In 1916, the Cottage School was closed and a first grade program was launched at the Downers Grove kindergarten, which was renamed the Junior Elementary School. To accommodate older students, a second grade class was added in 1920 for students around seven years old, a third grade in 1926 for eight-year-olds, and a fourth grade for nine-year-old students shortly thereafter. [26]

The Coonleys moved to Washington, D.C. in 1916, [9] and while Queene continued to devote her time and money, she left the day-to-day direction of the school to Morse. Under her direction, the Junior Elementary School built upon the educational foundations established at the Cottage School, with its focus on the active participation of the students. Drama, music, and dance were important parts of the curriculum, and nature study remained an integral component of students' activities. These ideas, and nature study in particular, were largely the creation of Colonel Francis Wayland Parker, whom John Dewey once referred to as "the father of progressive education". [27] The Junior Elementary School was a proving ground for these principles, which called for a new way of relating to students, allowing them to freely experience their lessons on their own terms. No distinction was made between boys' and girls' activities, which included gardening, carpentry, and cooking. Coonley recalled that "[w]e had boys and girls. We made no distinction, boys and girls cooked, boys and girls did carpenter work, boys and girls took an equal part in all matters of government." [16] Students re-enacted history and literature, composed their own music, and spent much of their time outdoors. [28] In 1924, Coonley and Morse helped found a journal entitled *Progressive Education*, in which they published their own practical experiences at the school, accompanied by articles written by leading educational theorists, including John Dewey. [29] [30] It became the leading professional journal of the progressive education movement and was published until 1957. [31]

[edit] Avery Coonley School (1929â ~1960s)

Enrollment continued to grow, and a second building was added to the Junior Elementary School campus in the late 1920s, but still larger facilities were deemed necessary to accommodate future growth and additional grade levels. Coonley chose a wooded tract in Downers Grove, adjacent to the Maple Grove Forest Preserve, as the site for the new building, [33] and her son-in-law, Waldron Faulkner, became the architect of the new building project. [34] [25] Over one hundred students attended school in the opened building on September 30, 1929, and it was renamed The Avery Coonley School, in honor of Coonley's late husband, who had died in 1920. [35] Coonley chose an unusual mascot to represent the ideals of the school. She felt a seahorse was an example of a unique creature who was also a member of a larger communityâ ~an analogy for her vision for Avery Coonley. The seahorse swims upright, from which derives the school motto: "Onward and Upward", [36] and representations of seahorses are reflected in decorative ironwork and the weather vane on the 1929 building.

Progressive education, a pedagogy promoting learning through real-life experiences, was at its zenith in the United States in the 1920s and 30s, and the Avery Coonley School was a widely known model of these theories in action. [37] Avery Coonley was featured regularly in *Progressive Education* and



other professional journals,[38] and in 1938, the editor of *Progressive Education*, Gertrude Hartman,[38] published a profile of the Avery Coonley School in her book *Finding Wisdom: Chronicles of a School of Today*. She noted, "[v]isitors from all parts of the United States and from foreign countries [came] to see the schoolâ ~sometimes as many as thirty in a day." [39] Hartman described in great detail the curriculum and daily life of the school, which had by then added a seventh and eighth grade, commenting that "the most noticeable thing about it is the spirit of earnestness and joy which pervades itÂ ... There is a fundamental philosophy of life and education underlying the work of the school, which gives clear direction to all its activities. Broad areas are planned, which form the framework of the curriculum. These however are flexible and subject to modification depending upon conditions." [40] The book described the progress of the students from their first year of kindergarten through their ten years of study, capturing in photos, stories, and examples of students' work their encounters with nature, history, art and other subjects through creative play and collaborative projects. She concluded with observations about the importance of the daily life of the school in developing social responsibility: "It is the belief of those concerned with the school that out of the kind of education described here will emerge more socially enlightened members of society than the education of our generation has producedÂ ... The method in which those in the school place their faith is the building into the very nature of growing boys and girls, through their growing years, those qualities of mind and spirit from which alone a new attitude towards human relations can evolve." [41] *Finding Wisdom* became a classic in the education field and solidified the Avery Coonley School's national reputation as a model of progressive education. [42]

Morse died in 1940, after 34 years as director, and several years went by without a strong local leadership. To ensure a sounder footing for the future, Coonley merged Avery Coonley with the National College of Education (NCE, formerly the Chicago Kindergarten College and now National-Louis University) in Evanston, Illinois, in 1943. [43] The two institutions had close ties dating back to Morse's Kindergarten College days, and the arrangement took advantage of the NCE's financial and teaching resources while Avery Coonley provided a living laboratory for teacher training and educational research. Under NCE management, ACS continued to offer a curriculum that emphasized practical learning, outdoor educationâ ~including farmingâ ~and hands-on activities like automobile repair. German and French were added in 1949, with students beginning conversational French in first grade. [44]

Coonley died in 1958; [45] ACS had looked to Coonley for her leadership over the years but even more so for her philanthropy. ACS began charging tuition in 1929, but still relied on Coonley's financial support, and her death caused serious financial hardship. Under the direction of newly appointed headmaster John Malach, a summer program was launched in 1960, open to all children from the surrounding area, to increase revenues and visibility. A swimming pool was added in 1961 to bolster the program. Enrollment had declined over the years and Malach marketed the program aggressively, personally interviewing prospective students. In 1964 enrollment again reached 200 students, which brought in additional tuition and much needed financial stability. [46]

In 1965, the benefits of the National College of Education partnership were less evident and the Administrative Board purchased Avery Coonley from the NCE. [43] Under Malach's leadership, ACS continued to experiment and innovate. Despite widespread skepticism among contemporary educators that kindergartners were ready to read, ACS launched an early reading program in the early 1960s. Malach's stance was that "we don't believe a child should be taught because he or she is now 6 years old or in 1st grade. Our children begin to learn to read when the teacher determines the child is ready. Then the teacher works individually with the child at his or her own pace." [47] By this time, however, the once-radical ideas of progressive education had become "conventional wisdom" [48] and kindergarten was a ubiquitous feature of American public schools. As part of Malach's "bid to reforge the leadership role that Avery

Coonley School had played during its early years",[49] ACS joined the Independent Schools Association of the Central States (ISACS) in 1961. ISACS was founded in 1908 to promote best practices in independent schools, and instituted a mandatory accreditation program for member schools in 1961. Avery Coonley served as the headquarters of ISACS from 1970 until the central office was dissolved in 2000.[50]

Malach also established the Institute for Educational Research (IER) in 1964 as a center for educational experimentation. The Institute, headquartered at ACS,[51] was a joint venture with more than thirty public school districts, which collaborated on research projects and shared in the findings. The large number of schools involved ensured that statistically significant research samples were available and multiple projects could be pursued at one time.[52] In one of the first projects of the Institute, 36 history teachers wrote over 2,000 test questions to help demonstrate that "many teachers want assistance in writing better evaluation items based on behavioral objectives".[52] Examples of other projects include kindergarten speech programs, elementary science programs, and speed reading in junior high school.[52]

[edit] Gifted education (1960sâ ^present)

The kindergarten reading program was the first step in the Avery Coonley School's transition to a new focus on the education of the gifted, which coincided with a growing public awareness of the needs of gifted children in the late 1960s. The increasing focus on gifted education was symbolized by the 1972 Marland Report to the United States Congress, which was the first acknowledgment of the characteristics of gifted children and their specific educational needs. The report found that "gifted children are, in fact, deprived and can suffer psychological damage and permanent impairment of their abilities to function well which is equal to or greater than the similar deprivation suffered by any other population with special needs".[53] The report highlighted the necessity for educational services for the gifted, and the near total lack of such programs in the public schools at the time. Malach believed that the educational philosophy of Avery Coonley was well aligned with the most important objectives of a gifted program, namely, "the stimulation of individual interestsÂ ... the development of student initiative, the development of self-acceptance, concept development, and recognition of the early ability to undertake complex learning tasks." [54]

In 1960, ACS began screening applicants for high intellectual potential, requiring a tested IQ above 120, achievement test results one and a half grade levels above national norms in reading and math, and intensive in-person evaluations.[47] At the same time, the teachers began adapting the curriculum to meet the goals of a gifted program, allowing even more differentiation for each student, accommodating different learning styles, and incorporating enough flexibility for all students to progress at their own pace.[55]

More accelerated classes were added, but the core of the gifted curriculum remained the individualized approaches and learning by doing that had long been central to the Avery Coonley curriculum. Nature study was still prominent in the student's activities, with music, art, and drama. The traditional learning themes and school projects involving maple trees, Native Americans, ancient Egypt and other topics were preserved but adapted to serve the gifted curriculum.[55] In early 1980, an early childhood (EC) program for three-year-olds was launched, designed to cater to the needs of gifted preschool children and prepare them to transition from home to kindergarten. Again departing from the prevailing educational theory, Avery Coonley introduced academics in the EC program, with the same focus on nature, music, movement, and practical skills as the higher grades.[56]

[edit] Campus

[edit] 1929 building

The campus occupies 10.45 acres (4.23Â ha) off of Maple Avenue in Downers Grove.[33] It borders the Maple Grove Forest Preserve, created in 1919,[58] one of the oldest forest preserves in the Forest Preserve District of DuPage County system.[59] The 82-acre (33Â ha) preserve protects "the largest remaining

remnant of the vast maple forest that became Downers Grove",[59] and has been categorized a globally endangered ecosystem.[59] Its black maple and upland sugar maple communities are host to many threatened and endangered plant species, and bloom with trillium, trout lilies, violets, buttercups, and wild geraniums in the spring.[60] The forest is a refuge for a wide range of birds, including Great Horned Owls and several species of hawks,[60] as well as a stopover for several species of migratory birds, including the Indigo Bunting, which nests there during the warm breeding season and migrates south by night in the winter.[59] A 1.1-mile (1.8 km) hiking trail winds through the preserve, crossing a small creek and passing a nearby pond.[60] The preserve is used by students in their science and nature activities.[47]

The designer of the grounds, Jens Jensen,[61] was known as the "dean of the world's landscape architects",[5] and "the father of the Chicago park system",[62] for his creation of Humboldt Park, Garfield Park, the Cook County Forest Preserves, and his masterpiece, Columbus Park, in Chicago.[63] Jensen's work became famous for his exclusive use of plants and materials native to the local region,[62] and was characterized by his use of open spaces, flowing water, gently curving lines, and "council rings", or low circular benches where people can gather.[61] All of these features are evident on the Avery Coonley campus, which makes use of wholly natural settings in lieu of formal gardens.[64] The original landscaping was largely forgotten over the years and poorly maintained. A complete restoration of Jensen's landscape design was completed in 2006 as part of the ACS centennial celebration.[57]

The building was designed by Coonley's son-in-law Waldron Faulkner,[34] who, with his son (also an architect) Avery Coonley Faulkner,[65] later became significant contributors to the design of George Washington University and American University in Washington, D.C.[32] The design ties the building to the land in the style of the Prairie School, at the same time employing the handcrafted features and human scale typical of the American Arts and Crafts (or American Craftsman) style.[6] The easy access to the outdoors, ground floor classrooms, separate science laboratories, and planned outdoor play area are among the features of the design that would later be adopted by schools throughout the US after World War II.[6]

The building surrounds a courtyard with a large reflecting pool. The classrooms are oriented outward, to provide views of the surrounding forest. There are no interior passages in this part of the building; each class area has an exit to the outside, and students pass between rooms via the covered cloister, even in inclement weather. The design is meant to reinforce the "home and school" atmosphere that dates back to the Cottage School, with child-sized classrooms, ten working fireplaces, draperies, and other home-like details.[66]

Decorative tiles designed by Henry Chapman Mercer—one of the leading figures of the Arts and Crafts Movement in the U.S.—are placed throughout the building.[68] These tiles (known as Moravian tiles after Mercer's Moravian Pottery and Tile Works) feature deep colors and a handmade appearance that complement the simple brick buildings.[69] The tiles on the fireplaces and entry floors boast patterns in literary and educational themes, such as The Canterbury Tales in the old library. A large, tripartite tile mural on the north wall of the courtyard, also by Mercer, depicts the eastern and western hemispheres united by a ship on an allegorical journey of education.[70]

In 1970, exploring new designs in school furniture, the Institute for Educational Research worked with the Design Department of Southern Illinois University to create a series of interconnected truncated octahedrons known as "learning spaces", which resembled an over-sized beehive. Each child had his or her own semi-private space with a fold-down seat, reading light, and bookshelf. The goal was to provide private spaces where third grade (eight-year-old) children could develop good study habits, and the school found that the children spent 90 percent of their work time in their learning spaces.[47] The structures were featured in local news stories and in Life magazine.[71] ACS patented the invention and sold models to several local schools.[67] The original structures were still in use in the third grade classroom in 2010.

The Avery Coonley School was designated a historical site by the Downers Grove Historical Society in 2006,[72] and was added to the National Register of Historic Places in 2007, which cited the educational program along with the building and grounds for their "unique design and features that have exerted a long-lasting influence on schools throughout the country".[73]

[edit] Recent additions

A new wing was added in early 1980 to provide additional space for the arts, with a large room for orchestra and music and another for studio art. Filling in the previously open east side of the courtyard, the design is nearly identical in design to the original school, built of red and white-washed brick with a cloister on the courtyard side.[74] The Gatehouse, which was built in 1929 and had served as the headmaster's residence, was remodeled to house the early childhood program in 1988.[75]

Increased enrollment in the late 1980s and the need for more space led to another addition in 1992.[33] This addition included a new 17,500-volume library, a 16-station computer lab, and a 236-seat Performing Arts Center (PAC).[76] Moravian tiles around the new foyer fireplace and library doors pay homage to the original building.[77] The PAC "is known for its excellent acoustics",[78] and hosts student productions and outside artistic groups, including the Beck Institute for the Arts, which stages musical recitals there.[78]

Avery Coonley added a full-day kindergarten program in 2005, again requiring more space, and a \$4Â million, 15,000-square-foot (1,400Â m2)[79] middle school wing was constructed, financed through tax-exempt bonds from the Village of Downers Grove. Its cream and red bricks, hipped roof, deep eaves, and detailed brickwork harmonize with the style of the earlier building.[77] The project added modernized math and science labs, two computer labs, and seven wireless classrooms using tablet computer technology, videoconferencing, and computer controlled overhead projectors.[79]

[edit] Curriculum

The founding educational philosophy is still evident in the modern day curriculum in the focus on learning by doing, teaching based on broad themes that cross subjects, an emphasis on collaborative projects, and a de-emphasis of textbooks. There remains a close integration of art and nature in daily activities and a focus on the development of social skills and education for social responsibility. These principles, adapted in the 1970s for gifted students, have been further extended to accommodate new developments in technology and educational research.[80]

ACS refers to grade levels as groups, a practice rooted in progressive education that dates back at least to the Junior Elementary School.[81] There are three divisions of students: the early school, which includes the early childhood Program (EC) for three-year-olds and junior kindergarten (JK) for four-year-olds; the lower school for kindergarten through group four, and middle school for groups five through eight. Each class in kindergarten through group eight has 32Â students. Each lower school class is team taught by two teachers.[82] The student-to-teacher ratio in the lower and middle school is 16 to 1,[83] 11 to 1 in kindergarten, 8 to 1 in junior kindergarten, and 7 to 1 in the early childhood program.[84]

[edit] Academic program

As of 2009, the curriculum is accelerated for each group, which is separated by grade and age; students are instructed a minimum of one year above their current grade level. (For example, the first group is taught at a second grade level.)[85] Students are grouped within their class to allow each of them work at the level of their ability, and they may work several years beyond their current level if they can do so.[86] Students may join older groups to study subjects, which they are exceptionally advanced; however, age groups are usually kept together "for social and emotional values".[85] All middle school students complete a high school level honors course in mathematics in either algebra or geometry.[87]

Students explore broad learning themes at each level that allow them to learn

across subjects and engage them in creative and collaborative projects. The second group, for example, spends much of their year on the study of trees, using trees as a focus for biology, mathematics, art, and creative writing. Students adopt and study a personal space in the nearby forest preserve. The year culminates with the tapping of maple trees to make syrup, which they share with the rest of the school. Each group engages different themes and group projects. Lower school students simulate an airplane flight to Paris and host a Japanese luncheon. The fourth group holds a Native American Fair, the fifth group creates an original Egyptian style mastaba, the sixth group presents a World's Fair, and the eighth group organizes an Immigration and Ethnic Fair.[88]

Science studies are enhanced by nature and outdoor experiences. Students participate in nature programs sponsored by the Forest Preserve District of DuPage County and the Illinois Department of Natural Resources, such as adopting a "Bass in the Class", and monitoring the growth of macroinvertebrates in the DuPage River. Competition in regional and state science fairs and Science Olympiad is considered an integral part of the science program. All students are strongly encouraged to participate, and the seventh group students are required to do so.[87]

All students study French, which is taught by language immersion, a technique in which they only speak French during language study.[82] All signs in the building are written in both French and English.[89] Students begin French instruction in junior kindergarten, and continue on to study French four times a week in groups one through eight. They culminate their study with a week-long experience in Quebec in group eight, during which they only speak French.[83]

Visual art study begins with drawing and painting and then advances to more complex techniques such as sculpture, stained glass, architecture, photography, and pottery. Students learn in a variety of media, including watercolor, oil pastels, charcoal, and clay. Music study begins in the early childhood program. As they progress, Avery Coonley students participate in vocal music, playing Orff instruments and recorders, dancing, and public performance. In middle school, students develop music literacy by reading and writing music, playing choir chimes, and choral singing. The study of music in culture and the history of jazz and opera are taught alongside theory and performance.[87]

The drama program begins engaging students in acting and dramatic writing, directing, and the technical arts in the fourth group. Students practice both rehearsed and improvised performances to create pantomimes, monologues, films, and short plays. Their theatrical work culminates in the eighth group with the performance of one-act plays the students write and direct themselves and the production of a professionally scripted full-length play. Artistically inclined students can extend their arts studies outside of class in optional activities including Art Club, Chorus, Orchestra, Tech Club, Drama Club, and the Variety Show.[87]

Avery Coonley teaches eight core values: appreciation of the individual, civility, gratitude, honesty, kindness and consideration, responsibility, and volunteerism. These ideals are part of the character development program as "building blocks", which are reinforced daily on the campus and in the family through literature selections sent home for parent participation.[87]

[edit] Technology

Avery Coonley began using computers for instruction in 1971 and offering computer programming to students as young as the fourth group in 1976.[47] Desktop computers were brought into the classrooms to teach math, language arts, music, art, and computer programming, in 1978.[90] Students begin learning basic keyboard and mouse skills in kindergarten and progress to multimedia presentations, data management, and software coding in the eighth group.[91]

In what ACS calls "one-to-one computing", every student in the fifth group through the eighth group receives a tablet computer, which they use to manage their daily schedules, work on class assignments, and prepare special projects. Students in early childhood and junior kindergarten have shared tablets

available, and each kindergarten through the fourth group class has at least four.[76] Students study in classrooms equipped with wireless overhead projectors, manipulate programs and presentations on touchscreen-equipped SMART board systems, and engage in self-paced classroom learning using ActiveExpression wireless response systems. Students, teachers, and parents communicate and interact online via a school-wide intranet and an extranet for parents. Sixteen dual platform iMacs were added in 2009 for computer lab work.[76]

#### [edit] Traditions

A hallmark of the curriculum in the earliest days was study organized around major themesâ ~trees, Shakespeare, Egypt and other subjectsâ ~that built over the school year into major class projects, performances, and all-school gatherings. Many of these themes and events have grown into lasting school traditions, with which the school community has come to identify each group and certain times of year. One the school's most cherished traditions, tapping maple trees to make syrup, began with the move to the new building in 1929.[93] The Spring Fair, in which groups one through five each prepare and perform their own dance, has been held annually since the 1930sâ ~the Maypole dance by the fifth group dates back to the beginning of the Cottage School.[94]

The annual third group overnight nature trip to Wisconsin, dates back to 1974,[86] and the eighth group French immersion trip began in the 1970s with trips to Paris and since the mid-1990s to Quebec.[95] Other lower school traditions, such as the Native American Fair and class visit to the Coonley Estate, also have a long history at Avery Coonley.[96] Middle school traditions include the alternating annual Greek and Shakespeare Fests, the sixth group World's Fair, and a seventh group trip to Washington, DC.[88]

In the annual Thanksgiving Program, the students, in identical brown capes, silently construct a large cornucopia of fruits and vegetables in a ceremony choreographed to music prepared by each class. The food is later donated to the Salvation Army. It is the most treasured of the school traditions, and has been performed every year, virtually unchanged, since 1929.[92]

Many of the extracurricular activities offered at ACS offer an extension of classroom subjects and an opportunity for students to pursue those studies in additional depth. Within the arts program, chorus, creative writing, drama, art, and three levels of orchestra are offered as optional activities. Students in these groups have opportunities to perform and exhibit their work throughout the year. The Book Club is available to students in groups six and above to extend the reading program. Computer Club, Creative Writing Club, Art Club, French Film Club, and Drama Club also offer opportunities to build on classroom activities.[84]

Student Council is primarily a service organization, which organizes charitable fund raising and community service opportunities in which all students can participate. Two representatives are elected from each group, one through eight, for each school year.[84] Students may also volunteer for the Annual staff, which edits and produces the yearbook, Reflections.[84]

Intramural sports are offered to students in group five and interscholastic sports are available in groups five through eight. ACS competes in the West DuPage Elementary School Association (WDESA) Conference. Team sports include co-ed soccer and girls' volleyball in the fall, boys' and girls' basketball in the winter, and co-ed track in the spring. There are no team tryouts and all students are free to participate.[84]

ACS students participate actively in academic competitions at the state and national level, including MATHCOUNTS, Science Olympiad, and other math and science competitions, as well spelling bees, geography bees, and contests in other subjects. The Chess Club competes locally, and won the first place trophy in the Naperville Chess Tournament in 2009.[97]

#### [edit] Student body and finances

Admission is competitive and decisions are based on evaluations of applicants' intellectual ability, social and emotional maturity, and readiness for the accelerated program of study.[85] Applicants for kindergarten through eighth

group must submit IQ test results at or above the 91st<sup>st</sup> percentile (over 120 on the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) or Wechsler Intelligence Scale for Children (WISC)), with consistent subtest scores, to qualify for consideration.[98] Evaluations are based on report cards, parent questionnaires, teacher recommendations, and in-person assessments by the faculty. Early childhood through kindergarten applicants are screened in one-hour play sessions. Applicants for groups one and two are invited for a half-day school visit, and older applicants for an entire day, where they are assessed by teachers in the actual classroom setting.[98]

Avery Coonley serves 378 students aged 3 through 14 as of 2010, with a nearly even ratio of males to females in each grade.[84] ACS seeks to achieve ethnic diversity in every group,[99] and offers limited need-based aid to families of children who would otherwise be unable to attend.[100] The student body is "primarily middle- and upper-class white suburban children",[47] and students "come from some of the most affluent families"[101] in Chicago's western suburbs, but thirty percent of the students are non-white.[92]

Tuition for kindergarten through group eight was \$16,750, junior kindergarten was \$9,500, and early childhood \$4,850 in 2009.[100] The Annual Giving Fund makes up 3.5<sup>th</sup> percent and the Annual Auction another 5<sup>th</sup> percent of the operating budget (\$5.9<sup>th</sup> million in 2008<sup>th</sup> ^2009).[84]

[edit] Academic achievement

"Avery Coonley reports that scores on the Iowa Test of Basic Skills, an exam given in schools across the United States, are in the top 1 percent in the nation",[101] with average scores of 99 in all eight grades and all four test sections (vocabulary, comprehension, language arts, and mathematics).[83] Avery Coonley was one of seventeen Illinois schools recognized as a Blue Ribbon School by the United States Department of Education in 1987<sup>th</sup> ^88[102] for "excellence in student success, school philosophy, curriculum, leadership, and climate".[103] Over five percent of Avery Coonley graduates since 1989 have been admitted to the nationally recognized Illinois Math and Science Academy (IMSA),[104] Illinois' public, competitive-entry, boarding school for top math and science students.[105]

Avery Coonley students have a record of top honors at the state[106] and national[107] level in science, math, geography and other subjects stretching back as far as 1989. In recent competitions, students won 24 Gold Medals at the 2009 Illinois Junior Academy of Science (IJAS) Science Fair,[108][109] and won the Science Olympiad Jr. High State Championship.[110] Avery Coonley won the 2009 IMSA Junior High Mathematics Competition (with four out of five first place awards) and placed second in the 2009 Illinois State MATHCOUNTS competition.[111] In 2008, a seventh group student placed in the top 0.2<sup>th</sup> percent of competitors from around the world with a perfect score in the 24th annual American Mathematics Contest.[112]

In 2009, the seventh and eighth group Social Studies teams both placed third in the nation at the National Social Studies League contest and an ACS student won the Illinois Geography Bee,[113] The same year, two eighth group students received perfect scores on Le Grand Concours<sup>th</sup> ~the National French Contest of the American Association of Teachers of French. Of the 40 Avery Coonley students who took Le Grand Concours, 32 placed in the top ten in the nation at their grade level.[114] Avery Coonley third group students "won highest honors in the WordMasters Challenge, a national language arts competition"[115] in 2007, placing eighth in the nation out of more than 200 teams.[115]

Controversy erupted in 1994, when ACS won the Illinois State Science Fair team competition for the fourth year in a row, prompting the IJAS "to banish the school from team competition for [the] next year, on the grounds that their students were 'just too good.'"[116] The incident attracted national attention and was decried as an example of the "dumbing down"[7] of education and the victory of self-esteem over excellence in schools. The IJAS relented under pressure from the media, but eliminated the team competition altogether in future years. Avery Coonley students won 24 top individual awards the following year.[117]

^a: Harrison's teacher's college was founded in 1886 as Miss Harrison's Training School. It was renamed the Chicago Kindergarten College in 1893, became the National Kindergarten College in 1912, and the National College of Education in 1930. It was as the National College of Education that it merged with Avery Coonley in 1943. The National College of Education was renamed yet again in 1990, when it became National-Louis University.[12] ^b: The windows were later removed and sold at auction. Several of them are in the collections of the Metropolitan Museum of Art in New York[118] and the Art Institute of Chicago.[119] ^c: Coonley helped found six private kindergartens between 1906 and 1920.[6] Among these was a kindergarten for the nearby village of Brookfield, Illinois, founded in 1911. The Brookfield Kindergarten was located at 3601 Forest Avenue, and designed by one of Wright's students, William E. Drummond. It is listed on the Historic American Buildings Survey, which considers it "one of his finest designs".[120] It was acquired by the Board of Education in 1929 and used as a public kindergarten. It is now split into two private residences.[9][121] ^d: Faulkner would later design a house in Washington, D.C. for Morse, as a retirement gift from Coonley.[9] ^e: Jensen had worked on the extensive gardens at the Coonley House from 1908 to 1917 and designed the Playhouse grounds in 1913.[122]

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#### [edit] External links

*Banksia oblongifolia*, commonly known as the fern-leaved or rusty banksia, is a species in the plant genus *Banksia*. Found along the eastern coast of Australia from Wollongong, New South Wales in the south to Rockhampton, Queensland in the north, it generally grows in sandy soils in heath, open forest or swamp margins and wet areas. A many-stemmed shrub up to 3Â m (10Â ft) high, it has leathery serrated leaves and rusty-coloured new growth. The yellow flower spikes, known as inflorescences, most commonly appear in autumn and early winter. Up to 80 follicles, or seed pods, develop on the spikes after flowering. *Banksia oblongifolia* resprouts from its woody lignotuber after bushfires, and the seed pods open and release seed when burnt, the seed germinating and growing on burnt ground. Some plants grow between fires from seed shed spontaneously.

Spanish botanist Antonio JosÃ© Cavanilles described *B.Â oblongifolia* in 1800, though it was known as *Banksia asplenifolia* in New South Wales for many years. However, the latter name, originally coined by Richard Anthony Salisbury, proved invalid, and *Banksia oblongifolia* has been universally adopted as the correct scientific name since 1981. Two varieties were recognised in 1987, but these have not been generally accepted. A wide array of mammals, birds, and invertebrates visit the inflorescences. Though easily grown as a garden plant, it is not commonly seen in horticulture.

#### [edit] Description

*Banksia oblongifolia* is a shrub that can reach 3Â m (10Â ft) high,[2] though is

generally less than 2 m (7 ft) high,[3] with several stems growing out of a woody base known as a lignotuber. The smooth bark is marked with horizontal lenticels, and is reddish-brown fading to greyish-brown with age. New leaves and branchlets are covered with a rusty fur. The leaves lose their fur and become smooth with maturity, and are alternately arranged along the stem. Measuring 5–11 cm (2–4.4 in) in length and 1.5–2 cm (0.6–0.8 in) in width, the leathery green leaves are oblong to obovate (egg-shaped) or truncate with a recessed midvein and mildly recurved margins, which are entire at the base and serrate towards the ends of the leaves. The sinuses (spaces between the teeth) are U-shaped and teeth are 1–2 mm long. The leaf underside is whitish with a reticulated vein pattern and a raised central midrib.[4] The leaves sit on 2–5 mm long petioles.[2]

Flowering has been recorded between January and October, with a peak in autumn and early winter (April to June).[5] The inflorescences, or flower spikes, arise from the end of 1 to 5 year old branchlets, and often have a whorl of branchlets arising from the node or base. Measuring 5–15 cm (2–6 in) high and 4 cm (1.6 in) wide, the yellow spikes often have blue-grey tinged limbs in bud,[2] though occasionally pinkish, mauve or mauve-blue limbs are seen.[6] Opening to a pale yellow after anthesis, the spikes lose their flowers with age and swell to up to 17.5 cm (7 in) high and 4 cm (1.8 in) wide, with up to 80 follicles. Covered with fine fur but becoming smooth with age, the oval-shaped follicles measure 1–1.8 cm (0.4–0.7 in) long by 0.2–0.7 cm high (0.1–0.3 in) and 0.3–0.7 cm (0.1–0.3 in) wide.[2] The bare swollen spike, now known as an infructescence, is patterned with short spiky persistent bracts on its surface where follicles have not developed.[4] Each follicle contains one or two obovate dark grey-brown to black seeds sandwiching a woody separator. Measuring 1.2–1.8 cm (0.5–0.7 in) long, they are made up of an oblong to semi-elliptic smooth or slightly ridged seed body, 0.7–1.1 cm (0.3–0.4 in) long by 0.3–0.7 cm (0.1–0.3 in) wide. The woody separator is the same shape as the seed, with an impression where the seed body lies next to it.[2] Seedlings have bright obovate green cotyledons 1.2–1.5 cm (0.5–0.6 in) long and 0.5–0.7 cm wide (0.2 in), which sit on a stalk, or 1 mm diameter finely hairy seedling stem, known as the hypocotyl, which is less than 1 cm high. The first seedling leaves to emerge are paired (oppositely arranged) and lanceolate with fine-toothed margins, measuring 2.5–3 cm long and 0.4–0.5 cm wide. Subsequent leaves are more oblanceolate, elliptic (oval-shaped) or linear. Young plants develop a lignotuber in their first year.[2]

*Banksia oblongifolia* can be distinguished from *B. robusta*, which it often co-occurs with, by its smaller leaves and bare fruiting spikes. *B. robusta* has more metallic green flower spikes, and often grows in wetter areas within the same region. *B. plagiocarpa* has longer leaves with more coarsely serrated margins, and its flower spikes are blue-grey in bud, and later bear wedge-shaped follicles.[2] In the Sydney Basin, *B. paludosa* also bears a superficial resemblance to *B. oblongifolia*, but its leaves are more prominently spathulate (spoon-shaped) and tend to point up rather than down. The leaf undersides are white and lack the prominent midrib of *B. oblongifolia*, the new growth is bare and lacks the rusty fur, and the aged flower parts remain on the old spikes.[7]

[edit] Taxonomy

First collected by Luis Née between March and April 1793, the fern-leaved banksia was described by Antonio Jos  Cavanilles in 1800 as two separate species from two collections, first as *Banksia oblongifolia* from the vicinity of Port Jackson (Sydney),[8] and then as *Banksia salicifolia* from around Botany Bay.[9] Derived from the Latin words oblongus "oblong", and folium "leaf", the species name refers to the shape of the leaves.[10] Richard Anthony Salisbury had published the name *Banksia aspleniifolia* in 1796 based on leaves of cultivated material.[2]

Robert Brown recorded 31 species of *Banksia* in his 1810 work *Prodromus Florae Novae Hollandiae et Insulae Van Diemen*, and used the epithet *oblongifolia* in his taxonomic arrangement, placing the taxon in the subgenus *Banksia verae*, the

"True Banksias", because the inflorescence is a typical Banksia flower spike. He recognised *B. salicifolia* as the same species at this point,[11] but was unsure whether Salisbury's *B. aspleniifolia* belonged under the same name.[2] By the time Carl Meissner published his 1856 arrangement of the genus, there were 58 described Banksia species. Meissner divided Brown's *Banksia verae*, which had been renamed *Eubanksia* by Stephan Endlicher in 1847,[12] into four series based on leaf properties. He followed Brown in using the name *B. oblongifolia*, and placed it in the series *Salicinae*. [13]

In 1870, George Bentham published a thorough revision of Banksia in his landmark publication *Flora Australiensis*. In Bentham's arrangement, the number of recognised Banksia species was reduced from 60 to 46. He declared *B. oblongifolia* referable to, and a synonym of, *B. integrifolia*. Bentham defined four sections based on leaf, style and pollen-presenter characters. *B. integrifolia* was placed in section *Eubanksia*. [14]

Botanists in the 20th century recognised *B. oblongifolia* as a species in its own right, but disagreed on the name. Those in Queensland felt Salisbury's name was invalid and used *Banksia oblongifolia*, while New South Wales authorities used *Banksia aspleniifolia* as it was the oldest published name for the species. Botanist and banksia authority Alex George ruled that *oblongifolia* was the correct name in his 1981 revision of the genus. After reviewing Salisbury's original species description, which is of the leaves alone, he concluded that it does not diagnose the species to the exclusion of others and is hence not a validly published name~the description could have applied to juvenile leaves of *B. paludosa*, *B. integrifolia* or even *B. marginata*. [2]

[edit] Placement within Banksia

The current taxonomic arrangement of the Banksia genus is based on botanist Alex George's 1999 monograph for the Flora of Australia book series.[1] In this arrangement, *B. oblongifolia* is placed in Banksia subgenus *Banksia*, because its inflorescences take the form of Banksia's characteristic flower spikes, section *Banksia* because of its straight styles, and series *Salicinae* because its inflorescences are cylindrical. In a morphological cladistic analysis published in 1994, Kevin Thiele placed it in the newly described subseries *Acclives* along with *B. plagiocarpa*, *B. robur* and *B. dentata* within the series *Salicinae*. [15] However, this subgrouping of the *Salicinae* was not supported by George.[1] *B. oblongifolia*'s placement within Banksia may be summarised as follows:

Genus Banksia

Subgenus *Isostylis*

Subgenus *Banksia*

Section *Oncostylis*

Section *Coccinea*

Section *Banksia*

Series *Grandes*

Series *Banksia*

Series *Crocinae*

Series *Prostratae*

Series *Cyrtostylis*

Series *Tetragonae*

Series *Bauerinae*

Series *Quercinae*

Series *Salicinae*

*B. dentata* ^ *B. aquilonia* ^ *B. integrifolia* ^ *B. plagiocarpa* ^ *B. oblongifolia*  
^ *B. robur* ^ *B. conferta* ^ *B. paludosa* ^ *B. marginata* ^ *B. canei* ^ *B. saxicola*

Since 1998, American botanist Austin Mast and co-authors have been publishing results of ongoing cladistic analyses of DNA sequence data for the subtribe *Banksiinae*, which then comprised genera *Banksia* and *Dryandra*. Their analyses suggest a phylogeny that differs greatly from George's taxonomic arrangement. *Banksia oblongifolia* resolves as the closest relative, or "sister", to *B. robur*, with *B. plagiocarpa* as next closest relative.[16][17][18] In 2007, Mast and Thiele rearranged the genus *Banksia* by merging *Dryandra* into it, and published *B. subg. Spathulatae* for the taxa having spoon-shaped cotyledons;



thus *Banksia* subg. *Banksia* was redefined as encompassing taxa lacking spoon-shaped cotyledons. They foreshadowed publishing a full arrangement once DNA sampling of *Dryandra* was complete; in the meantime, if Mast and Thiele's nomenclatural changes are taken as an interim arrangement, *Banksia oblongifolia* is placed in *Banksia* subg. *Spathulatae*. [19]

#### [edit] Variation

George noted that *Banksia oblongifolia* showed considerable variation in habit, and in 1987 Conran and Clifford separated the taxon into two subspecies. In examining populations in southern Queensland, they reported that the two forms were distinct in growth habit and habitat, and that they did not find any intermediate forms. [20] New South Wales botanists Joseph Maiden and Julius Henry Camfield had collected this taller form of *Banksia oblongifolia* in Kogarah in 1898, and given it the name *Banksia latifolia* variety *minor* ~ *Banksia latifolia* being a published name by which *Banksia robur* was known ~ before Maiden and Ernst Betche renamed it *Banksia robur* variety *minor*. [2] This name (confusingly) thus became the name for the taller variety. They defined variety *oblongifolia* as a multistemmed shrub 0.5 ~ 1.3 m (20 ~ 50 in) high, with leaves 3 ~ 11 cm (1.2 ~ 4.3 in) long and 1 ~ 2.5 cm (0.4 ~ 1 in) wide, and flower spikes 4 ~ 10 cm (1.6 ~ 4 in) high. The habitat is swamps and swamp borders, or rarely sandstone ridges. Variety *minor* is a taller shrub 1 ~ 3.5 m (3 ~ 11 ft) high with leaves up to 16 cm (6.3 in) long and spikes 6 to 14 cm (2.2 ~ 5.5 in) high. It is an understory plant in sclerophyll forests, associated with *Eucalyptus signata* and *Banksia spinulosa* var. *collina*. Both subspecies occur throughout the range. [20] However, George rejected the varieties, stating the variability was continuous. [1]

#### [edit] Hybridization

*Banksia robur* and *Banksia oblongifolia* hybrids have been recorded at several locations along the eastern coastline. Field workers for The *Banksia* Atlas recorded 20 populations between Wollongong and Pialba in central Queensland. [3] Locales include Calga north of Sydney, Ku-ring-gai Chase National Park, and Cordeaux Dam near Wollongong. [2] A study of an area of extensive hybridization between the two near Darkes Forest on the Woronora Plateau south of Sydney revealed extensive hybridisation in mixed species stands but almost none in pure stands of either species there. Genetic analysis showed generations of crossing and complex ancestry. Morphology generally correlated with genetic profile, but occasionally plants that resembled one parent had some degree of genetic hybridisation. Furthermore, there were a few plants with morphology suggestive of a third species, *Banksia paludosa*, in their parentage, and requiring further investigation. [21] A possible hybrid between *Banksia oblongifolia* and *Banksia integrifolia* was recorded near Caloundra by *Banksia* Atlas volunteers. [3]

#### [edit] Distribution and habitat

*Banksia oblongifolia* occurs along the eastern coast of Australia from Wollongong, New South Wales in the south to Rockhampton, Queensland in the north. [3] There are isolated populations offshore on Fraser Island, [2] and inland at Blackdown Tableland National Park and Crows Nest in Queensland, and also inland incursions at the base of the Glasshouse Mountains in southern Queensland, at Grafton in northern New South Wales, and Bilpin and Lawson in the Blue Mountains west of Sydney. [3] *Banksia oblongifolia* grows in a range of habitats ~ in damp areas with poor drainage, along the edges of swamps and flats, as well as Wallum shrubland, [2] or coastal plateaux. [5] It is also found in open forest or woodland, where it grows on ridges or slopes, [2] [3] or heath. Soils are predominantly sandy or sandstone-based, though granite-based and clay-loams are sometimes present. [2] [5]

Associated species in the Sydney region include heathland species such as heath *Banksia* (*Banksia ericifolia*), coral heath (*Epacris microphylla*) and mountain devil (*Lambertia formosa*), and tick bush (*Kunzea ambigua*) and prickly-leaved paperbark (*Melaleuca nodosa*) in taller scrub, and under trees such as scribbly gum (*Eucalyptus sclerophylla*) and narrow-leaved apple (*Angophora bakeri*) in woodland. [5] The Agnes Banks Woodland in western Sydney has been recognised by the New South Wales Government as an Endangered Ecological Community. Here *Banksia oblongifolia* is an understory plant in low open

woodland, with scribbly gum, narrow-leaved apple and old man banksia (*B. serrata*) as canopy trees, and wallum banksia (*B. aemula*), variable smoke-bush (*Conospermum taxifolium*), wedding bush (*Ricinocarpos pinifolius*), showy parrot-pea (*Dillwynia sericea*) and nodding geebung (*Persoonia nutans*) as other understory species.[22]

#### [edit] Ecology

*Banksia oblongifolia* plants can live for more than 60 years.[5] They respond to bushfire by resprouting from buds located on the large woody lignotuber. Larger lignotubers have the greatest number of buds, although buds are more densely spaced on smaller lignotubers. A 1988 field study in Ku-ring-gai Chase National Park found that shoots grow longer after fire, particularly one within the previous four years, and that new buds grow within six months after a fire.[23] These shoots are able to grow, flower and set seed two to three years after a fire.[24] The woody infructescences also release seeds as their follicles are opened with heat,[5] although a proportion do open spontaneously at other times. One field study in Ku-ring-gai Chase National Park found 10% opened in the absence of bushfire, and that seeds germinated, and young plants do grow.[25] Older plants are serotinous, that is, they store large numbers of seed in an aerial seed bank in their canopy that are released after fire.[24] Being relatively heavy, the seeds do not disperse far from the parent plant.[5]

Bird species that have been observed foraging and feeding at the flowers include the Red Wattlebird (*Anthochaera carunculata*), Lewin's Honeyeater (*Meliphaga lewinii*), Brown Honeyeater (*Lichmera indistincta*), Tawny-crowned Honeyeater (*Gliciphila melanops*), Yellow-faced Honeyeater (*Lichenostomus chrysops*), White-plumed Honeyeater (*L. penicillatus*), White-cheeked Honeyeater (*Phylidonyris niger*), New Holland Honeyeater (*P. novaehollandiae*), Noisy Friarbird (*Philemon corniculatus*), Noisy Miner (*Manorina melanocephala*) and Eastern Spinebill (*Acanthorhynchus tenuirostris*).[3] Insects recorded visiting flower spikes include the European Honey Bee and ants.[3] The swamp wallaby (*Wallabia bicolor*) eats new shoots that grow from lignotubers after bushfire.[23]

One field study found 30% of seeds were eaten by insects between bushfires.[23] Insects recovered from inflorescences include the banksia boring moth (*Arotrophora arcuatalis*), younger instars of which eat flower and bract parts before tunneling into the woody axis of the spike as they get older and boring into follicles and eating seeds. Other seed predators include unidentified species of moth of the genera *Cryptophasa* and *Xylorycta*, as well as *Scieropepla rimata*, *Chalarotona intabescens* and *Chalarotona melipnoa* and an unidentified weevil species.[26] The fungal species *Asterina systema-solare*, *Episphaerella banksiae* and *Lincostromea banksiae* have been recorded on the leaves.[5]

Like most other proteaceae, *B. oblongifolia* has proteoid roots ~ roots with dense clusters of short lateral rootlets that form a mat in the soil just below the leaf litter. These enhance solubilisation of nutrients, allowing nutrient uptake in low-nutrient soils such as the phosphorus-deficient native soils of Australia.[27] A study of coastal heaths on Pleistocene sand dunes around the Myall Lakes found *B. oblongifolia* on slopes (wet heath) and *B. aemula* grew on ridges (dry heath), and the two species did not overlap.[28] Manipulation of seedlings in the same study area showed that *B. oblongifolia* can grow longer roots seeking water than other wet heath species and that seedlings can establish in dry heath, but it is as yet unclear why the species does not grow in dry heath as well as wet heath.[29] Unlike similar situations with *Banksia* species in Western Australia, the two species did not appear to impact negatively on each other.[30]

#### [edit] Cultivation

Conrad Loddiges and his sons wrote of *Banksia oblongifolia* in volume 3 of their work *The Botanical Cabinet* in 1818, reporting it had been brought into cultivation in 1792, though had been initially and incorrectly called *Banksia dentata*. It flowered in November in the United Kingdom, and was grown in a greenhouse over winter.[31]

Not commonly cultivated,[32] it adapts readily to garden conditions and tolerates most soils in part-shade or full sun.[10] The colours of the inflorescences in bud,[6] and timing of flowers into winter give it horticultural value, as does its reddish new growth.[10] Larger plants have taller flower spikes.[6] It is propagated readily from seed,[10] with young plants taking five to seven years to flower from seed.[6] Pruning can improve the shrub's appearance,[10] and it is a potential bonsai subject.[6]

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[edit] External links

Lawrence Sullivan "Sul" Ross "Soldier, Statesman, Knightly Gentleman" (September 27, 1838 – January 3, 1898) was the 19th Governor of Texas (USA), a Confederate States Army general during the American Civil War, and a president of the Agricultural and Mechanical College of Texas, now called Texas A&M University.

Ross was raised in the Republic of Texas, which was later annexed to the United States. Much of his childhood was spent on the frontier where his family founded the town of Waco. As a teenager, Ross attended Baylor University and Florence Wesleyan University. On one of his summer breaks he suffered severe injuries while fighting renegade Comanches. After graduation Ross joined the Texas Rangers, and in 1860 led troops in the Battle of Pease River, where he rescued Cynthia Ann Parker, who had been captured by the Comanches as a child.

When Texas seceded from the United States and joined the Confederacy, Ross joined the Confederate States Army. He participated in 135 battles and skirmishes and became one of the youngest Confederate generals. Following the Civil War, Ross briefly served as sheriff of McLennan County before resigning to participate in the 1875 Texas Constitutional Convention. With the exception of a two-year term as a state senator, Ross spent the next decade focused on his farm and ranch concerns. In 1887, he became the 19th governor of Texas. During his two terms, he oversaw the dedication of the new Texas State Capitol, resolved the Jaybird-Woodpecker War, and became the only Texas governor to call a special session to deal with a treasury surplus.

Despite his popularity, Ross refused to run for a third term as governor. Days after leaving office, he became president of the Agricultural and Mechanical College of Texas (now Texas A&M University). He is credited with saving the school from closure, and his tenure saw a large expansion in college facilities and the birth of many school traditions. After his death, the Texas legislature created Sul Ross State University in his honor.

[edit] Early years

Lawrence Sullivan Ross was born on September 27, 1838 in Bentonsport, Iowa Territory. He was the fourth child and second son of Shapley Prince Ross and Catherine Fulkerson, the daughter of Missouri legislator Isaac Fulkerson. Ross was jointly named for his paternal uncle, Giles O. Sullivan, and his father's grandfather and brother, both named Lawrence Ross. The senior Lawrence Ross had been captured by Native Americans as a child, and lived with them from the time he was six years old until he was rescued at 23. To differentiate Ross from his uncle and great-grandfather, he was called "Little Sul" when he was a child, and later "Sul." [1]

Shortly after Ross's birth, his parents sold their Iowa property and returned to Missouri to escape Iowa's cold weather. In 1839, the family moved to the Republic of Texas, where they settled in the Robertson Colony on the lower Brazos River. [2] [3] Two years later, they joined seven other families under Captain Daniel Monroe and settled near present-day Cameron, [3] where they received 640 acres (260 ha) of land along the Little River. [2] Their land adjoined Comanche territory and was raided several times. [2] [4]

In 1845, the family moved to Austin so Ross and his older siblings could attend school. [5] Four years later, they relocated again. By this time Shapley Ross was well known as a frontiersman, and to coax him to settle in the newly formed community of Waco, the family was given four city lots, exclusive rights to operate a ferry across the Brazos River, and the right to buy 80 acres (32 ha) of farmland at US\$1 per acre. [6] [7] In March 1849, the Ross family built the first house in Waco, a double-log cabin on a bluff overlooking the springs. Ross's sister Kate soon became the first Caucasian child born in Waco. [7]

Eager to further his education, Ross entered the Preparatory Department at Baylor University (then in Independence, Texas) in 1856, despite the fact that he was several years older than most of the other students. He completed the two-year study course in one year. [8] [9] Following his graduation, he enrolled at Wesleyan University in Florence, Alabama. [4] [10] The Wesleyan faculty

originally deemed his mathematics knowledge so lacking that they refused his admittance; the decision was rescinded after a professor agreed to tutor Ross privately in the subject.[10] At Wesleyan, students lived with prominent families instead of congregating in dormitories,[9] thus giving them "daily exposure to good manners and refinement".[11] Ross lived with the family of his tutor.[11]

[edit] Wichita Village fight

During the summer of 1858, Ross returned to Texas and journeyed to the Brazos Indian Reserve, where his father served as Indian Agent. The United States Army had conscripted Indians from the reserve to help the "Wichita Expedition" of 2nd Cavalry in a search for Buffalo Hump, a Penateka Comanche chief who had led several deadly raids on Texas settlements. Fearing that Shapley Ross was too ill to command them on the expedition, the Indians named Sul Ross their new war chief. With his father's approval, the younger Ross led the 135 warriors to accompany 225 troops led by brevet Major Earl Van Dorn.[12][13][14] Ross was given the courtesy title of "Captain" during his command.[12]

Native scouts found approximately 500 Comanches, including Buffalo Hump, camped outside a Wichita village in Indian Territory. Early in the battle, Ross and his men successfully stampeded the Comanche horses, leaving the Comanche warriors at a disadvantage when facing the mounted troops. When many Comanche tried to flee the area, Ross, one of his scouts, Lieutenant Cornelius Van Camp of the 2nd Cavalry and one of his troopers chased a party of noncombatants that appeared to contain a white child.[15] On Ross's orders, his man grabbed the child; as the four turned to rejoin the battle, they were confronted by 25 Comanche warriors.[16][17] Van Camp and the private were killed with arrows, and Ross received an arrow through his shoulder. A Comanche picked up the trooper's carbine[15] and fired a 0.58 caliber bullet through Ross's chest.[16][18] His attacker, Mohee, was a Comanche brave Ross had known since childhood. Mohee was killed by buckshot fired by Lieutenant James Majors of the 2nd Cavalry as the warrior approached the temporarily paralyzed Ross with a scalping knife.[15][16]

After five hours of fighting, the troops subdued the Comanche resistance.[19][20] Buffalo Hump escaped, but seventy Comanches were killed or mortally wounded, only two of them noncombatants.[15][19] Ross's injuries were severe, and for five days he lay under a tree on the battlefield, unable to be moved.[18][20] His wounds became infected, and Ross begged the others to kill him to end his pain. When he was able to travel, he was first carried on a litter suspended between two mules, and then on the shoulders of his men. He recovered fully, but experienced some pain for much of the rest of the year.[18]

In his written report, Van Dorn praised Ross highly. The Dallas Herald printed the report on October 10, and other state newspapers also praised Ross's bravery. General Winfield Scott learned of Ross's role and offered him a direct commission in the Army. Eager to finish his education, Ross declined Scott's offer and returned to school in Alabama.[20][21]

The following year, Ross graduated from Wesleyan with a Bachelor of Arts and returned to Texas. Once there, he discovered that no one had been able to trace the family of the young Caucasian girl rescued during the Wichita Village fight. He adopted the child and named her Lizzie Ross, in honor of his new fiancée, Lizzie Tinsley.[22]

[edit] Texas Rangers

[edit] Enlistment

In early 1860, Ross enlisted in Captain J. M. Smith's Waco company of Texas Rangers, which formed to fight the renegade Native Americans. Smith appointed Ross his second lieutenant. When Smith was promoted, the other men in the company unanimously voted to make Ross the new captain. In conjunction with several other Ranger companies, Ross led his men to retaliate against a Kickapoo tribe which had murdered two white families. The tribe had been warned of the Rangers' approach and set the prairie ablaze. The Rangers were forced to abandon their mission when confronted with the massive wildfire.[23]

Smith disbanded Ross's company in early September 1860. Within a week, Governor Sam Houston authorized Ross to raise his own company of 60 mounted volunteers to protect the settlements near Belknap from Native American attacks. Ross and his men arrived at Fort Belknap on October 17, 1860 to find that the local citizens they were sworn to protect had passed a resolution asking Ross to resign his commission and leave the frontier. The citizens erroneously believed that the raiding was committed by Native Americans from the reservations, and they feared that Ross's friendship with those on the reservations would make him ineffective.[24]

[edit] Battle of Pease River

In late October and November 1860, Comanches led by Peta Nocona conducted numerous raids on various settlements, culminating in the brutal killing of a pregnant woman. On hearing of these incidents, Houston sent several 25-men companies to assist Ross. A citizen's posse had tracked the raiders to their winter village along the Pease River. As the village contained at least 500 warriors and many women and children, the posse returned to the settlements to recruit additional fighters. Ross requested help from the U.S. Army at Camp Cooper, which sent 21 troops.[25]

Immediately after the soldiers arrived on December 11, Ross and 39 Rangers departed for the Comanche village. On December 13 they met the civilian posse, which had grown to 69 members. After several days of travel, the fast pace and poor foraging forced the civilians to stop and rest their horses. The Rangers and soldiers continued on. When they neared the village, Ross personally scouted ahead. Hidden from view by a dust storm, he was able to get within 200 yards (183 m) of the village and saw signs that the tribe was preparing to move on. Realizing that his own horses were too tired for a long pursuit, Ross resolved to attack immediately, before the civilians were able to rejoin the group. Ross lead the Rangers down the ridge, while the soldiers circled around to cut off the Comanche retreat.[26]

After fierce fighting, the Comanches fled. Ross and several of his men pursued the chief and a second, unknown, rider. As the Rangers neared, the second rider slowed and held a child over her head; the men did not shoot, but instead surrounded and stopped her. Ross continued to follow the chief, eventually shooting him three times. The chief refused to surrender, even after falling from his horse. Ross's cook, Anton Martinez, who had been a captive in Nocona's band, identified the fallen chief as Nocona. With Ross's permission, Martinez fired the shot that took Nocona's life.[27] Nocona was the only Comanche male to die in the fighting; thirteen Comanche women were also killed. Ross's men suffered no casualties.[28]

The civilian posse arrived at the battleground as the fighting finished. Although they initially congratulated Ross for winning the battle, some of them later complained that Ross had pushed ahead without them so that he would not have to share the glory or the spoils of war.[29]

When Ross arrived back at the campground, he realized that the captured woman had blue eyes.[29] The woman could not speak English and did not remember her birth name or details of her life prior to joining the Comanche. After much questioning, she was able to provide a few details of her capture as a child. The details matched what Ross knew of the 1836 Fort Parker Massacre, so he summoned Colonel Isaac Parker to identify her. When Parker mentioned that his kidnapped niece had been named Cynthia Ann Parker, the woman slapped her chest and said "Me Cincee Ann." [30] Parker never returned to the Comanche people, but was not happy to have been rescued by Ross.[31]

In contrast, Ross's intervention was welcomed by a nine-year-old Indian boy found hiding alone in the tall grass. Ross took the child with him, naming him Pease. Though Pease was later given the choice to return to his people, he refused and was raised by Ross.[32]

The Battle of Pease River cemented Ross's fame. His "aggressive tactics of carrying the war to the Comanche fireside, (as it had long been carried to that of the white) ended charges of softness in dealing with the Indians." [30] After Ross's death, however, Nocona's son Quanah Parker maintained that his father

was not present at the battle, and instead died three or four years later. Quanah Parker identified the man Martinez shot as a Mexican captive who was the personal servant of Nocona's wife, Cynthia Ann Parker.[33]

[edit] Resignation

When Ross returned home, Houston asked him to disband the company and form a new company of 83 men, promising to send written directives soon. While Ross was in the process of supervising this reorganization, Houston appointed Captain William C. Dalrymple as his new aide-de-camp with overall command of the Texas Rangers. Dalrymple, unaware of Houston's verbal orders, castigated Ross for disbanding his company. Ross completed the reorganization of the company, then returned to Waco and resigned his commission. In his letter of resignation, effective February 1861, Ross informed Houston of his encounter with Dalrymple, and noted that he did not believe a Ranger company could be effective if the captain did not report solely to the Governor. Houston offered to appoint Ross as an aide-de-camp with the rank of colonel, but Ross refused.[34]

[edit] Civil War service

[edit] Enlistment

In early 1861, after Texas voted to secede from the United States and join the Confederacy, Ross's brother Peter began recruiting men for a new military company.[35] Shortly after Ross enlisted in his brother's company as a private, Governor Edward Clark requested that he instead proceed immediately to Indian Territory to negotiate treaties with the Five Civilized Tribes so that they would not help the Union Army. One week after his May 28 wedding to Lizzie Tinsley, Ross set out for Indian Territory.[35] Upon reaching the Washita Agency, he discovered that Confederate commissioners had already signed a preliminary treaty with the tribes.[36][37]

Ross returned home for several months. In the middle of August he departed, with his company, for Missouri, leaving his wife with her parents. On September 7, his group became Company G of Stone's Regiment, later known as the Sixth Texas Cavalry. The other men elected Ross the major for the regiment.[38] Twice in November 1861 Ross was chosen by General McCulloch, with whom he had served in the Texas Rangers, to lead a scouting force near Springfield, Missouri. Both times, Ross successfully slipped behind the Union Army lines, gathered information, and retreated before being caught. After completing the missions, he was granted a 60-day leave and returned home to visit his wife.[39]

[edit] Active duty

In early 1862, Ross returned to duty. By late February, he and 500 troops were assigned to raid the Union Army. He led the group 70 miles (110 km) behind the enemy lines, where they gathered intelligence, destroyed several wagonloads of commissary supplies, captured 60 horses and mules, and took 11 prisoners.[39] The following month, the regiment was assigned to Earl Van Dorn, now a Major General, with whom Ross had served during the battle at the Wichita Village. Under Van Dorn, the group suffered a defeat at the Battle of Pea Ridge; Ross attributed their loss solely to Van Dorn, and blamed him for over-marching and underfeeding his troops, and for failing to properly coordinate the plan of attack.[40] In April, the group was sent to Des Arc, Arkansas. Because of the scarcity of forage, Ross's cavalry troop was ordered to dismount and send their horses back to Texas. The unit, now on foot, traveled to Memphis, Tennessee, arriving two weeks after the Battle of Shiloh.[41] Ross soon caught a bad cold accompanied by a lingering fever, and was extremely ill for eight weeks. By the time he considered himself cured, his weight had dwindled to only 125 lb (57 kg).[42]

Over Ross's protests, the men of the Sixth Regiment elected him colonel in 1862. He did not want the responsibility of the position and had not wanted to embarrass a friend who wanted the job. Their brigade commander, General Charles W. Phifer, was often absent, leaving Ross in charge. Ross's actions impressed other officers, and several times during the summer of 1862 he was nominated for promotion to brigadier general. Although he was not promoted at that time, his unit was the only one of the 8–10 dismounted cavalry units in the area to



be promised the return of their horses.[43]

While still afoot, Ross and his men participated in the Battle of Corinth. Under Ross's command, his Texans twice captured Union guns at Battery Robinett. They were forced to retreat from their position each time as reinforcements failed to arrive. During the battle, Ross, who had acquired a horse, was bucked off, leading his men to believe he had been killed. He was actually unharmed.[44] The Confederate Army retreated from the battle and found themselves facing more Union troops at Hatchie's Bridge. Ross led 700 riflemen to engage the Union troops. For three hours, his men held off 7,000 Union troops, repulsing three major enemy assaults.[45]

The Sixth Cavalry's horses arrived soon after the battle, and the regiment was transferred to the cavalry brigade of Colonel William H. "Red" Jackson. Ross was permitted to take a few weeks leave in November 1862 to visit his wife, and returned to his regiment in mid-January 1863.[46] Several months later, his unit participated in the Battle of Thompson's Station.[47] In July, Major General Stephen D. Lee joined the Sixth Texas Cavalry with Colonel R.A. Pinson's First Mississippi Cavalry, creating a new brigade with Ross at the helm. Near the same time, Ross received word that his first child had died, possibly stillborn.[48]

Ross fell ill again in September 1863. From September 27 through March 1864, he suffered recurring attacks of fever and chills every three days, symptomatic of tertian malaria.[18][49] Despite his illness, Ross never missed a day of duty, and in early 1864 he was promoted to brigadier general, becoming the ninth-youngest general officer of the Confederate Army.[18][50] Following his promotion, unit morale improved, and every one of his men re-enlisted.[51][52]

In March 1864, Ross's brigade fought against African American soldiers for the first time at Yazoo City, Mississippi. After bitter fighting, the Confederates were victorious. During the surrender negotiations, the Union officer accused the Texans of murdering several captured African American soldiers. Ross claimed that two of his men had likewise been killed after surrendering to Union troops.[53]

Beginning in May, the brigade endured 112 consecutive days of skirmishes, comprising 86 separate clashes with the enemy. Though most of the skirmishes were small, by the end of the period injuries and desertion had cut the regiment's strength by 25%.[51][53] Ross was captured in late July at the Battle of Brown's Mill, but was quickly rescued by a successful Confederate cavalry counterattack.[53]

Their last major military campaign was the Franklin-Nashville Campaign of November and December 1864. Ross and his men led the Confederate advance into Tennessee. Between the beginning of November and December 27, his men captured 550 prisoners, several hundred horses, and enough overcoats and blankets to survive the winter chill. Only 12 of Ross's men were killed, with 70 wounded and 5 captured.[54]

[edit] Surrender

By the time Ross began a 90-day furlough on March 13, 1865, he had participated in 135 engagements with the enemy and his horse had been shot out from under him five times, yet he had escaped serious injury.[55] With his leave approved, Ross hurried home to Texas to visit the wife he had not seen in two years. While at home, the Confederate Army began its surrender. He had not rejoined his regiment when it surrendered in Jackson, Mississippi on May 14, 1865.[56] Because he was not present at the surrender, Ross did not receive a parole protecting him from arrest. As a Confederate Army officer over the rank of colonel, Ross was also exempted from President Andrew Johnson's amnesty proclamation of May 29, 1865. To prevent his arrest and the confiscation of his property, on August 4, 1865, Ross applied for a special pardon for his treason against the United States. Johnson personally approved Ross's application on October 22, 1866, but Ross did not receive and formally accept the pardon until July 1867.[57]

[edit] Farming and early public service

When the Civil War ended, Ross was just 26 years old. He owned 160 acres (65

ha) of farmland along the South Bosque River west of Waco, and 5.41 acres (2.19Â ha) in town. For the first time, he and his wife were able to establish their own home. They expanded their family having eightÂ children over the next seventeenÂ years.[58]

Mervin

born January 2, 1866

died 1883

Lawrence Sullivan, Jr.

born July 25, 1868

Florine

born October 3, 1870

Harvey

born March 5, 1873

Frank

born April 27, 1875

Elizabeth

born April 24, 1878

James Tinsley

born December 30, 1880

died 1881

Neville P.

born March 23, 1882

Despite his federal pardon for being a Confederate general, Ross was disqualified from voting and serving as a juror by the first Reconstruction Act of March 2, 1867. This act, and the Supplementary Reconstruction Act passed threeÂ weeks later, disenfranchised anyone who had held a federal or state office before supporting the Confederacy.[59]

Reconstruction did not harm Ross's fortune, and with hard work he soon prospered. Shortly after the war ended, he bought 20 acres (8.1Â ha) of land in town from his parents for \$1,500. By May 1869 he had purchased an additional 40 acres (16Â ha) of farmland for \$400, and the following year his wife inherited 186 acres (75Â ha) of farmland from the estate of her father. Ross continued to buy land, and by the end of 1875 he owned over 1,000 acres (400Â ha) of farmland.[60] Besides farming, Ross and his brother Peter also raised Shorthorn cattle. The two led several trail drives to New Orleans. The combined farming and ranching incomes left Ross wealthy enough to build a house in the Waco city limits and to send his children to private school.[61]

By 1873, Reconstruction in Texas was coming to an end.[62] In December, Ross was elected sheriff of McLennan County, "without campaigning or other solicitation".[63] Ross promptly named his brother Peter a deputy, and within 2Â years they had arrested over 700Â outlaws.[63] In 1874, Ross helped establish the Sheriff's Association of Texas. After various state newspapers publicized the event, sheriffs representing 65 Texas counties met in Corsicana in August 1874.[64] Ross became one of a committee of three assigned to draft resolutions for the convention. They asked for greater pay for sheriffs in certain circumstances, condemned the spirit of mob law, and proposed that state law be modified so that arresting officers could use force if necessary to "compel the criminal to obey the mandates of the law." [65]

Ross resigned as sheriff in 1875 and was soon elected as a delegate to the 1875 Texas Constitutional Convention. One of three members appointed to wait upon convention president-elect E.B. Pickett, Ross was also named to a committee that would determine what officers and employees were needed by the convention. He sat on many other committees, including Revenue and Taxation, the Select Committee on Frontier Affairs, the Select Committee on Education, and the Standing Committee on the Legislative Department. Of the 68 days of the convention, Ross attended 63, voted 343 times, and missed or abstained from voting only 66 times.[66]

When the convention concluded, Ross returned home and spent the next four years focusing on his farm.[67] In 1880, he became an accidental candidate for

Texas State Senator from the 22nd District. The nominating convention deadlocked between two candidates, with neither receiving a two-thirds majority. As a compromise, one of the delegates suggested that the group nominate Ross. Although no one asked Ross whether he wanted to run for office, the delegates elected him as their candidate. He agreed to the nomination in order to spare the trouble and expense of another convention.[68]

Ross won the election with a large majority.[68] Shortly after his arrival in Austin, his youngest son died. Ross returned home for a week to attend the funeral and help care for another son who was seriously ill. On returning to the state capital, he was assigned to the committees for Educational Affairs, Internal Improvements, Finance, Penitentiaries, Military Affairs (where he served as chairman), State Affairs, Contingent Expenses, Stock and Stock Raising, Agricultural Affairs, and Enrolled Bills.[69] Ross introduced a petition on behalf of 500 citizens of McLennan County, requesting that a prohibition amendment be placed on the next statewide ballot; the legislature did agree to place this on the next ballot.[70]

Although the Texas Legislature typically meets once every two years, a fire destroyed the state capitol building in November 1881 and Ross was called to serve in a special session in April 1882. The session agreed to build a new capitol building.[71] Near the end of the special session, the Senate passed a reapportionment bill, which reduced Ross's four-year term to only two years. He declined to run again.[72]

[edit] Governor

[edit] Election

As early as 1884, Ross's friends, including Victor M. Rose, the editor of the newspaper in Victoria, had encouraged Ross to run for governor. He declined and asked his friend George Clark to attend the 1884 state Democratic convention to prevent Ross from being named the gubernatorial candidate. Clark had to produce written authorization from Ross to convince the delegates to nominate someone else.[73] Ross changed his mind in late 1885, announcing his candidacy for governor on February 25, 1886.[74] During the campaign he was variously accused of pandering to the Greenbackers, the Republicans, and the Knights.[75] Ross spent no money on his campaign other than traveling expenses but still handily won the Democratic nomination.[76] He won the general election with 228,776 votes, compared with 65,236 for the Republican candidate and 19,186 from the Prohibitionist candidate.[77][78] Much of his support came from Confederate veterans.[78]

Ross became the 19th governor of Texas.[79] His inauguration ball was held at the newly opened Driskill Hotel, a tradition followed by every subsequent Texas governor.[78] Under the 1876 Texas Constitution, which he had helped write, the governor was granted the power to be commander-in-chief, to convene the legislature, to act as executor of the laws, to direct trade with other states, to grant pardons, and to veto bills.[79] His campaign had focused on land use reform, as most of the frontier issues now resulted from disagreements over the use of public land, especially between farmers and ranchers concerned with water rights and grazing issues. At Ross's urging the legislature passed laws to restore the power of the Land Office Commissioner, provide punishments for those using state lands illegally, and to catalog existing public lands.[80]

[edit] Second term

In May 1888, Ross presided over the dedication of the new Texas State Capitol building.[81] Later that year, Ross ran relatively unopposed for a second term.[82] His platform included abolishing the national banking system, regulating monopolies, reducing tariffs, and allowing the railroads to regulate themselves through competition.[75] No other Democrats placed their names in contention at the nominating convention, and the Republicans chose not to select a candidate, as they were happy with Ross's performance. His sole competition was a Prohibitionist whom Ross defeated by over 151,000 votes.[82] In his second inaugural address, Ross, a true Jeffersonian Democrat,[75] maintained that "'a plain, simple government, with severe limitations upon delegated powers, honestly and frugally administered, as the noblest and truest

outgrowth of the wisdom taught by its founders.'"[83]

During his second term, Ross was forced to intervene in the Jaybird-Woodpecker War in Fort Bend County. Sheriff Jim Garvey feared that there would be armed battles between the white supremacist Democrats (the Jaybirds) and the black men who had retained political power (who, with their white supporters, were known as Woodpeckers). At Garvey's request, Ross sent two militia companies, which managed to impose a four-month peace. In August 1889, Ross sent four Texas Rangers, including Sergeant Ira Aten, to quell the unrest. Violence erupted, leaving four people dead and injuring six, including a Ranger. Aten wired Ross for help. The following morning, the Houston Light Guard arrived and instituted martial law; that evening, Ross arrived with an Assistant Attorney General and another militia company. Ross fired all the local civil officials and called together representatives from both factions. On his suggestion, the two groups agreed to choose a mutually acceptable sheriff to replace Garvey, who had been killed in the firefight. When they could not agree on a candidate, Ross suggested Aten; both groups finally agreed, thus halting the conflict.[84][85]

In March 1890, the U.S. Attorney General launched a suit in the Supreme Court against Texas to determine ownership of a disputed 1,500,000-acre (6,100 km<sup>2</sup>) plot of land in Greer County.[86] Determined to meet personally with the Attorney General, Ross and his wife traveled to Washington, D.C., where they visited President Benjamin Harrison at the White House. Following that visit, they traveled to New York, where they met with former president Grover Cleveland. While in New York, Ross was extremely popular with journalists. He was interviewed by several large northeastern newspapers, which recounted in detail many of his exploits along the frontier. According to his biographer Judith Brenner, the trip and the resulting exposure for Ross, "excited much interest in Texas among easterners, an interest that would eventually bear fruit in increased investment, tourism, and immigration".[87]

Ross declined to become the first Texas governor to run for a third term and left office on January 20, 1891.[88][89] During his four years in office, he vetoed only ten bills, and pardoned 861 people.[90] Compared to other Texas governors, these are small numbers; Governor Miriam A. Ferguson granted 1161 pardons in just two years.[91]

[edit] Major legislation

During his time in office Ross proposed tax reform laws intended to provide for more equitable assessments of property~at that time people were allowed to assess their own belongings with little oversight. The legislature passed his recommendations,[92] and approved his plan to exert more control over school funds and to require local taxation to support the public schools.[93] He also encouraged the legislature to enact antitrust laws. These were passed March 30, 1889, a full year before the federal government enacted the Sherman Antitrust Act.[94] His reform acts were beneficial for the state, leading Ross to become the only Texas governor to call a special session of the legislature to deal with a treasury surplus.[81]

During his term, the legislature agreed to allow the public to vote on a state constitutional amendment for the prohibition of alcohol. Ross vehemently opposed the measure, saying "'No government ever succeeded in changing the moral convictions of its subjects by force.'"[95] The amendment was defeated by over 90,000 votes.[95]

When Ross took the governor's oath of office, Texas had only four charitable institutions~two insane asylums, an institute for the blind, and an institute for the deaf and dumb. By the time he left office, Ross had supervised the opening of a state orphan's home, a state institute for deaf, dumb, and blind black children, and a branch asylum for the insane.[93] He also convinced the legislature to set aside 696 acres (2.82 km<sup>2</sup>) near Gatesville for a future open farm reformatory for juvenile offenders.[96]

Ross was the first governor to set aside a day for civic improvements, declaring the third Friday in January to be Arbor Day, when schoolchildren should endeavor to plant trees.[97][98] He also supported the legislature's

efforts to purchase the Huddle portrait gallery, a collection of paintings of each governor of Texas. These paintings continue to hang in the rotunda of the Texas State Capitol.[98]

Ross felt strongly that the state should adequately care for its veterans. During his first term, the first Confederate home in Texas was dedicated in Austin. Within two years, the facility had run out of room, so Ross served as chairman of a committee to finance a relocation to a larger facility. By August 1890, the home had collected enough money to move to a larger location.[99]

Samuel Willis Tucker Lanham was the last governor of Texas that also served as a Confederate soldier in the Civil War, January 20, 1903 to January 15, 1907.[100]

[edit] College president

[edit] Arrival

By the late 1880s, rumors abounded of "poor management, student discontent, professorial dissatisfaction, faculty factionalism, disciplinary problems, and campus scandals" at the Agricultural and Mechanical College of Texas (now Texas A&M University).[101] The public was skeptical of the idea of scientific agriculture[102] and the legislature declined to appropriate money for improvements to the campus because it had little confidence in the school's administrators. The board of directors decided that the school, known as Texas AMC, needed to be run by an independent administrative chief rather than the faculty chairman. On July 1, 1890, the board unanimously agreed to offer the new job to the sitting governor and asked Ross to resign his office immediately.[102][103] Ross agreed to consider the offer as well as several others he had received. An unknown person informed several newspapers that Ross had been asked to become Texas AMC's president, and each of the newspapers editorialized that Ross would be a perfect fit. The college had been founded to teach military and agricultural knowledge, and Ross had demonstrated excellence in the army and as a farmer. His gubernatorial service had honed his administrative skills, and he had always expressed an interest in education.[102][104]

Though Ross was concerned about the appearance of a conflict of interest, as he had appointed many of the board members who had elected him, he announced that he would accept the position.[105] As the news of his acceptance spread throughout the state, prospective students flocked to Texas AMC. Many of the men Ross had supervised during the Civil War wanted their sons to study under their former commander, and 500 students attempted to enroll at the beginning of the 1890-1891 school year. Three hundred sixteen students were admitted, even though the facilities were only designed for 250 scholars. When Ross officially took charge of the school on February 2,[106] the campus had no running water, faced a housing shortage, was taught by disgruntled faculty, and many students were running wild.[107]

[edit] Improvements

The board of directors named Ross the treasurer of the school, and he posted a \$20,000 personal bond "'for the faithful performance of his duty'".[108] In the break between school years Ross instituted a number of changes. When students returned for the 1891-1892 school year, they found a new 3-story dormitory with 41 rooms (named Ross Hall), the beginning of construction on a new home for the president, and a new building to house the machine and blacksmith shops. The minimum age for enrollment decreased from 16 to 15, and Ross now personally interviewed all prospective students to determine if they should be admitted. Fees and expenses rose by \$10 per session, and the number of hours required for graduation increased, including additional hours in English grammar, sciences, mathematics, and history. Additionally, Ross would now appoint the officers for the Corps of Cadets, and the name of the company of best-drilled cadets in the Corps would change to the Ross Volunteers (from Scott Volunteers). Finally, Ross enacted an official prohibition against hazing, vowing to expel any student found guilty of the practice.[109] Although Ross professed to enjoy his new position, he wrote to several people that directing the college "'made me turn gray very fast.'"[109]

Enrollment continued to rise, and by the end of his tenure, Ross requested that parents first communicate with his office before sending their sons to the school.[110] The increase in students necessitated an improvement in facilities, and from late 1891 until September 1898 the college spent over \$97,000 on improvements and new buildings. This included construction of a mess hall, which could seat 500 diners at once, an infirmary, which included the first indoor toilets on campus, an artesian well, a natatorium, four faculty residences, an electric light plant, an ice works, a laundry, a cold storage room, a slaughterhouse, a gymnasium, a warehouse, and an artillery shed.[111][112] Despite the expenditures on facilities, the school treasury held a surplus in 1893 and 1894. The 1894 financial report credited the surplus to Ross's leadership, and Ross ensured that the money was returned to the students in the form of lower fees.[111][112]

[edit] Impact on students

Ross made himself accessible to students and participated in school activities whenever possible. Those around him found him "slow to condemn but ready to encourage ... [and they] could not recall hearing Ross use profanity or seeing him visibly angry." [113] Every month he prepared grade sheets for each student and would often call poorly performing students into his office for a discussion of their difficulties.[112][114] Under his leadership, the military aspect of the college was emphasized. However, he eliminated many practices that he considered unnecessary, including marching to and from class, and he reduced the amount of guard time and the number of drills that students were expected to perform.[115]

Although enrollment had always been limited to men, Ross favored coeducation, as he thought the male cadets "'would be improved by the elevating influence of the good girls'".[116] In 1893, Ethel Hudson, the daughter of a Texas AMC professor, became the first woman to attend classes at the school and helped edit the annual yearbook. She was made an honorary member of the class of 1895. Several years later, her twin sisters became honorary members of the class of 1903, and slowly other daughters of professors were allowed to attend classes.[117]

During Ross's seven and one-half year tenure, many enduring Texas A&M traditions formed. These include the first Aggie Ring and the formation of the Aggie Band. Ross's tenure also saw the school's first intercollegiate football game, played against the University of Texas.[107] Many student organizations were founded in this time period, including the Fat Man's Club, the Bowlegged Men's Club, the Glee Club (now known as the Singing Cadets), the Bicycle Club, and the College Dramatic Club. In 1893, students began publishing a monthly newspaper, The Battalion, and two years later they began publishing an annual yearbook, known as The Olio.[112][118]

[edit] Personal life and death

Ross continued to be active in veteran's organizations, and in 1893 he became the first commander of the Texas Division of the United Confederate Veterans. He was re-elected president several times and served one term as commander-in-chief of the entire United Confederate Veterans organization. During that time, a Daughters of the Confederacy chapter was established in Bryan and named the L.S. Ross Chapter.[119][120]

In 1894, Ross was appointed to a seat on the Railroad Commission of Texas. While Ross pondered whether to resign his position and accept the appointment, letters and petitions poured into his office begging him to remain at Texas AMC. He declined the appointment and remained president of the college.[120][121]

Ross had always been an avid hunter, and he embarked on a hunting trip along the Navasota River with his son Neville and several family friends during Christmas vacation in 1897. While hunting he suffered acute indigestion and a severe chill and decided to go home early while the others continued their sport. He arrived in College Station on December 30 and consulted a doctor. Ross remained in pain for several days, and in the early evening of January 3, 1898, he died, aged 59 years and 3 months.[112][122] Although no death

certificate was filed, "evidence points to a coronary heart attack as the probable cause of death." [112] The entire Texas AMC student body accompanied Ross's body back to Waco, where Confederate veterans in gray uniforms formed an honor guard. Several thousand people attended Ross's burial at Oakwood Cemetery. [112][123] To further memorialize him, students at Texas AMC held the first Silver Taps ceremony, a tradition still followed when a member of the Texas A&M community dies. [124]

[edit] Legacy

The morning after Ross's death, the Dallas Morning News published an editorial, quoted in several biographies of Ross:

It has been the lot of few men to be of such great service to Texas as Sul Ross. ... Throughout his life he has been closely connected with the public welfare and ... discharged every duty imposed upon him with diligence, ability, honesty and patriotism. ... He was not a brilliant chieftain in the field, nor was he masterful in the art of politics, but, better than either, he was a well-balanced, well-rounded man from whatever standpoint one might estimate him. In his public relations he exhibited sterling common sense, lofty patriotism, inflexible honesty and withal a character so exalted that he commanded at all times not only the confidence but the affection of the people. ... He leaves a name that will be honored as long as chivalry, devotion to duty and spotless integrity are standards of our civilization and an example which ought to be an inspiration to all young men of Texas who aspire to careers of public usefulness and honorable renown. [125][126]

Within weeks of Ross's death former cadets at Texas AMC began gathering funds for a monument. In 1917, the state appropriated \$10,000 for the monument, and two years later a 10' foot (3 m) bronze statue of Ross, sculpted by Pompeo Coppini, was unveiled at the center of the Texas AMC campus. [126][127] In more recent years, students began the tradition of placing pennies at the feet of statue before exams for good luck. School legend states that Ross would often tutor students, and as payment would accept only a penny for their thoughts. At exam time his statue, located in Academic Plaza, is often covered in pennies. [128]

At the same time they appropriated money for the statue, the legislature established the Sul Ross Normal College, now Sul Ross State University in Alpine, Texas. [127] The college opened for classes in June 1920. [126][129]

- ^ Benner (1983), pp. 3â ^4.
- ^ a b c Benner (1983), pp. 5â ^6.
- ^ a b Davis (1989), p. 149.
- ^ a b Sterling (1959), p. 284.
- ^ Benner (1983), p. 9.
- ^ Benner (1983), p. 10.
- ^ a b Davis (1989), p. 151.
- ^ Benner (1983), pp. 14â ^18.
- ^ a b Davis (1989), p. 152.
- ^ a b Benner (1983), p. 19.
- ^ a b Davis (1989), p. 153.
- ^ a b Benner (1983), pp. 21, 23, 25.
- ^ Mayhall (1971), p. 217.
- ^ Utley (1967), p. 130
- ^ a b c d Utley (1967), p. 131
- ^ a b c Benner (1983), pp. 26â ^29.
- ^ Davis (1989), p. 155.
- ^ a b c d e Welsh, Jack D., M.D. (1995), Medical Histories of Confederate Generals, [[Kent, Ohio|]], Ohio: Kent State University Press, pp.Â 188â ^189, ISBNÂ 0-87338-505-5
- ^ a b Mayhall (1971), p. 218.
- ^ a b c Benner (1983), pp. 30â ^33.

^ Davis (1989), p. 157.  
^ Benner (1983), p. 37. Davis (1989), p. 156.  
^ Benner (1983), pp. 38, 40, 42.  
^ Benner (1983), pp. 47â ^48.  
^ Benner (1983), pp. 49â ^50.  
^ Benner (1983), pp. 50â ^53. Davis (1989), p. 160.  
^ Benner (1983), p. 54.  
^ Davis (1989), p. 162.  
^ a b Benner (1983), p. 56.  
^ a b Benner (1983), p. 57.  
^ Hendrickson (1995), p. 113.  
^ Benner (1983), p.55.  
^ Davis (1989), p. 161.  
^ Benner (1983), pp.58â ^60.  
^ a b Benner (1983), pp. 63â ^64.  
^ Benner (1983), p. 65.  
^ Davis (1989), p. 164.  
^ Benner (1984), pp. 67â ^68. Davis (1989), p. 164.  
^ a b Benner (1983), p. 72. Wooster (2000), p. 213.  
^ Davis (1989), p. 165.  
^ Benner (1983), p. 76.  
^ Benner (1983), p. 115.  
^ Benner (1983), pp. 79, 80.  
^ Benner (1983), pp. 84â ^85. Davis (1989), p. 167.  
^ Benner (1983), p. 87.  
^ Benner (1983), p. 88.  
^ Wooster (2000), p. 214.  
^ Benner (1983), p 92.  
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^ Benner (1983), p. 93.  
^ a b Benner (1983), p. 103.  
^ Davis (1989), p. 169.  
^ a b c Wooster (2000), p. 215.  
^ Benner (1983), pp. 108, 109, 111.  
^ Davis (1989), p. 170.  
^ Benner (1983), p. 111.  
^ Benner (1983), pp. 116, 117.  
^ Benner (1983), pp. 117, 119.  
^ Benner (1983), p. 119.  
^ Benner (1983), p. 120.  
^ Davis (1989), p. 171.  
^ Benner (1983), p. 124.  
^ a b Benner (1983), p. 126.  
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^ Benner (1983), p. 129.  
^ Benner (1983), pp. 131â ^133  
^ Benner (1983), p. 140.  
^ a b Benner (1983), p. 141.  
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^ Benner (1983), pp. 148â ^149.  
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^ a b c Hendrickson (1995), p. 116.  
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^ a b c Davis (1989), p. 176.  
^ a b Benner (1983), pp. 160, 161.  
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 ^ a b Benner (1983), p. 169.  
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 ^ a b Benner (1983), p. 165.  
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 ^ a b c d e f g Davis (1989), p. 189.  
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Persondata

Name

Ross, Lawrence Sullivan

Alternative names

Short description

Governor of Texas, Confederate States of America general, Texas A&M

University president

Date of birth

September 27, 1838

Place of birth

Bentonsport, Iowa Territory

Date of death

January 3, 1898

Place of death

Brazos County, Texas

The Osiris myth is the most elaborate and influential story in ancient Egyptian mythology. It concerns the murder of the god Osiris, a primeval king of Egypt, and its consequences. Osiris' murderer, his brother Set, usurps his throne. Meanwhile, Osiris' wife Isis restores her husband's body, allowing him to posthumously conceive a son with her. The remainder of the story focuses on Horus, the product of Isis and Osiris' union, who is first a vulnerable child protected by his mother and then becomes Set's rival for the throne. Their often violent conflict ends with Horus' triumph, which restores order to Egypt after Set's unrighteous reign and completes the process of Osiris resurrection. The myth, with its complex symbolism, is integral to the Egyptian conceptions of kingship and succession, conflict between order and disorder and, especially, death and the afterlife. It also expresses the essential character of each of the four deities at its center, and many elements of their worship in ancient Egyptian religion were derived from the myth.

The Osiris myth reached its basic form in or before the 25th century BC. Many of its elements originated in religious ideas, but the conflict between Horus and Set may have been partly inspired by a regional struggle in Egypt's early history or prehistory. Scholars have tried to discern the exact nature of the events that gave rise to the story, but they have reached no definitive conclusions.

Parts of the myth appear in a wide variety of Egyptian texts, from funerary texts and magical spells to short stories. The story is, therefore, more detailed and more cohesive than any other ancient Egyptian myth. Yet no Egyptian source gives a full account of the myth, and the sources vary widely in their versions of events. Greek and Roman writings, particularly *De Iside et Osiride* by Plutarch, provide more information but may not always accurately

reflect Egyptian beliefs. Through these writings, the Osiris myth persisted after knowledge of most ancient Egyptian beliefs was lost, and it is still well known today.

#### [edit] Sources

The myth of Osiris was very important in ancient Egyptian religion and was popular among ordinary people.[1] One reason for this popularity is the myth's primary religious meaning, which implies that any dead person can reach a pleasant afterlife.[2] Another reason is that the characters and their emotions are more reminiscent of the lives of real people than those in most Egyptian myths, making the story more appealing to the general populace.[3] In particular, the myth conveys a "strong sense of family loyalty and devotion", as the Egyptologist J. Gwyn Griffiths put it, in the relationships between Osiris, Isis, and Horus.[4] With this widespread appeal, the myth appears in more ancient texts than any other myth and in an exceptionally broad range of Egyptian literary styles.[1] These sources also provide an unusual amount of detail.[2] Ancient Egyptian myths are fragmentary and vague, because the religious metaphors contained within the myths were more important than coherent narration. The Osiris myth is fragmentary to some extent, and it too is rich in symbolism. But in comparison with other myths, it bears a greater resemblance to a cohesive story.[5]

The earliest mentions of the Osiris myth are in the Pyramid Texts, the first Egyptian funerary texts, which appeared on the walls of burial chambers in pyramids at the end of the Fifth Dynasty, during the 25th century BC. These texts, made up of disparate spells or "utterances", contain ideas that are presumed to date from still earlier times.[6] The texts are concerned with the afterlife of the king buried in the pyramid, so they frequently refer to the Osiris myth, which is deeply involved with kingship and the afterlife.[7] Major elements of the story, such as the death and restoration of Osiris and the strife between Horus and Set, appear in the utterances of the Pyramid Texts.[8]

The same elements from the myth that appear in the Pyramid Texts recur in funerary texts written in later times, such as the Coffin Texts from the Middle Kingdom (c. 2055â ~1650 BC) and the Book of the Dead from the New Kingdom (c. 1550â ~1070 BC). Most of these writings were made for the general populace, so the association made in these texts, between Osiris and the dead, is no longer restricted to royalty.[9]

The most complete ancient Egyptian account of the myth is the Great Hymn to Osiris, an inscription from the Eighteenth Dynasty (c. 1550â ~1292 BC) that gives the general outline of the entire story but includes little detail.[10] Another important source is the Memphite Theology, a religious narrative that includes an account of Osiris' death as well as the resolution of the dispute between Horus and Set. This narrative associates the kingship that Osiris and Horus represent with Ptah, the creator deity of Memphis.[11] The text was long thought to date back to the Old Kingdom (c. 2686â ~2181 BC) and was treated as a source for information about the early stages in the development of the myth. Since the 1970s, however, Egyptologists have concluded that the text dates from the New Kingdom at the earliest.[12]

Texts related to Osirian rituals come from the walls of Egyptian temples that date from the New Kingdom to the Ptolemaic era of 323â ~30 BC. Such ritual texts are another major source of information about the myth.[13]

Magical healing spells, which were used by Egyptians of all classes, are the source for an important portion of the myth, in which Horus is poisoned or otherwise sickened, and Isis heals him. The spells identify a sick person with Horus so that he or she can benefit from the goddess' efforts. The spells are known from papyrus copies, which serve as instructions for healing rituals, and from a specialized type of inscribed stone stela called a cippus. People seeking healing poured water over these cippi, an act that was believed to imbue the water with the healing power contained in the text, and then drank the water in hope of curing their ailments. The theme of an endangered child protected by magic also appears on inscribed ritual wands from the Middle Kingdom, which were made centuries before the more detailed healing spells that

specifically connect this theme with the Osiris myth.[14]

Episodes from the myth were also recorded in writings intended as entertainment. Prominent among these texts is "The Contendings of Horus and Set", a humorous retelling of several episodes of the struggle between the two deities, which dates to the Twentieth Dynasty (c. 1190âˆ’1070 BC).[15] It vividly characterizes the deities involved; as the Egyptologist Donald B. Redford says, "Horus appears as a physically weak but clever Puck-like figure, Seth [Set] as a strong-man buffoon of limited intelligence, Re-Horakhty [Ra] as a prejudiced, sulky judge, and Osiris as an articulate curmudgeon with an acid tongue." [16] Despite its atypical nature, "Contendings" includes many of the oldest episodes in the divine conflict, and many events appear in the same order as in much later accounts, suggesting that a traditional sequence of events was forming at the time that the story was written.[17]

Ancient Greek and Roman writers, who described Egyptian religion late in its history, recorded much of the Osiris myth. Herodotus, in the 5th century BC, mentioned parts of the myth in his description of Egypt in *The Histories*, and four centuries later, Diodorus Siculus provided a summary of the myth in his *Bibliotheca historica*. [18] In the early 2nd century AD, [19] Plutarch wrote the most complete ancient account of the myth in *De Iside et Osiride*, an analysis of Egyptian religious beliefs. [20] Plutarch's account of the myth is the version that modern popular writings most frequently retell. [21] The writings of these classical authors may give a distorted view of Egyptian beliefs. [20] For instance, *De Iside et Osiride* includes many interpretations of Egyptian belief that are influenced by various Greek philosophies, and its account of the myth contains portions with no known parallel in Egyptian tradition. Griffiths concluded that several elements of this account were taken from Greek mythology, and that the work as a whole was not based directly on Egyptian sources. [22] His colleague John Baines, on the other hand, says that temples may have kept written accounts of myths, which later were lost, and that Plutarch could have drawn on such sources to write his narrative. [23]

[edit] Synopsis

[edit] Death and resurrection of Osiris

At the start of the story, Osiris rules Egypt, having inherited the kingship from his ancestors in a lineage stretching back to the creator of the world, Ra or Atum. His queen is Isis, who, along with Osiris and his murderer Set, is one of the children of the earth god Geb and the sky goddess Nut. Little information about the reign of Osiris appears in Egyptian sources; the focus is on his death and the events that follow. [24] Osiris is connected with life-giving power, righteous kingship, and the rule of maat, the ideal natural order whose maintenance was a fundamental goal in ancient Egyptian culture. [25] Set is closely associated with violence and chaos. Therefore, the slaying of Osiris symbolizes the struggle between order and disorder, and the disruption of life by death. [26]

Some versions of the myth provide Set's motive for killing Osiris. According to a spell in the Pyramid Texts, Set is taking revenge for a kick Osiris gave him, [27] whereas in a Late Period text, Set's grievance is that Osiris had sex with Nephthys, who is Set's consort and the fourth child of Geb and Nut. [2] The murder itself is frequently alluded to, but never clearly described. The Egyptians believed that written words had the power to affect reality, so they avoided writing directly about profoundly negative events such as Osiris' death. [28] Sometimes they denied his death altogether, even though the bulk of the traditions about him make it clear that he has been murdered. [29] In some cases the texts suggest that Set takes the form of a wild animal, such as a crocodile or bull, to slay Osiris; in others they imply that Osiris' corpse is thrown in the water or that he is drowned. This latter tradition is the origin of the Egyptian belief that people who had drowned in the Nile were sacred. [30] Even the identity of the victim is changeable in texts, as it is sometimes the god Haroeris, an elder form of Horus, who is murdered by Set and then avenged by another form of Horus, who is Haroeris' son by Isis. [31]

By the end of the New Kingdom, a tradition had developed that Set had cut

Osiris' body into pieces and scattered them across Egypt. Cult centers of Osiris all over the country claimed that the corpse, or particular pieces of it, were found near them. The dismembered parts could be said to number as many as forty-two, each piece being equated with one of the forty-two nomes, or provinces, in Egypt.[32] Thus, the god of kingship becomes the embodiment of his kingdom.[30]

Osiris' death is followed either by an interregnum or by a period in which Set assumes the kingship. Meanwhile, Isis searches for her husband's body with the aid of Nephthys.[34] When searching for or mourning Osiris, the two goddesses are often likened to falcons or kites,[35] possibly because kites travel far in search of carrion,[36] because the Egyptians associated their plaintive calls with cries of grief, or because of the goddesses' connection with Horus, who is often represented as a falcon.[35] In the New Kingdom, when Osiris' death and renewal came to be associated with the annual flooding of the Nile that fertilized Egypt, the waters of the Nile were equated with Isis' tears of mourning,[37] or with Osiris' bodily fluids.[38] Osiris thus represented the life-giving divine power that was present in the river's water and in the plants that grew after the flood.[39]

The goddesses find and restore Osiris' body, often with the help of other deities, including Thoth, a deity credited with great magical and healing powers, and Anubis, the god of embalming and funerary rites. Their efforts are the mythological basis for Egyptian embalming practices, which, by mummifying the body, sought to prevent and reverse the decay that follows death. This part of the story is often extended with episodes in which Set or his followers try to damage the corpse, and Isis and her allies must protect it. Once Osiris is made whole, Isis, still in bird form, fans breath and life into his body with her wings and copulates with him.[34] Osiris' revival is apparently not permanent, and after this point in the story he is only mentioned as the ruler of the Duat, the distant and mysterious realm of the dead. Yet in his brief contact with Isis, he has conceived his son and rightful heir, Horus. Although Osiris himself lives on only in the Duat, he and the kingship he stands for will, in a sense, be reborn in his son.[40]

The cohesive account by Plutarch, which deals mainly with this portion of the myth, differs in many respects from the known Egyptian sources. Setâ ~whom Plutarch, using Greek names for many of the Egyptian deities, refers to as "Typhon"â ~conspires against Osiris with seventy-three other people. Set has an elaborate chest made to fit Osiris' exact measurements and then, at a banquet, declares that he will give the chest as a gift to whoever fits inside it. The guests, in turn, lie inside the coffin, but none fit inside except Osiris. When he lies down in the chest, Set and his accomplices slam the cover shut, seal it, and throw it into the Nile. With Osiris' corpse inside, the chest floats out into the sea, arriving at the city of Byblos, where a tree grows around it. The king of Byblos has the tree cut down and made into a pillar for his palace, still with the chest inside. Isis must remove the chest from within the tree in order to retrieve her husband's body. Having taken the chest, she leaves the tree in Byblos, where it becomes an object of worship for the locals. This episode, which is not known from Egyptian sources, gives an etiological explanation for a cult of Isis and Osiris that existed in Byblos in Plutarch's time and possibly as early as the New Kingdom.[41]

Plutarch also states that Set steals and dismembers the corpse only after Isis has retrieved it. Isis then finds and buries each piece of her husband's body, with the exception of the penis, which she has to reconstruct with magic, because the original was eaten by fish in the river. According to Plutarch, this is the reason the Egyptians had a taboo against eating fish. In Egyptian accounts, however, the penis of Osiris is found intact, and the only close parallel with this part of Plutarch's story is in "The Tale of Two Brothers", a folk tale from the New Kingdom with similarities to the Osiris myth.[42]

A final difference in Plutarch's account is Horus' birth. The form of Horus that avenges his father has been conceived and born before Osiris' death. It is a premature and weak second child, Harpocrates, who is born from Osiris'

posthumous union with Isis. Here, two of the separate forms of Horus that exist in Egyptian tradition have been given distinct positions within Plutarch's version of the myth.[43]

#### [edit] Birth and childhood of Horus

In Egyptian accounts, the pregnant Isis hides from Set, to whom the unborn child is a threat, in a thicket of papyrus in the Nile Delta. This place is called Akh-bity, meaning "papyrus thicket of the king of Lower Egypt" in Egyptian.[44] Greek writers call this place Khemmis and indicate that it is near the city of Buto,[45] but in the myth, the physical location is unimportant compared with its nature as an iconic place of seclusion and safety.[46] The thicket's special status is indicated by its frequent depiction in Egyptian art; for most events in Egyptian mythology, the backdrop is minimally described or illustrated. In this thicket, Isis gives birth to Horus and raises him, and hence it is also called the "nest of Horus".[34] The image of Isis nursing her child is a very common motif in Egyptian art.[44]

There are texts in which Isis travels in the wider world. She moves among ordinary humans who are unaware of her identity, and she even appeals to these people for help. This is another unusual circumstance, for in Egyptian myth, gods and humans are normally separate.[47] As in the first phase of the myth, she often has the aid of other deities, who protect her son in her absence.[34] According to one magical spell, seven minor scorpion deities travel with and guard Isis as she seeks help for Horus. They even take revenge on a wealthy woman who has refused to help Isis by stinging the woman's son, making it necessary for Isis to heal the blameless child.[47] This story conveys a moral message that the poor can be more virtuous than the wealthy and illustrates Isis' fair and compassionate nature.[48]

In this stage of the myth, Horus is a vulnerable child beset by dangers. The magical texts that use Horus' childhood as the basis for their healing spells give him different ailments, from scorpion stings to simple stomachaches,[49] adapting the tradition to fit the malady that each spell was intended to treat.[50] Most commonly, the child god has been bitten by a snake, reflecting the Egyptians' fear of snakebite and the resulting poison.[34] Some texts indicate that these hostile creatures are agents of Set.[51] Isis may use her own magical powers to save her child, or she may plead with or threaten deities such as Ra or Geb, so they will cure him. As she is the archetypal mourner in the first portion of the story, so during Horus' childhood she is the ideal devoted mother.[52] Through the magical healing texts, her efforts to heal her son are extended to cure any patient.[46]

#### [edit] Conflict of Horus and Set

The next phase of the myth begins when the adult Horus challenges Set for the throne of Egypt. The contest between them is often violent but is also described as a legal judgment before the Ennead, an assembled group of Egyptian deities, to decide who should inherit the kingship. The judge in this trial may be Geb, who, as the father of Osiris and Set, held the throne before they did, or it may be the creator gods Ra or Atum, the originators of kingship.[53] Other deities also take important roles: Thoth frequently acts as a conciliator in the dispute[54] or as an assistant to the divine judge, and in "Contentings", Isis uses her cunning and magical power to aid her son.[55]

The rivalry of Horus and Set is portrayed in two contrasting ways. Both perspectives appear as early as the Pyramid Texts, the earliest source of the myth. In some spells from these texts, Horus is the son of Osiris and nephew of Set, and the murder of Osiris is the major impetus for the conflict. The other tradition depicts Horus and Set as brothers.[56] This incongruity persists in many of the subsequent sources, where the two gods may be called brothers or uncle and nephew at different points in the same document.[57]

The divine struggle involves many episodes. "Contentings" describes the two gods appealing to various other deities to arbitrate the dispute and competing in different types of contests, such as racing in boats or fighting each other in the form of hippopotami, to determine a victor. In this account, Horus repeatedly defeats Set and is supported by most of the other deities.[58] Yet

the dispute drags on for eighty years, largely because the judge, the creator god, favors Set.[59] In late ritual texts, the conflict is characterized as a great battle involving the two deities' assembled followers.[60] The strife in the divine realm extends beyond the two combatants. At one point Isis attempts to harpoon Set as he is locked in combat with her son, but she strikes Horus instead, who then cuts off her head in a fit of rage.[61] Thoth replaces Isis' head with that of a cow; the story gives a mythical origin for the cow-horn headdress that Isis commonly wears.[62] In some sources, Set justifies further attacks on Horus as punishment for the young god's violence against his mother.[63]

In a key episode in the conflict, Set sexually abuses Horus. Set's violation is partly meant to degrade his rival, but it also involves homosexual desire, in keeping with one of Set's major characteristics, his forceful and indiscriminate sexuality.[64] In the earliest account of this episode, in a fragmentary Middle Kingdom papyrus, the sexual encounter begins when Set asks to have sex with Horus, who agrees on the condition that Set will give Horus some of his strength.[65] The encounter puts Horus in danger, because in Egyptian tradition semen is a potent and dangerous substance, akin to poison. According to some texts, Set's semen enters Horus' body and makes him ill, but in "Contendings", Horus thwarts Set by catching Set's semen in his hands. Isis retaliates by putting Horus' semen on lettuces that Set eats. Set's defeat becomes apparent when this semen appears on his forehead as a golden disk. He has been impregnated with his rival's seed and as a result "gives birth" to the disk. In "Contendings", Thoth takes the disk and places it on his own head; in earlier accounts, it is Thoth who is produced by this anomalous birth.[66]

Another important episode concerns mutilations that the combatants inflict upon each other: Horus injures or steals Set's testicles and Set damages or tears out one, or occasionally both, of Horus' eyes. Sometimes the eye is torn into pieces.[67] Set's mutilation signifies a loss of virility and strength.[68] The removal of Horus' eye is even more important, for this stolen Eye of Horus represents a wide variety of concepts in Egyptian religion. One of Horus' major roles is as a sky deity, and for this reason his right eye was said to be the sun and his left eye the moon. The theft or destruction of the Eye of Horus is therefore equated with the darkening of the moon in the course of its cycle of phases, or during eclipses. Horus may take back the lost eye, or other deities, including Isis, Thoth, and Hathor, may retrieve or heal it for him.[67] The Egyptologist Herman te Velde argues that the tradition about the lost testicles is a late variation on Set's loss of semen to Horus, and that the moon-like disk that emerges from Set's head after his impregnation is the Eye of Horus. If so, the episodes of mutilation and sexual abuse would form a single story, in which Set assaults Horus and loses semen to him, Horus retaliates and impregnates Set, and Set comes into possession of Horus' Eye when it appears on Set's head. Because Thoth is a moon deity in addition to his other functions, it would make sense, according to te Velde, for Thoth to emerge in the form of the Eye and step in to mediate between the feuding deities.[69]

In any case, the restoration of the Eye of Horus to wholeness represents the return of the moon to full brightness,[70] the return of the kingship to Horus,[71] and many other aspects of maat.[72] Sometimes the restoration of Horus' eye is accompanied by the restoration of Set's testicles, so that both gods are made whole near the conclusion of their feud.[73]

[edit] Resolution

As with so many other parts of the myth, the resolution is complex and varied. Often, Horus and Set divide the realm between them. This division can be equated with any of several fundamental dualities that the Egyptians saw in their world. Horus may receive the fertile lands around the Nile, the core of Egyptian civilization, in which case Set takes the barren desert or the foreign lands that are associated with it; Horus may rule the earth while Set dwells in the sky; and each god may take one of the two traditional halves of the country, Upper and Lower Egypt, in which case either god may be connected with

either region. Yet in the Memphite Theology, Geb, as judge, first apportions the realm between the claimants and then reverses himself, awarding sole control to Horus. In this peaceable union, Horus and Set are reconciled, and the dualities that they represent have been resolved into a united whole.

Through this resolution, order is restored after the tumultuous conflict.[74]

A different view of the myth's end focuses on Horus' sole triumph.[75] In this version, Set is not reconciled with his rival, but utterly defeated,[76] and sometimes he is exiled from Egypt or even destroyed.[77] His defeat and humiliation is more pronounced in sources from later periods of Egyptian history, when he was increasingly equated with disorder and evil, and the Egyptians no longer saw him as an integral part of natural order.[76]

With great celebration among the gods, Horus takes the throne, and Egypt at last has a rightful king.[78] The divine decision that Set is in the wrong corrects the injustice created by Osiris' murder and completes the process of his restoration after death.[79] Sometimes Set is made to carry Osiris' body to its tomb as part of his punishment.[80] The new king performs funerary rites for his father and gives food offerings to sustain himâ ~often including the Eye of Horus, which in this instance represents life and plenty.[81] According to some sources, only through these acts can Osiris be fully enlivened in the afterlife and take his place as king of the dead, paralleling his son's role as king of the living. Thereafter, Osiris is deeply involved with natural cycles of death and renewal, such as the annual growth of crops, that parallel his own resurrection.[82]

[edit] Origins

As the Osiris myth first appears in the Pyramid Texts, most of its essential features must have taken shape sometime before the texts were written. The distinct segments of the storyâ ~Osiris' death and restoration, Horus' childhood, and Horus' conflict with Setâ ~may originally have been independent mythic episodes. If so, they must have begun to coalesce into a single story by the time of the Pyramid Texts, which loosely connect those segments. In any case, the myth was inspired by a variety of influences.[3] Much of the story is based in religious ideas[83] and the general nature of Egyptian society: the divine nature of kingship, the succession from one king to another,[84] the struggle to maintain maat,[85] and the effort to overcome death.[3] For instance, Isis and Nephthys' lamentations for their dead brother may represent an early tradition of ritualized mourning.[86]

There are, however, important points of disagreement. The origins of Osiris are much debated,[38] and the basis for the myth of his death is also somewhat uncertain.[87] One influential hypothesis was given by the anthropologist James Frazer, who in 1906 said that Osiris, like other "dying and rising gods" across the ancient Near East, began as a personification of vegetation. His death and restoration, therefore, were based on the yearly death and re-growth of plants.[88] Many Egyptologists adopted this explanation. But in the late 20th century, J. Gwyn Griffiths, who extensively studied Osiris and his mythology, argued that Osiris originated as a divine ruler of the dead, and his connection with vegetation was a secondary development.[89] Meanwhile, scholars of comparative religion have increasingly criticized Frazer's overarching concept of "dying and rising gods".[88] More recently, the Egyptologist Rosalie David maintains that Osiris originally "personified the annual rebirth of the trees and plants after the [Nile] inundation." [90]

Another continuing debate concerns the opposition of Horus and Set, which Egyptologists have often tried to connect with political events early in Egypt's history or prehistory. The cases in which the combatants divide the kingdom, and the frequent association of the paired Horus and Set with the union of Upper and Lower Egypt, suggest that the two deities represent some kind of division within the country. Egyptian tradition and archaeological evidence indicate that Egypt was united at the beginning of its history when an Upper Egyptian kingdom, in the south, conquered Lower Egypt in the north. The Upper Egyptian rulers called themselves "followers of Horus", and Horus became the patron god of the unified nation and its kings. Yet Horus and Set cannot be



easily equated with the two halves of the country. Both deities had several cult centers in each region, and Horus is often associated with Lower Egypt and Set with Upper Egypt.[31] One of the better-known explanations for these discrepancies was proposed by Kurt Sethe in 1930. He argued that Osiris was originally the human ruler of a unified Egypt in prehistoric times, before a rebellion of Upper Egyptian Set-worshippers. The Lower Egyptian followers of Horus then forcibly reunified the land, inspiring the myth of Horus' triumph, before Upper Egypt, now led by Horus worshippers, became prominent again at the start of the Early Dynastic Period.[91]

In the late 20th century, Griffiths focused on the inconsistent portrayal of Horus and Set as brothers and as uncle and nephew. He argued that, in the early stages of Egyptian mythology, the struggle between Horus and Set as siblings and equals was originally separate from the murder of Osiris. The two stories were joined into the single Osiris myth sometime before the writing of the Pyramid Texts. With this merging, the genealogy of the deities involved and the characterization of the Horus-Set conflict were altered so that Horus is the son and heir avenging Osiris' death. Traces of the independent traditions remained in the conflicting characterizations of the combatants' relationship and in texts unrelated to the Osiris myth, which make Horus the son of the goddess Nut or the goddess Hathor rather than of Isis and Osiris. Griffiths therefore rejected the possibility that Osiris' murder was rooted in historical events.[92] This hypothesis has been accepted by more recent scholars such as Jan Assmann[57] and George Hart.[93]

Griffiths sought a historical origin for the Horus-Set rivalry, and he posited two distinct predynastic unifications of Egypt by Horus worshippers, similar to Sethe's theory, to account for it.[94] Yet the issue remains unresolved, partly because other political associations for Horus and Set complicate the picture further.[95] Before even Upper Egypt had a single ruler, two of its major cities were Nekhen, in the far south, and Naqada, many miles to the north. The rulers of Nekhen, where Horus was the patron deity, are generally believed to have unified Upper Egypt, including Naqada, under their sway. Set was associated with Naqada, so it is possible that the divine conflict dimly reflects an enmity between the cities in the distant past. Much later, at the end of the Second Dynasty (c. 2890-2686 BC), King Peribsen used the Set animal in writing his serekh-name, in place of the traditional falcon hieroglyph representing Horus. His successor Khasekhemwy used both Horus and Set in the writing of his serekh. This evidence has prompted conjecture that the Second Dynasty saw a clash between the followers of the Horus-king and the worshippers of Set led by Peribsen. Khasekhemwy's use of the two animal symbols would then represent the reconciliation of the two factions, as does the resolution of the myth.[31]

Noting the uncertainties surrounding events so far back in time, Herman te Velde argues that the historical roots of the conflict are too obscure to be very useful in understanding the myth and are not as significant as its religious meaning. He says that "the origin of the myth of Horus and Seth is lost in the mists of the religious traditions of prehistory." [83]

[edit] Influence

The effect of the Osiris myth on Egyptian culture was greater and more widespread than that of any other myth.[1] In literature, the myth was not only the basis for a retelling such as "Contendings"; it also provided the basis for more distantly related stories. "The Tale of Two Brothers", a folk tale with human protagonists, includes elements similar to the myth of Osiris.[96] One character's penis is eaten by a fish, and he later dies and is resurrected.[97] Another story, "The Tale of Truth and Falsehood", adapts the conflict of Horus and Set into an allegory, in which the characters are direct personifications of truth and lies rather than deities associated with those concepts.[96]

From at least the time of the Pyramid Texts, kings hoped that after their deaths they could emulate Osiris' restoration to life and his rule over the realm of the dead. By the early Middle Kingdom (c. 2055-1650 BC), non-royal Egyptians believed that they, too, could overcome death as Osiris had, by

worshipping him and receiving the funerary rites that were partly based on his myth. Osiris thus became Egypt's most important afterlife deity.[99] The myth also influenced the notion, which grew prominent in the New Kingdom, that only virtuous people could reach the afterlife. As the assembled deities judged Osiris and Horus to be righteous, undoing the injustice of Osiris' death, so a deceased soul had to be judged righteous in order for his or her death to be undone.[79] As ruler of the land of the dead and as a god connected with maat, Osiris became the judge in this posthumous trial, offering life after death to those who followed his example.[100]

As the importance of Osiris grew, so did his popularity. By late in the Middle Kingdom, the centuries-old tomb of the First Dynasty ruler Djer, near Osiris' main center of worship in the city of Abydos, was seen as Osiris' tomb. Accordingly, it became a major focus of Osiris worship. For the next 1,500 years, an annual festival procession traveled from Osiris' main temple to the tomb site. This procession made reference to, and may have ritually reenacted, Isis and Nephthys' mourning, restoration, and revival of their murdered brother.[101] Kings and commoners from across Egypt built chapels, which served as cenotaphs, near the processional route. In doing so they sought to strengthen their connection with Osiris in the afterlife.[102] Another major funerary festival, a national event spread over several days in the month of Khoiak in the Egyptian calendar, became linked with Osiris during the Middle Kingdom.[103] During Khoiak the djed pillar, an emblem of Osiris, was ritually raised into an upright position, symbolizing Osiris' restoration. By Ptolemaic times (305â ^30 BC), Khoiak also included the planting of seeds in an "Osiris bed", a mummy-shaped bed of soil, connecting the resurrection of Osiris with the seasonal growth of plants.[104]

The myth's religious importance extended beyond the funerary sphere. Mortuary offerings, in which family members or hired priests presented food to the deceased, were logically linked with the mythological offering of the Eye of Horus to Osiris. By analogy, this episode of the myth was eventually equated with other interactions between a human and a being in the divine realm. In temple offering rituals, the officiating priest took on the role of Horus, the gifts to the deity became the Eye of Horus, and whichever deity received these gifts was momentarily equated with Osiris.[105]

The ideology surrounding the living king was also affected by the Osiris myth. The Egyptians envisioned the events of the Osiris myth as taking place sometime in Egypt's dim prehistory, and Osiris, Horus, and their divine predecessors were included in Egyptian lists of past kings such as the Turin Royal Canon.[106] Horus, as a past king and as the personification of kingship, was regarded as the predecessor and exemplar for all Egyptian rulers. His assumption of his predecessor's throne and pious actions to sustain that spirit in the afterlife were the model for all pharaonic successions to emulate.[107] Each new king was believed to renew maat after the death of the preceding king, just as Horus had done. In royal coronations, rituals alluded to Osiris' burial, and hymns celebrated the new king's accession as the equivalent of Horus' own.[78]

The myth influenced popular religion as well. One example is the magical healing spells based on Horus' childhood. Another is the use of the Eye of Horus as a protective emblem in personal apotropaic amulets. Its mythological restoration made it appropriate for this purpose, as a general symbol of well-being.[31]

As the antagonist of the myth, Set did not enjoy increased popularity. Although he was credited with positive traits in the Osiris myth, the sinister aspects of his character predominate. Overall he was viewed with ambivalence until, during the first millennium BC, he came to be seen as a totally malevolent deity. This transformation was prompted more by his association with foreign lands than by the Osiris myth.[108] Nevertheless, in these late times, the widespread temple rituals involving the ceremonial annihilation of Set were often connected with the myth.[109]

Both Isis and Nephthys were seen as protectors of the dead in the afterlife

because of their protection and restoration of Osiris' body.[110] Isis, as Horus' mother, was also the mother of every king according to royal ideology, and kings were said to have nursed at her breast as a symbol of their divine legitimacy.[111] Her appeal to the general populace was based in her protective character, as exemplified by the magical healing spells. In the Late Period, she was credited with ever greater magical power, and her maternal devotion was believed to extend to everyone. By Roman times she was the most important goddess in Egypt.[112] The image of the goddess holding her child was used prominently in her worshipâ ~for example, in panel paintings that were used in household shrines dedicated to her. Isis' iconography in these paintings closely resembles and probably influenced the earliest Christian icons of Mary holding Jesus.[113]

In the late centuries BC, the worship of Isis spread from Egypt across the Mediterranean world, and she became one of the most popular deities in the region. Although this new, multicultural form of Isis absorbed characteristics from many other deities, her original mythological nature as a wife and mother was key to her appeal. Horus and Osiris, being central figures in her story, spread along with her.[114] It was to a Greek priestess of Isis that Plutarch wrote his account of the myth of Osiris.[115] Her importance continued into the fourth century AD, when Christianity eclipsed it. But Christianity absorbed many of the traditions surrounding Isis and incorporated them into the veneration of Mary, such as Isis' title "Mother of the God" (referring to Horus), which influenced Mary's title "Mother of God".[116]

Through the work of classical writers such as Plutarch, knowledge of the Osiris myth was preserved even after the middle of the first millennium AD, when Egyptian religion ceased to exist and knowledge of the writing systems that were originally used to record the myth were lost. The myth remained a major part of Western impressions of ancient Egypt. In modern times, when understanding of Egyptian beliefs is informed by the original Egyptian sources, the story continues to influence and inspire new ideas, from works of fiction to scholarly speculation and new religious movements.[117]

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 ^ a b Assmann 2001, pp. 141â ^144  
 ^ a b Smith 2008, p. 3  
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 ^ Pinch 2004, pp. 84, 179  
 ^ a b te Velde 1967, pp. 76â ^80  
 ^ Griffiths 1980, pp. 185â ^186, 206

^ Tobin 1989, p. 92  
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 ^ a b Mettinger 2001, pp. 15â ^18  
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Hasekura Rokuemon Tsunenaga (or "Francisco Felipe Faxicura", as he was baptized in Spain) (1571–1622) (Japanese: 𐰇𐰺𐰍𐰏𐰤 𐰇𐰏𐰤 𐰇𐰏𐰤𐰏𐰤𐰏𐰤, also spelled Faxicura Rocuyemon in period European sources, reflecting the contemporary pronunciation of Japanese)[1] was a Japanese samurai and retainer of Date Masamune, the daimyo of Sendai.

In the years 1613 through 1620, Hasekura headed a diplomatic mission to the Vatican in Rome, traveling through New Spain (arriving in Acapulco and departing from Veracruz) and visiting various ports-of-call in Europe. This historic mission is called the Keicho Embassy (𐰇𐰺𐰍𐰏𐰤 𐰇𐰏𐰤𐰏𐰤𐰏𐰤), and follows the Tensho embassy (𐰇𐰺𐰍𐰏𐰤 𐰇𐰏𐰤𐰏𐰤𐰏𐰤) of 1582.[2] On the return trip, Hasekura and his companions re-traced their route across Mexico in 1619, sailing from Acapulco for Manila, and then sailing north to Japan in 1620.[3] He is conventionally considered the first Japanese ambassador in the Americas and in Europe.[4]

Although Hasekura's embassy was cordially received in Europe, it happened at a time when Japan was moving toward the suppression of Christianity. European monarchs such as the King of Spain thus refused the trade agreements Hasekura had been seeking. Hasekura returned to Japan in 1620 and died of illness a year later, his embassy seemingly ending with few results in an increasingly isolationist Japan.

Japan's next embassy to Europe would only occur more than 200 years later, following two centuries of isolation, with the "First Japanese Embassy to Europe" in 1862.

[edit] Early life

Little is known of the early life of Hasekura Tsunenaga. He was a mid-level noble samurai in the Sendai Domain in northern Japan, who had the opportunity to directly serve the daimyo Date Masamune. They were of roughly the same age, and it is recorded that several important missions were given to Tsunenaga as his representative.

It is also recorded that Hasekura served as samurai of the Japanese invasion of Korea under the Taiko Toyotomi Hideyoshi, during six months in 1597.

In 1612, Hasekura's father, Hasekura Tsunenari (𐰇𐰺𐰍𐰏𐰤 𐰇𐰏𐰤𐰏𐰤), was indicted for corruption, and he was put to death in 1613. His fief was confiscated, and his son should normally have been executed as well. Date however gave him the opportunity to redeem his honour by placing him in charge of the Embassy to Europe, and soon gave him back his territories as well.

[edit] Background: early contacts between Japan and Spain

The Spanish started trans-Pacific voyages between New Spain (Mexico) and the Philippines in 1565. The famous Manila galleons carried silver from Mexican mines westward to the entrep  t of Manila in the Spanish possession of the Philippines. There, the silver was used to purchase spices and trade goods gathered from throughout Asia, including (until 1638) goods from Japan. The return route of the Manila galleons, first charted by the Spanish navigator Andr  s de Urdaneta, took the ships northeast into the Kuroshio Current (also known as the Japan Current) off the coast of Japan, and then across the Pacific to the west coast of North America, landing eventually in Acapulco.[5]

Spanish ships were periodically shipwrecked on the coasts of Japan due to bad weather, initiating contacts with the country. The Spanish wished to expand the Christian faith in Japan. Efforts to expand influence in Japan were met by stiff resistance towards the Jesuits, who had started the evangelizing of the country in 1549, as well as by the opposition of Portuguese and the Dutch who did not wish to see Spain participate in Japanese trade. However, some Japanese, such as Christopher and Cosmas, are known to have crossed the Pacific onboard Spanish galleons as early as 1587. It is known that gifts were exchanged between the governor of the Philippines and Toyotomi Hideyoshi, who thanks him in a 1597 letter, writing "The black elephant in particular I found most unusual." [6]

In 1609, the Spanish Manila galleon San Francisco encountered bad weather on its way from Manila to Acapulco, and was wrecked on the Japanese coast in Chiba, near Tokyo. The sailors were rescued and welcomed, and the ship's captain, Rodrigo de Vivero, former interim governor of the Philippines, met with the retired shogun Tokugawa Ieyasu. Rodrigo de Vivero drafted a treaty, signed on 29 November 1609, whereby the Spaniards could establish a factory in eastern Japan, mining specialists would be imported from New Spain, Spanish ships would be allowed to visit Japan in case of necessity, and a Japanese embassy would be sent to the Spanish court.

[edit] First Japanese expeditions to the Americas

[edit] 1610 San Buena Ventura

A Franciscan monk named Luis Sotelo, who was proselytizing in the area of what is now modern Tokyo, convinced Tokugawa Ieyasu and his son Tokugawa Hidetada to send him as a representative to New Spain (Mexico) on one of their ships, in order to advance the trade treaty. Rodrigo de Vivero offered to sail on the Japanese ship in order to guarantee the safety of their reception in New Spain, but insisted that another Franciscan, named Alonso Mu  os, be sent instead as the Shogun's representative. In 1610, the returning Rodrigo de Vivero, several Spanish sailors, the Franciscan father, and 22 Japanese representatives led by the trader Tanaka Sh  suke, sailed to Mexico aboard the San Buena Ventura, a ship built by the English adventurer William Adams for the Shogun. Once in New Spain, Alonso Mu  os met with the Viceroy Luis de Velasco, who agreed to send an ambassador to Japan in the person of the famous explorer Sebastian Vizcaino, with the added mission of exploring the "Gold and silver islands" ("Isla de Plata") that were thought to be east of the Japanese isles.

Vizcaino arrived in Japan in 1611, and had many meetings with the Shogun and feudal lords. These encounters were tainted by his poor respect for Japanese customs, the mounting resistance of the Japanese towards Catholic proselytism, and the intrigues of the Dutch against Spanish ambitions. Vizcaino finally left to search for the "Silver island", during which search he encountered bad weather, forcing him to return to Japan with heavy damage.

[edit] 1612 San Sebastian

Without waiting for Vizcaino, another ship    built in Izu by the Bakufu under the minister of the Navy Mukai Shogen, and named San Sebastian    left for Mexico on 9 September 1612 with Luis Sotelo onboard as well as two representatives of Date Masamune, with the objective of advancing the trade agreement with New Spain. However, the ship foundered a few miles from Uraga, and the expedition had to be abandoned.

[edit] The 1613 embassy project

The Shogun decided to build a new galleon in Japan in order to bring Vizcaino back to Nueva España, together with a Japanese embassy accompanied by Luis Sotelo. The galleon, named Date Maru by the Japanese and later San Juan Bautista by the Spanish, took 45 days work in building, with the participation of technical experts from the Bakufu (the Minister of the Navy Mukai Shogen, an acquaintance of William Adams with whom he built several ships, dispatched his Chief Carpenter), 800 shipwrights, 700 smiths, and 3,000 carpenters. The daimyo of Sendai, Date Masamune, was put in charge of the project. He named one of his retainers, Hasekura Tsunenaga (his fief was rated at around 600 koku), to lead the mission:

"The Great Ship left Toshima-Tsukinoura for the Southern Barbarians on 15 September [Japanese calendar], with at its head Hasekura Rokuemon Tsunenaga, and those called Imaizumi Sakan, Matsuki Shusaku, Nishi Kyusuke, Tanaka Taroemon, Naito Hanjuro, Sonohoka Kyuemon, Kuranojo, Tonomo, Kitsunai, Kyuji, as well as several others under Rokuemon, as well as 40 Southern Barbarians, 10 men of Mukai Shogen, and also tradespeople, to a total 180" (Records of the Date House, Keichō -Genna 3 é 4001 1615-1616, Gonoï p. 56).

The objective of the Japanese embassy was both to discuss trade agreements with the Spanish crown in Madrid, and to meet with the Pope in Rome. Date Masamune displayed a great will to welcome the Catholic religion in his domain: he invited Luis Sotelo and authorized the propagation of Christianity in 1611. In his letter to the Pope, brought by Hasekura, he wrote: "I'll offer my land for a base of your missionary work. Send us as many padres as possible."

Sotelo, in his own account of the travels, emphasizes the religious dimension of the mission, claiming that the main objective was to spread the Christian faith in northern Japan:

"I was formerly dispatched as ambassador of Idate Masamune, who holds the reins of the kingdom of Oxu [Japanese:奥州.] (which is in the Eastern part of Japan) who, while he has not yet been reborn through baptism, has been catechized, and was desirous that the Christian faith should be preached in his kingdom together with another noble of his Court, Philippus Franciscus Faxecura Rocuyemon, to the Roman Senate & to the one who at that time was in charge of the Apostolic See, His Holiness Pope Paul V." (Luis Sotelo De Ecclesiae Iaponicae Statu Relatio, 1634).[7]

The embassy was probably, at that time, part of a plan to diversify and increase trade with foreign countries, before the participation of Christians in the Osaka rebellion triggered a radical reaction from the Shogunate, with the interdiction of Christianity in the territories it directly controlled, in 1614.

[edit] Trans-Pacific voyage

Upon completion, the ship left on 28 October 1613 for Acapulco with around 180 people on board, including 10 samurai of the Shogun (provided by the Minister of the Navy Mukai Shogen Tadakatsu), 12 samurai from Sendai, 120 Japanese merchants, sailors, and servants, and around 40 Spaniards and Portuguese, including Sebastian Vizcaino who, in his own words, only had the quality of a passenger.[8]

[edit] New Spain (Acapulco)

The ship first reached Cape Mendocino in today's California, and then continued along the coast to arrive in Acapulco on 25 January 1614 after three months at sea. The Japanese were received with great ceremony, but had to wait in Acapulco until orders were received regarding how to organize the rest of their travels.

Fights erupted between the Japanese and the Spaniards, especially Vizcaino, apparently due to some disputes on the handling of presents from the Japanese ruler. A contemporary journal, written by the historian Chimalpahin Quauhtlehuanitzin, a noble Aztec born in Amecameca (ancient Chalco province) in 1579, whose formal name was Domingo Francisco de San Anton Muñón, relates Vizcaino was seriously wounded in the fight:

"Señor Vizcaino is still coming slowly, coming hurt; the Japanese injured him when they beat and stabbed him in Acapulco, as became known here in Mexico,



because of all the things coming along that had been made his responsibility in Japan"[10]

Following these fights, orders were promulgated on 4 and 5 March to bring peace back. The orders explained that:

"The Japanese should not be submitted to attacks in this Land, but they should remit their weapons until their departure, except for Hasekura Tsunenaga and eight of his retinue... The Japanese will be free to go where they want, and should be treated properly. They should not be abused in words or actions. They will be free to sell their goods. These orders have been promulgated to the Spanish, the Indians, the Mulattos, the Mestizos, and the Blacks, and those who don't respect them will be punished".[11]

[edit] New Spain (Mexico)

The embassy remained two months in Acapulco and entered Mexico City on 24 March,[10] where it was received with great ceremony. The ultimate mission for the embassy was to go on to Europe. The embassy spent some time in Mexico, and then went to Veracruz to board the fleet of Don Antonio Oquendo.

Chimalpahin gives some account of the visit of Hasekura.

"This is the second time that the Japanese have landed one of their ships on the shore at Acapulco. They are transporting here all things of iron, and writing desks, and some cloth that they are to sell here." (Chimalpahin, "Annals of His Time").[12]

"It became known here in Mexico and was said that the reason their ruler the Emperor of Japan sent this said lordly emissary and ambassador here, is to go in Rome to see the Holy Father Paul V, and to give him their obedience concerning the holy church, so that all the Japanese want to become Christians" (Chimalpahin, "Annals of His Time").[13]

Hasekura was settled in a house next to the Church of San Francisco, and met with the Viceroy. He explained to him that he was also planning to meet King Philip III to offer him peace and to obtain that the Japanese could come to Mexico for trade. On Wednesday 9 April, 20 Japanese were baptized, and 22 more on 20 April by the archbishop in Mexico, don Juan P  rez de la Serna, at the Church of San Francisco.[14] Altogether 63 of them received confirmation on 25 April. Hasekura waited for his travel to Europe to be baptized there:

"But the lordly emissary, the ambassador, did not want to be baptized here; it was said that he will be baptized later in Spain" (Chimalpahin, "Annals of His Time").[15]

[edit] Departure for Europe

Chimalpahin explains that Hasekura left some of his compatriots behind before leaving for Europe:

"The Ambassador of Japan set out and left for Spain. In going he divided his vassals; he took a certain number of Japanese, and he left an equal number here as merchants to trade and sell things." (Chimalpahin, "Annals of His Time").[16]

The fleet left for Europe on the San Jose on 10 June. Hasekura had to leave the largest parts of the Japanese group behind, who were to wait in Acapulco for the return of the embassy.

Some of them, as well as those from the previous travel of Tanaka Sh  suke, returned to Japan the same year, sailing back with the San Juan Bautista:

"Today, Tuesday the 14th of the month of October of the year 1614, was when some Japanese set out from Mexico here going home to Japan.; they lived here in Mexico for four years. Some still remained here; they earn a living trading and selling here the goods they brought with them from Japan." (Chimalpahin, "Annals of His Time").[17]

The embassy stopped and changed ships in Havana in Cuba in July 1614. The embassy stayed in Havana for six days. A bronze statue was erected on 26 April 2001 at the head of Havana Bay.[18]

[edit] Mission to Europe

The fleet arrived in Sanlucar de Barrameda on 5 October 1614.

"The fleet arrived safely finally, after some dangers and storms, to the port

of Sanl car de Barrameda on 5 October, where the Duke of Medina Sidonia was advised of the arrival. He sent carriages to honor them and accommodate the Ambassador and his gentlemen" (Scipione Amati "History of the Kingdom of Voxu").[19]

"The Japanese ambassador Hasekura Rokuemon, sent by Joate Masamune, king of Boju, entered Seville on Wednesday, 23 October 1614. He was accompanied by 30 Japanese with blades, their captain of the guard, and 12 bowmen and halberdiers with painted lances and blades of ceremony. The captain of the guard was Christian and was called Don Thomas, the son of a Japanese martyr" (Library Capitular Calombina 84-7-19 Memorias..., fol.195).[20]

The Japanese embassy met with King Philip III in Madrid on 30 January 1615. Hasekura remitted to the King a letter from Date Masamune, as well as offer for a treaty. The King responded that he would do what he could to accommodate these requests.

Hasekura was baptized on 17 February by the king's personal chaplain, and renamed Felipe Francisco Hasekura. The baptism ceremony was to have been conducted by the Archbishop of Toledo, Bernardo de Sandoval y Rojas, though he was too ill to actually carry this out, and the Duke of Lerma   the main administrator of Phillip III's rule and the de facto ruler of Spain   was designated as Hasekura's godfather.

The embassy stayed eight months in Spain before leaving the country for Italy. [edit] France

After traveling across Spain, the embassy sailed on the Mediterranean aboard three Spanish frigates towards Italy. Due to bad weather, they had to stay for a few days in the French harbour of Saint-Tropez, where they were received by the local nobility, and made quite a sensation on the populace.

The visit of the Japanese Embassy is recorded in the city's chronicles as led by "Philip Francis Faxicura, Ambassador to the Pope, from Date Masamunni, King of Woxu in Japan".

Many picturesque details of their movements were recorded:

"They never touch food with their fingers, but instead use two small sticks that they hold with three fingers."

"They blow their noses in soft silky papers the size of a hand, which they never use twice, so that they throw them on the ground after usage, and they were delighted to see our people around them precipitate themselves to pick them up."

"Their swords cut so well that they can cut a soft paper just by putting it on the edge and by blowing on it."

("Relations of Mme de St Tropez", October 1615, Biblioth que Inguimbertaine, Carpentras).[21]

The visit of Hasekura Tsunenaga to Saint-Tropez in 1615 is the first recorded instance of Franco-Japanese relations.

The Japanese Embassy went on to Italy where they were able to meet with Pope Paul V in Rome in November 1615, the same year Galileo Galilei was first confronted by the Roman Inquisition regarding his findings against geocentrism. Hasekura remitted to the Pope two gilded letters, one in Japanese and one in Latin, containing a request for a trade treaty between Japan and Mexico and the dispatch of Christian missionaries to Japan. These letters are still visible in the Vatican archives. The Latin letter, probably written by Luis Sotelo for Date Masamune, reads, in part:

Kissing the Holy feet of the Great, Universal, Most Holy Lord of The Entire World, Pope Paul, in profound submission and reverence, I, Idate Masamune, King of W sh  in the Empire of Japan, suppliantly say:

The Franciscan Padre Luis Sotelo came to our country to spread the faith of God. On that occasion, I learnt about this faith and desired to become a Christian, but I still haven't accomplished this desire due to some small issues. However, in order to encourage my subjects to become Christians, I wish that you send missionaries of the Franciscan church. I guarantee that you will be able to build a church and that your missionaries will be protected. I also

wish that you select and send a bishop as well. Because of that, I have sent one of my samurai, Hasekura Rokuemmon, as my representative to accompany Luis Sotelo across the seas to Rome, to give you a stamp of obedience and to kiss your feet. Further, as our country and Nueva España are neighbouring countries, could you intervene so that we can discuss with the King of Spain, for the benefit of dispatching missionaries across the seas." Translation of the Latin letter of Date Masamune to the Pope.[22]

The Pope agreed to the dispatch of missionaries, but left the decision for trade to the King of Spain.

The Roman Senate also gave to Hasekura the honorary title of Roman Citizen, in a document he brought back to Japan, and which is preserved today in Sendai.

Sotelo also described the visit to the Pope, book *De ecclesiae Iaponicae statu relatio* (published posthumously in 1634):

"When we got there by the aid of God in the Year of Our Salvation 1615, not only were we kindly received by His Holiness the great Pope, with the Holy College of the Cardinals and a gathering of bishops and nobles, and even the joy and general happiness of the Roman People, but we and three others (whom the Japanese Christians had specially designated to announce their condition with respect to the Christian religion) were heard, rested, and just as we were hoping, dispatched as quickly as possible." (Sotelo, *De ecclesiae Iaponicae statu relatio*).[23]

[edit] Rumours of political intrigue

Besides the official description of Hasekura's visit to Rome, some contemporary communications tend to indicate that political matters were also discussed, and that an alliance with Date Masamune was suggested as a way to establish Christian influence in the whole of Japan:

"The Ambassador strongly insisted that the authority and power of his ruler was superior to that of many European countries" (Anonymous Roman communication, dated 10 October 1615)

"The Franciscan Spanish fathers are explaining that the King of the Ambassador [Hasekura Tsunenaga] will soon become the supreme ruler of his country, and that, not only will they become Christians and follow the will of the church of Rome, but they will also in turn convert the rest of the population. This is why they are requesting the dispatch of a high ecclesiastic together with the missionaries. Because of this, many people have been doubting the true purpose of the embassy, and are wondering if they are not looking for some other benefit." (Letter of the Venetian ambassador, 7 November 1615).

[edit] Second visit to Spain

For the second time in Spain, Hasekura met again with the King, who declined to sign a trade agreement, on the ground that the Japanese Embassy did not appear to be an official embassy from the ruler of Japan Tokugawa Ieyasu, who, on the contrary, had promulgated an edict in January 1614 ordering the expulsion of all missionaries from Japan, and started the persecution of the Christian faith in Japan.

The embassy left Seville for Mexico in June 1617 after a period of two years spent in Europe, but some of the Japanese remained in Spain in a town near Seville (Coria del R  o), where their descendants to this day still use the surname Jap  n.

[edit] Western publications on Hasekura's embassy

The embassy of Hasekura Tsunenaga was the subject of numerous publications throughout Europe. The Italian writer Scipione Amati, who accompanied the embassy in 1615 and 1616, published in 1615 in Rome a book titled "History of the Kingdom of Voxu". This book was also translated in German in 1617. In 1616, the French publisher Abraham Savgrain published an account of Hasekura's visit to Rome: "R  cit de l'entr  e solennelle et remarquable faite    Rome, par Dom Philippe Francois Faxicura" ("Account of the solemn and remarkable entrance in Rome of Dom Philippe Francois Faxicura").

Amati's book "History of the Kingdom of Woxu", published in 1615.

German translation of Amati's account.

Print depicting Hasekura, with legend in Latin.

[edit] Return to Mexico

Hasekura stayed for 5 months in Mexico on his way back to Japan. The San Juan Bautista was waiting in Acapulco since 1616, after a second trip across the Pacific from Japan to Mexico. Captained by Yokozawa Shogen, she was laden with fine pepper and lacquerware from Kyoto, which were sold on the Mexican market. Following a request by the Spanish king, in order to avoid too much silver leaving to Japan, the Viceroy asked for the proceeds to be spent on Mexican goods, except for an amount of 12,000 pesos and 8,000 pesos in silver which Hasekura and Yokozawa could bring back with them respectively.

[edit] Philippines

In April 1618, the San Juan Bautista arrived in the Philippines from Mexico, with Hasekura and Luis Sotelo on board. The ship was acquired by the Spanish government there, with the objective of building up defenses against the attacks of the Dutch and the English. The bishop of the Philippines with the local Filipinos and native Tagalog in Manila described the deal to the king of Spain in a missive dated 28 July 1619:

"The Governor was extremely friendly with the Japanese, and provided them with his protection. As they had many expensive things to buy, they decided to lend their ship. The ship was immediately furnished for combat. The Governor eventually bought the ship, because it turned out that it was of excellent and sturdy construction, and available ships were dramatically few. In favour of your Majesty, the price paid was reasonable." (Document 243)

During his stay in the Philippines with local Filipinos and Native Tagalog, Hasekura purchased numerous goods for Date Masamune, and built a ship, as he explained in a letter he wrote to his son. He finally returned to Japan in August 1620, reaching the harbour of Nagasaki.

[edit] Return to Japan

By the time Hasekura came back, Japan had changed quite drastically: an effort to eradicate Christianity had been under way since 1614, Tokugawa Ieyasu had died in 1616 and been replaced by his more xenophobic son Tokugawa Hidetada, and Japan was moving towards the "Sakoku" policy of isolation. Because news of these persecutions arrived in Europe during Hasekura's embassy, European rulers â ^ especially the King of Spain â ^ became very reluctant to respond favorably to Hasekura's trade and missionary proposals.

Hasekura reported his travels to Date Masamune upon his arrival in Sendai. It is recorded that he remitted a portrait of Pope Paul V, a portrait of himself in prayer (shown above), and a set of Ceylonese and Indonesian daggers acquired in the Philippines, all preserved today in the Sendai City Museum. The "Records of the House of Masamune" describe his report in a rather succinct manner, ending with a rather cryptic expression of surprise bordering on the outrage ("あゝ æ ¢æ ¢ã ¢.") at Hasekura's discourse:

"Rokuemon went to the country of the Southern Barbarians, he paid his respects to the king Paolo, he stayed there for several years, and now he sailed back from Luzon. He brought paintings of the king of the Southern Barbarians, and a painting of himself, which he remitted. Many of his descriptions of the Southern Barbarian countries, and the meaning of Rokuemon's declarations were surprising and extraordinary." [24]

[edit] Interdiction of Christianity in Sendai

The direct effect of Hasekura's return to Sendai was the interdiction of Christianity in the Sendai fief two days later:

"Two days after the return of Rokuemon to Sendai, a three-point edict against the Christian was promulgated: first, that all Christians were ordered to abandon their faith, in accordance with the rule of the Shogun, and for those who did not, they would be exiled if they were nobles, and killed if they were citizens, peasants or servants. Second, that a reward would be given for the denunciation of hidden Christians. Third that propagators of the Christian faith should leave the Sendai fief, or else, abandon their religion" (November 1620 letter of father Angelis, Japan-China archives of the Jesuits in Rome,

quoted in Gonoï's "Hasekura Tsunenaga", p231)

What Hasekura said or did to bring about such a result is unknown. As later events tend to indicate that he and his descendants remained faithful Christians, Hasekura may have made an enthusiastic account of the greatness and might of Western countries and the Christian religion. He may also have encouraged an alliance between the Church and Date Masamune to take over the country (an idea advertized by the Franciscans while in Rome), which, in 1620 Japan, would have been a totally unrealistic proposition. Lastly, hopes of trade with Spain evaporated when Hasekura communicated that the Spanish King would not enter an agreement as long as persecutions were occurring in the rest of the country.

Date Masamune, heretofore very tolerant of Christianity in spite of the Bakufu's prohibition in the land it directly controlled, thus suddenly chose to distance himself from the Western faith. The first executions of Christians started 40 days later. The anti-Christian measures taken by Date Masamune were however comparatively mild, and Japanese and Western Christians repeatedly claimed that he only took them to appease the Shogun:

"Date Masamune, out of fear of the Shogun, ordered the persecution of Christianity in his territory, and created several martyrs." (Letter of 17 prominent Japanese Christians from Sendai, to the Pope, 29 September 1621).[25]

One month after Hasekura's return, Date Masamune wrote a letter to the Shogun Tokugawa Hidetada, in which he makes a very clear effort to evade responsibility for the embassy, explaining in detail how it was organized with the approval, and even the collaboration, of the Shogun:

"When I sent a ship to the Southern Barbarian countries several years ago, upon the advice of Mukai Shogen, I also dispatched the Southern Barbarian named Sotelo, who had resided for several years in Edo. At that time, your highness also gave messages for the Southern Barbarians, as well as presents, such as folding screens and sets of armour." (18 October 1620, quoted in Gonoï, p. 234).

Spain was by far the most threatening power for Japan at that time (with a colony and an army in the nearby Philippines). Hasekura's eyewitness accounts of Spanish power and colonial methods in Nueva España (Mexico) may have precipitated the Shogun Tokugawa Hidetada's decision to sever trade relations with Spain in 1623, and diplomatic relations in 1624, although other events such as the smuggling of Spanish priests into Japan and a failed Spanish embassy also contributed to the decision.

What became of Hasekura is unknown and accounts of his last years are numerous. Contemporary Christian commentators could only rely on hearsay, with some rumours stating that he abandoned Christianity, others that he was martyred for his faith, and others that he practiced Christianity in secret. The fate of his descendants and servants, who were later executed for being Christians, would suggest that Hasekura remained strongly Christian himself, and transmitted his faith to the members of his family.

Sotelo, who returned to Japan but was caught and finally burnt at the stake in 1624, gave before his execution an account of Hasekura returning to Japan as a hero who propagated the Christian faith:

"My other colleague, the ambassador Philipppus Faxecura, after he reached his aforementioned king (Date Masamune), was greatly honored by him, and sent to his own estate, to rest after such a long and tiring journey, where he made his wife, children, servants, and many other vassals into Christians, and advised other nobles who were his kith and kin to accept the faith, which they indeed did. While he was engaged in these and other pious works, a full year after his return, having provided much instruction and a great example, with much preparation, he piously passed on, leaving for his children by a special inheritance the propagation of the faith in his estate, and the protection of the religious (i.e. "members of religious orders") in that kingdom. The King and all the nobles were greatly saddened by his passing, but especially the Christians and Religious, who knew very well the virtue and religious zeal of this man. This is what I heard by letters from the very Religious who administered the sacraments to him, and who had been present at his death, as

well as from others." (Luis Sotelo, *De ecclesiae Iaponicae statu relatio*).[26]

Hasekura also did bring back to Japan several Catholic artifacts, but he did not give them to his ruler, and instead kept them in his own estate.

Hasekura Tsunenaga died of illness (according to Japanese as well as Christian sources) in 1622, but the location of his grave is not known for certain. Three graves are claimed as Hasekura's. The most likely is in the outskirts of Osato town (奥州・大田) in Miyagi. Another is visible in the Buddhist temple of Enfukuji (大佛寺・大田) in Miyagi. Another is clearly marked (along with a memorial to Padre Sotelo) in the cemetery of a Buddhist temple in the Kitayama neighborhood at Komyoji Temple (大田・大田).

[edit] Execution of his descendants and servants

Hasekura had a son, named Rokuemon Tsuneyori. Two of his son's servants, Yogoemon (大田・大田・大田) and his wife, were convicted of being Christian but refused to recant their faith under torture (reverse hanging, called "Tsurushi", 逆懸) and as a result died in August 1637 (as the lives of Christians were spared if they recanted, these executions indicate that they were steadfast and refused to deny their faith). In 1637, Rokuemon Tsuneyori himself also came under suspicion of Christianity after being denounced by someone from Edo, but escaped questioning because he was the master of the Zen temple of Komyoji (大田・大田). In 1640, two other servants of Tsuneyori, Tarozaemon (大田・大田・大田, 71), who had followed Hasekura to Rome, and his wife (59), were convicted of being Christians, and, also refusing to recant their faith under torture, died. Tsuneyori was held responsible this time and decapitated the same day, at the age of 42, for having failed to denounce Christians under his roof, although it remained unconfirmed whether he was himself Christian or not.[27] Also, two Christian priests, the Dominican Pedro Vazquez and Joan Bautista Paulo, had given his name under torture. Tsuneyori's younger brother, Tsunemichi, was convicted as a Christian, but managed to flee and disappear.[27]

The privileges of the Hasekura family were abolished at this point by the Sendai fief, and their property and belongings seized. It is at this time, in 1640, that Hasekura's Christian artifacts were confiscated, and they were kept in custody in Sendai until they were rediscovered at the end of the 19th century.

Altogether, around fifty Christian artifacts were found in Hasekura's estate in 1640, such as crosses, rosaries, religious gowns and religious paintings. The artifacts were seized and stored by the Date fief. An inventory was made again in 1840 describing the items as belonging to Hasekura Tsunenaga. Nineteen books were also mentioned in the inventory, but they have been lost since. The artifacts are today preserved in the Sendai City Museum and other museum in Sendai.

[edit] Re-discovery

The very existence of the travels of Hasekura was forgotten in Japan until the reopening of the country after the Sakoku policy of isolation. In 1873, a Japanese embassy to Europe (the Iwakura mission) headed by Iwakura Tomomi heard for the first time of the travels of Hasekura when shown documents during their visit to Venice in Italy.[28]

[edit] Hasekura today

Today, there are statues of Hasekura Tsunenaga in the outskirts of Acapulco in Mexico, at the entrance of Havana Bay in Cuba,[29] in Coria del R  o in Spain,[30] in the Church of Civitavecchia in Italy, in Tsukinoura, near Ishinomaki.[31] and two in Osato town in Miyagi. [32]

Approximately 700 inhabitants of Coria del R  o bear the surname Jap  n (originally Hasekura de Jap  n), identifying them as descendants of the members of Hasekura Tsunenaga's delegation.[33]

A theme park describing the embassy and displaying a replica of the San Juan Bautista was established in the harbour of Ishinomaki, from which Hasekura initially departed on his voyage.

Today there stands a statue of Hasekura in a park in Manila, the Philippines. Shusaku Endo wrote a 1980 novel, titled *The Samurai*, a fictitious account

relating the travels of Hasekura.

A 2005 animation film produced in Spain and titled *Gisaku* relates the adventures of a young Japanese samurai named Yohei who visited Spain in the 17th century, in a story loosely taking its inspiration from the travels of Hasekura. Yohei survived in hiding to the present day due to magical powers ("After centuries of lethargy, he awakes in a World he does not know"), and accomplishes many adventures in modern Europe as a superhero.[34]

[edit] Timeline and itinerary

[edit] See also

^ In the Japanese of the era, the sound now transcribed as *h* was pronounced as an *f* before all vowels, not just *u*. Likewise *s* was sometimes pronounced *sh* before */e/*, not only before */i/*, and the syllable *ã`* (now read as *e*), was pronounced *ye*. On the other hand, the use of *x* to represent the *sh* sound is specific to the older pronunciations of Spanish and Portuguese.

^ In the name "*Keichō* Embassy", the noun "*Keichō*" refers to the *nengō* (Japanese era name) after "*Bunroku*" and before "*Genna*." In other words, the *Keichō* Embassy commenced during *Keichō*, which was a time period spanning the years from 1596 through 1615.

^ Ministry of Foreign Affairs: Japan-Mexico Relations.

^ The *Keichō* Embassy was, in fact, preceded by a Sengoku period mission headed by Mancio Ito with Alessandro Valignano in 1582–1590. Although less well-known and less well-documented, this historic mission is sometimes referred to as the "*Tenshō* Embassy" because it was initiated in the *Tenshō* era. This venture was organized by three daimyo of Western Japan – Omura Sumitada, Otomo Sorin and Arima Harunobu.

^ Hayes, Derek (2001). *Historical atlas of the North Pacific Ocean: maps of discovery and scientific exploration, 1500–2000*. Seattle, Washington: Sasquatch Books. pp. 17–19.

^ <http://www.kufs.ac.jp/toshokan/50/zos.htm>

^ *Nempe fuisse me quondam Idate Masamune, qui regni Oxu (quod est in Orientali Iaponiā| parte) gubernacula tenet, nec dum quidem per baptismum regenerato, sed tamen Catechumeno, & qui Christianam fidem in suo regno prædicari cupiebat, simul cum alio suā| Curiā| optimate Philippo Francisco Faxecura Retuyemon [sic] ad Romanam Curiam & qui tunc Apostolicā| sedis culmen tenebat SS. Papam Paulum V. qui ad cālos evolavit, Legatum expeditum.* (p. 1)

^ Sebastian Vizcaino "Account of the search for the gold and silver islands", quoted by Gonoï

^ Cardona "Geographic Descriptions", by Michael Mathes, ISBN 0-87093-235-7 p75

^ a b "Annals of his time", p275

^ "5th document", quoted from "*Hasekura Tsunanaga*", Gonoï, p77

^ Chimalpahin "Annals of his time", 4 March 1614, p275

^ Chimalpahin "Annals of his time", 24 March 1614, p275

^ "Image of the church". *Concise.britannica.com*.

<http://concise.britannica.com/ebc/art-17637>. Retrieved 2011-11-06.

^ Chimalpahin "Annals of his time", 9 April 1614, p277

^ Chimalpahin "Annals of his time", 29 May 1614, p283

^ Chimalpahin "Annals of his time", 14 October 1614, p291

^ <http://granmai.cubaweb.com/ingles/abril4/17japone-i.html>

^ "Se llegó por fin a salvo, después de algunos peligros y tempestades al puerto de Sanlúcar de Barrameda el 5 de Octubre, donde residiendo el Duque de Medina Sidonia y avisado del arribo, envi³ carrozas para honrarlos, recibirlos y acomodar en ellas al Embajador y a sus gentiles hombres, habi³ndoles preparado un suntuoso alojamiento; y después de haber cumplido con esta obligaci³n como correspond³a, y de regalarlos con toda liberalidad, a instancias de la ciudad de Sevilla hizo armar dos galeras, las cuales llevaron a los embajadores a CORIA, donde fueron hospedados por orden de la dicha Ciudad por Don Pedro Galindo, veinticuatro, el cual se ocup³ con gran diligencia en tener satisfecho el Ånimo del Embajador con todos los placeres y regalos posibles, procurando este entretanto que preparasen ropas nuevas a su s³quito y

ayudantes para resplandecer con más decoro y pompa a la entrada en Sevilla. Mientras se resolvía a esta cuestión, la Ciudad determinó enviar a Coria a Don Diego de Cabrera, hermano del padre Sotelo, a Don Bartolomé López de Mesa, del hábito de Calatraba, a Don Bernardo de Ribera, a Don Pedro Galindo y a multitud de jurados y otros caballeros para que en su nombre besaran la mano al Embajador y lo felicitaron por su llegada a salvo. Sobre esto, quedó el Embajador contentísimo, agradeció mucho a la Ciudad que por su generosidad se complacía en honrarle, y se apartó con los dichos caballeros mostrando mucha prudencia en su trato". "A veintiuno de Octubre del dicho año la Ciudad hizo otra demostración de la mayor cortesía para el recibimiento del Embajador y del Padre Sotelo mandando carrozas, cabalgaduras y gran número de caballeros y de nobles que lo escoltaron formando una cabalgata de gran solemnidad. Saliendo el Embajador de Coria, vio con sumo placer el honor que se le había preparado, la pompa de los caballeros y la gran cantidad de gente que lo acompañó durante su camino hacia Sevilla". "Cerca de Triana y antes de cruzar el puente, se multiplicó de tal manera el número de carrozas, caballos y gentes de todo género, que no bastaba la diligencia de dos alguaciles y de otros ministros de la justicia para poder atravesarlo. Finalmente compareció el Conde de Salvatierra. Asistente de la Ciudad, con gran número de titulados y con los restantes veinticuatro y caballeros; y el embajador desmontando de la carroza, montó a caballo con el Capitán de su guardia y Caballerizo, vestido sobriamente, a la usanza del Japón, y mostrando al Asistente lo obligado que quedaba de la mucha cortesía y honores que la Ciudad se servía de usar con él, fue puesto en medio del dicho Asistente y Alguaciles Mayores y prosiguiéndose la cabalgata con increíble aplauso y contento de la gente, por la Puerta de Triana se dirigieron al Alcázar Real." (Scipione Amati, "Historia del regno di Voxu", 1615)

^ "Mientras que el 23 de octubre de 1614 años entró en Sevilla el embajador Japon Faxera Recuremon, enviado de Joate Masamune, rey de Boju. Traía treinta hombres japoneses con cuchillas, con su capitán de la guardia, y doce flecheros y alabarderos con lanzas pintadas y sus cuchillas de abara. El capitán era cristiano y se llamaba don Thomas, y era hijo de un mártir Japonés. Venía a dar la obediencia a Su Santidad por su rey y reyno, que se avía baptizado. Todos traían rosarios al cuello; y él venía a recibir el bautismo de mano de Su Santidad. Venía en su compañía fray Luis Sotelo, natural de Sevilla, religioso de San Francisco recoleto. Salieron a Coria a recibirlo por la Ciudad, el veinticuatro don Bartolomé López de Mesa, y el veinticuatro don Pedro Galindo; y junto a la puente los recibió la Ciudad. Entró por la puerta de Triana, y fue al Alcázar, donde la Ciudad lo hospedó, y hizo la costa mientras estuvo en Sevilla. Vido la Ciudad, y subió a la Torre. Lunes 27 de octubre de dicho año por la tarde, el dicho embajador, con el dicho padre fray Luis Sotelo, entró en la Ciudad con el presente de su rey con toda la guardia, todos a caballo desde la puente. Dio su embaxada sentado al lado del asistente en su lengua, que interpretó el padre fray Luis Sotelo, y una carta de su rey, y una espada a su usanza, que se puso en el archivo de la Ciudad. Esta espada se conservó hasta la revolución del 68 que la chusma la robó. La embaxada para su magestad el rey don Felipe Tercero, nuestro señor, no trataba de religión, sino de amistad. (Biblioteca Capitular Calombina 84-7-19 .Memorias..., fol.195)"

^ Extracts from the Old French original:

"Il y huit jours qu'il passa a St Troppez un grand seigneur Indien, nomme Don Felipe Fransceco Faxicura, Ambassadeur vers le Pape, de la part de Idate Massamuni Roy de Woxu au Jappon, feudataire du grand Roy du Japon et de Meaco. Il avoit plus de trente personnes a sa suite, et entre autre, sept autres pages tous fort bien vetus et tous camuz, en sorte qu'ilz sembloient presque tous freres. Ils avaiient trois fregates fort lestes, lesuelles portoient tout son attirail. Ils ont la teste rase, excepte une petite bordure sur le derrier faisant une flotte de cheveux sur la cime de la teste retroussee, et nouee a la Chinoise....".

"...Ilz se mouchent dans des mouchoirs de papier de soye de Chine, de la grandeur de la main a peu prez, et ne se servent jamais deux fois d'un



mouchoir, de sorte que toutes les fois qu'ilz ne mouchoyent, ils jestoyent leurs papiers par terre, et avoyent le plaisir de les voir ramasser a ceux de deca qui les alloient voir, ou il y avoit grande presse du peuple qui s'entrebatoit pour un ramasser principalement de ceux de l'Ambassadeur qui estoient hystoriez par les bordz, comme les plus riches poullletz des dames de la Cour. Ils en portient quantite dans leur seign, et ils ont apporte provision suffisante pour ce long voyage, qu'ilz sont venus faire du deca....".

"... Le ses epees et dagues sont faictes en fasson de simmetterre tres peu courbe, et de moyenne longueur et sont sy fort tranchantz que y mettant un feuillet de papier et soufflant ilz couppent le papier, et encore de leur papier quy est beaucoup plus deslie que le notre et est faict de soye sur lesquels ils escrivent avec un pinceau."

"... Quand ilz mangeoient ils ne touchent jamais leur chair sinon avec deux petits batons qu'ils tiennent avec trois doigts." (Marcouin, Francis and Keiko Omoto. Quand le Japon s'ouvrit au monde. Paris: DÃ©couvertes Gallimard, 1990. ISBN 2-07-053118-X. Pages 114â ^116)

^ Body of the text translated from Gonoï quote, p152. Translation of the salutation was done separately. The original Latin of the introduction is as follows:

MAGNI ET UNIVERSALIS SISQ3 [SISQ3 = Sanctissimique]

totius Orbis Patris Domini Pape Pauli s. pedes cum profunda summissee et reuerentia [s. prob. = sanctos, summissee prob. = summissione]

osculando ydate masamune \* Imperio Japonico Rex voxu suppliciter dicimus.

^ Quo tandem cum anno Salutis 1615. iuvante deo pervenissemus, Æ SS. Papa magno cum Cardinalium Sacri Collegij Antistitum ac Nobilium concursu, nec non & Rom. populi ingenti lãtitia & communi alacritate non modo benignã excepti, verãm & humanissimã tam nos quam etiã tres alij, quos Iaponii Christiani, quatenus eorum circa Christianam Religionem statum Apostolicis auribus intimarent, specialiter destinaverant, auditi, recreati, & prout optabamus, quantocyus expediti. (p. 1)

^ "ã 'è, @ã, ½ã ç @ã° ã ã -ã 'è; , é~ ç @èª.ã è¶fã á¥ æ ¢æ åõ'ã ." ä¼ é ~æ²»ã@¶è""é ²ã ("Record of the House of Masamune")

^ Quoted in Gonoï p229

^ Collega alter legatus Philippus Fiasecura [sic] postquam ad prædictum Regem suum pervenit, ab ipso valdã est honoratus, & in proprium statum missus, ut tam longã viã fessus reficeretur, ubi uxorem, filios, domesticos cum multis aliis vasallis Christianos effecit, aliisque nobilibus hominibus consanguineis & propinquis suasit ut fidem reciperent; quam utique receperunt. Dum in his & aliis piis operibus exerceretur ante annum completum post eius regressum magna cum omnium ãdificatione & exemplo, multa cum præparatione suis filiis hãreditate præcipua fidei propagationem in suo statu, & Religiosorum in eo regno protectionem commendatam relinquens, pie defunctus est. De cuius discessu Rex & omnes Nobiles valdã doluerunt, præcipuã tamen Christiani & Religiosi, qui huius viri virtutem & fidei Zelum optimã noverant. Ab ipsis Religiosis, qui eidem sacramenta ministrarunt, eiusque obitui interfuerant; & ab aliis sic per literas accepi. (p. 16)

^ a b "National Treasure: Documents of the Keicho Embassy to Europe", p80

^ Source: Sendai museum monograph. Description of the visit of the Hasekura mission to the Venice archives Text (Japanese)

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^ "Spain's Japon clan has reunion to trace its 17th century roots", Japan Times, 11 December 2003 (registration required)  
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"Date Masamune's Mission to Rome in 1615" å,¼ã~ã æ ¶é·é æ-sä¼ç- é~çä¼ è³ æ~ ã , Catalogue of Sendai City Museum, 2001 (Japanese)

#### [edit] External links

Persondata

Name

Hasekura Tsunenaga

Alternative names

Rocuyemon, Faxecura (contemporary pronunciation); Don Felipe Francisco Hasekura (Christian name); Philippus Franciscus Faxecura Rocuyemon (Latin)

Short description

Japanese Samurai and diplomat

Date of birth

1571

Place of birth

Japan

Date of death

1622

Place of death

Japan

Harold Pinter

Pinter in December 2005

Born

(1930-10-10)10 October 1930Hackney, east London, England

Died

24 December 2008(2008-12-24) (aged 78)London, England

Occupation

Playwright, screenwriter, actor, theatre director, poet

Nationality

British

Period

1947â ^2008

Notable award(s)

Spouse(s)

Children

One son with Merchant,  
six stepchildren with Fraser  
Influences

Samuel Beckett, T. S. Eliot, W. S. Graham, Ernest Hemingway, James Joyce, Franz Kafka, Marcel Proust, William Shakespeare, John Webster, W. B. Yeats; cinema of the 1940s, 1950s, and 1960s; Surrealism

Influenced

Alan Ayckbourn, Jez Butterworth, Caryl Churchill, W. S. Graham, Sarah Kane, David Mamet, Patrick Marber, Sam Shepard, Václav Havel, William Friedkin, Heathcote Williams

Signature

[www.haroldpinter.org](http://www.haroldpinter.org)

Literature portal

Harold Pinter, CH, CBE (10 October 1930 – 24 December 2008) was a Nobel Prize-winning English playwright, screenwriter, director and actor. One of the most influential modern British dramatists, his writing career spanned more than 50 years. His best-known plays include *The Birthday Party* (1957), *The Homecoming* (1964), and *Betrayal* (1978), each of which he adapted for the screen. His screenplay adaptations of others' works include *The Servant* (1963), *The Go-Between* (1970), *The French Lieutenant's Woman* (1981), *The Trial* (1993), and *Sleuth* (2007). He also directed or acted in radio, stage, television, and film productions of his own and others' works.

Pinter was born and raised in Hackney, east London, and educated at Hackney Downs School. He was a sprinter and a keen cricket player, acting in school plays and writing poetry. He attended the Royal Academy of Dramatic Art but did not complete the course. He was fined for refusing National Service as a conscientious objector. Subsequently, he continued training at the Central School of Speech and Drama and worked in repertory theatre in Ireland and England. In 1956 he married actress Vivien Merchant and had a son, Daniel born in 1958. He left Merchant in 1975 and married author Antonia Fraser in 1980.

Pinter's career as a playwright began with a production of *The Room* in 1957. His second play, *The Birthday Party*, closed after eight performances, but was enthusiastically reviewed by critic Harold Hobson. His early works were described by critics as "comedy of menace". Later plays such as *No Man's Land* (1975) and *Betrayal* (1978) became known as "memory plays". He appeared as an actor in productions of his own work on radio and film. He also undertook a number of roles in works by other writers. He directed nearly 50 productions for stage, theatre and screen. Pinter received over 50 awards, prizes, and other honours, including the Nobel Prize in Literature in 2005 and the French Légion d'honneur in 2007.

Despite frail health after being diagnosed with oesophageal cancer in December 2001, Pinter continued to act on stage and screen, last performing the title role of Samuel Beckett's one-act monologue *Krapp's Last Tape*, for the 50th anniversary season of the Royal Court Theatre, in October 2006. He died from liver cancer on 24 December 2008.

Biography

Early life and education

Pinter was born on 10 October 1930, in Hackney, east London, as the only child of lower middle class English parents of Jewish Eastern European ancestry: his father, Jack Pinter (1902–1997) was a ladies' tailor; his mother, Frances (née Moskowitz; 1904–1992), a housewife.[1] Pinter believed an aunt's erroneous view that the family was Sephardic and had fled the Spanish Inquisition; thus, for his early poems, Pinter used the pseudonym Pinta and at other times used variations such as da Pinto.[2] Later research by Antonia Fraser, Pinter's second wife, revealed the legend to be apocryphal; three of Pinter's grandparents came from Poland and the fourth from Odessa, so the family was Ashkenazic.[2][3][4]

Pinter's family home in London is described by his official biographer Michael Billington as "a solid, red-brick, three-storey villa just off the noisy, bustling, traffic-ridden thoroughfare of the Lower Clapton Road".[5] In 1940

and 1941, after the Blitz, Pinter was evacuated from their house in London to Cornwall and Reading.[5] Billington states that the "life-and-death intensity of daily experience" before and during the Blitz left Pinter with profound memories "of loneliness, bewilderment, separation and loss: themes that are in all his works." [6]

Pinter discovered his social potential as a student at Hackney Downs School, a London grammar school, between 1944 and 1948. "Partly through the school and partly through the social life of Hackney Boys' Club ... he formed an almost sacerdotal belief in the power of male friendship. The friends he made in those daysâ ~most particularly Henry Woolf, Michael (Mick) Goldstein and Morris (Moishe) Wernickâ ~have always been a vital part of the emotional texture of his life." [4][7] A major influence on Pinter was his inspirational English teacher Joseph Brearley, who directed him in school plays and with whom he took long walks, talking about literature.[8] According to Billington, under Brearley's instruction, "Pinter shone at English, wrote for the school magazine and discovered a gift for acting." [9][10] In 1947 and 1948, he played Romeo and Macbeth in productions directed by Brearley.[11]

At the age of 12, Pinter began writing poetry, and in spring 1947, his poetry was first published in the Hackney Downs School Magazine.[12] In 1950, his poetry was first published outside of the school magazine in Poetry London, some of it under the pseudonym "Harold Pinta". [13][14]

#### Sport and friendship

Pinter enjoyed running and broke the Hackney Downs School sprinting record.[15][16] He was an avid cricket enthusiast, taking his bat with him when evacuated during the Blitz.[17] In 1971 he told Mel Gussow: "one of my main obsessions in life is the game of cricketâ ~I play and watch and read about it all the time." [18] He was chairman of the Gaieties Cricket Club, a supporter of Yorkshire Cricket Club,[19] and devoted a section of his official website to the sport.[20] One wall of his study was dominated by a portrait of himself as a young man playing cricket, which was described by Sarah Lyall, writing in The New York Times: "The painted Mr. Pinter, poised to swing his bat, has a wicked glint in his eye; testosterone all but flies off the canvas." [21][22] Pinter approved of the "urban and exacting idea of cricket as a bold theatre of aggression." [23] After his death, several of his school contemporaries recalled his achievements in sports, especially cricket and running.[24] The BBC Radio 4 memorial tribute included an essay on Pinter and cricket.[25]

Other interests that Pinter mentioned to interviewers are family, love and sex, drinking, writing, and reading.[26] According to Billington, "If the notion of male loyalty, competitive rivalry and fear of betrayal forms a constant thread in Pinter's work from The Dwarfs onwards, its origins can be found in his teenage Hackney years. Pinter adores women, enjoys flirting with them, worships their resilience and strength. But, in his early work especially, they are often seen as disruptive influences on some pure and Platonic ideal of male friendship: one of the most crucial of all Pinter's lost Edens." [4][27]

#### Early theatrical training and stage experience

Beginning in late 1948, Pinter attended the Royal Academy of Dramatic Art for two terms, but hating the school, missed most of his classes, feigned a nervous breakdown, and dropped out in 1949.[28] In 1948 he was called up for National Service. He registered as a conscientious objector, was brought to trial twice, and was ultimately fined for refusing to serve.[29] He had a small part in the Christmas pantomime Dick Whittington and His Cat at the Chesterfield Hippodrome in 1949 to 1950.[30] From January to July 1951, he attended the Central School of Speech and Drama.[31]

From 1951 to 1952, he toured Ireland with the Anew McMaster repertory company, playing over a dozen roles.[32] In 1952 he began acting in regional English repertory productions; from 1953 to 1954, he worked for the Donald Wolfit Company, at the King's Theatre, Hammersmith, performing eight roles.[33][34] From 1954 until 1959, Pinter acted under the stage name David Baron.[35][36] In all, Pinter played over 20 roles under that name.[36][37] To supplement his

income from acting, Pinter worked as a waiter, a postman, a bouncer, and a snow-clearer, meanwhile, according to Mark Batty, "harbouring ambitions as a poet and writer." [38] In October 1989 Pinter recalled: "I was in English rep as an actor for about 12 years. My favourite roles were undoubtedly the sinister ones. They're something to get your teeth into." [39] During that period, he also performed occasional roles in his own and others' works for radio, TV, and film, as he continued to do throughout his career. [36] [40]

#### Marriages and family life

From 1956 until 1980, Pinter was married to Vivien Merchant, an actress whom he met on tour, [41] perhaps best known for her performance in the 1966 film *Alfie*. Their son, Daniel, was born in 1958. [42] Through the early 1970s, Merchant appeared in many of Pinter's works, including *The Homecoming* on stage (1965) and screen (1973), but the marriage was turbulent. [43] For seven years, from 1962 to 1969, Pinter was engaged in a clandestine affair with BBC-TV presenter and journalist Joan Bakewell, which inspired his 1978 play *Betrayal*, [44] and also throughout that period and beyond he had an affair with an American socialite, whom he nicknamed "Cleopatra". This relationship was another secret he kept from both his wife and Bakewell. [45] Initially, *Betrayal* was thought to be a response to his later affair with historian Antonia Fraser, the wife of Hugh Fraser, and Pinter's "marital crack-up". [46]

Pinter and Merchant had both met Fraser in 1969, when all three worked together on a National Gallery programme about Mary, Queen of Scots; several years later, on 8<sup>th</sup> January 1975, Pinter and Fraser became romantically involved. [47] That meeting initiated their five-year extramarital love affair. [48] [49] After hiding the relationship from Merchant for two and a half months, on 21 March 1975, Pinter finally told her "I've met somebody". [50] After that, "Life in Hanover Terrace gradually became impossible", and Pinter moved out of their house on 28 April 1975, five days after the premiere of *No Man's Land*. [51] [52]

In mid-August 1977, after Pinter and Fraser had spent two years living in borrowed and rented quarters, they moved into her former family home in Holland Park, [53] where Pinter began writing *Betrayal*. [46] He reworked it later, while on holiday at the Grand Hotel, in Eastbourne, in early January 1978. [54] After the Frasers' divorce had become final in 1977 and the Pinters' in 1980, Pinter married Fraser on 27 November 1980. [55] Because of a two-week delay in Merchant's signing the divorce papers, however, the reception had to precede the actual ceremony, originally scheduled to occur on his 50th birthday. [56] Vivien Merchant died of acute alcoholism in the first week of October 1982, at the age of 53. [57] [58] Billington writes that Pinter "did everything possible to support" her and regretted that he ultimately became estranged from their son, Daniel, after their separation, Pinter's remarriage, and Merchant's death. [59]

A reclusive gifted musician and writer, Daniel changed his surname from Pinter to Brand, the maiden name of his maternal grandmother, [60] before Pinter and Fraser became romantically involved; while according to Fraser, his father couldn't understand it, she says that she could: "Pinter is such a distinctive name that he must have got tired of being asked, 'Any relation?'" [61] Michael Billington wrote that Pinter saw Daniel's name change as "a largely pragmatic move on Daniel's part designed to keep the press ... at bay." [62] Fraser told Billington that Daniel "was very nice to me at a time when it would have been only too easy for him to have turned on me ... simply because he had been the sole focus of his father's love and now manifestly wasn't." [62] Still unreconciled at the time of his father's death, Daniel Brand did not attend Pinter's funeral. [63]

Billington observes that "The break-up with Vivien and the new life with Antonia was to have a profound effect on Pinter's personality and his work," though he adds that Fraser herself did not claim to have influence over Pinter or his writing. [60] In her own contemporaneous diary entry dated 15 January 1993, Fraser described herself more as Pinter's literary midwife. [64] Indeed, she told Billington that "other people [such as Peggy Ashcroft, among others]

had a shaping influence on [Pinter's] politics" and attributed changes in his writing and political views to a change from "an unhappy, complicated personal life ... to a happy, uncomplicated personal life", so that "a side of Harold which had always been there was somehow released. I think you can see that in his work after *No Man's Land* [1975], which was a very bleak play." [60]

Pinter was content in his second marriage and enjoyed family life with his six adult stepchildren and 17 step-grandchildren. [65] Even after battling cancer for several years, he considered himself "a very lucky man in every respect". [66] Sarah Lyall notes in her 2007 interview with Pinter in *The New York Times* that his "latest work, a slim pamphlet called *Six Poems for A.*," comprises poems written over 32 years, with "A" of course being Lady Antonia. The first of the poems was written in Paris, where she and Mr. Pinter traveled soon after they met. More than three decades later the two are rarely apart, and Mr. Pinter turns soft, even cozy, when he talks about his wife." [21] In that interview Pinter "acknowledged that his playsâ ~full of infidelity, cruelty, inhumanity, the lotâ ~seem at odds with his domestic contentment. 'How can you write a happy play?' he said. 'Drama is about conflict and degrees of perturbation, disarray. I've never been able to write a happy play, but I've been able to enjoy a happy life.'" [21] After his death, Fraser told *The Guardian*: "He was a great man, and it was a privilege to live with him for over 33 years. He will never be forgotten." [67] [68]

#### Civic activities and political activism

In 1948â ^49, when he was 18, Pinter opposed the politics of the Cold War, leading to his decision to become a conscientious objector and to refuse to comply with National Service in the British military. But he was not a pacifist. He told interviewers that, if he had been old enough at the time, he would have fought against the Nazis in World War II. [69] He seemed to express ambivalence, both indifference and hostility, towards political structures and politicians in his Fall 1966 *Paris Review* interview conducted by Lawrence M. Bensky. [70] Yet, he had been an early member of the Campaign for Nuclear Disarmament and also had supported the British Anti-Apartheid Movement (1959â ^1994), participating in British artists' refusal to permit professional productions of their work in South Africa in 1963 and in subsequent related campaigns. [71] [72] [73] In "A Play and Its Politics", a 1985 interview with Nicholas Hern, Pinter described his earlier plays retrospectively from the perspective of the politics of power and the dynamics of oppression. [74]

In his last 25 years, Pinter increasingly focused his essays, interviews and public appearances directly on political issues. He was an officer in International PEN, travelling with American playwright Arthur Miller to Turkey in 1985 on a mission co-sponsored with a Helsinki Watch committee to investigate and protest against the torture of imprisoned writers. There he met victims of political oppression and their families. Pinter's experiences in Turkey and his knowledge of the Turkish suppression of the Kurdish language inspired his 1988 play *Mountain Language*. [75] He was also an active member of the Cuba Solidarity Campaign, an organisation that "campaigns in the UK against the US blockade of Cuba". [76] In 2001 Pinter joined the International Committee to Defend Slobodan MiloÅ;eviÄ (ICDSM), which appealed for a fair trial and for the freedom of Slobodan MiloÅ;eviÄ , signing a related "Artists' Appeal for MiloÅ;eviÄ " in 2004. [77]

Pinter strongly opposed the 1991 Gulf War, the 1999 NATO bombing campaign in Yugoslavia during the Kosovo War, the United States' 2001 War in Afghanistan, and the 2003 Invasion of Iraq. Among his provocative political statements, Pinter called Prime Minister Tony Blair a "deluded idiot" and compared the administration of President George W. Bush to Nazi Germany. [77] [78] He stated that the United States "was charging towards world domination while the American public and Britain's 'mass-murdering' prime minister sat back and watched." [78] He was very active in the antiwar movement in the United Kingdom, speaking at rallies held by the Stop the War Coalition [79] and frequently criticising American aggression, as when he asked rhetorically, in his acceptance speech for the Wilfred Owen Award for Poetry on 18 March 2007: "What

would Wilfred Owen make of the invasion of Iraq? A bandit act, an act of blatant state terrorism, demonstrating absolute contempt for the conception of international law." [80][81][82]

Pinter's blunt political statements, and the award of the Nobel Prize in Literature, elicited strong criticism and even, at times, provoked ridicule and personal attacks. [83] The historian Geoffrey Alderman, author of the official history of Hackney Downs School, expressed his own "Jewish View" of Harold Pinter: "Whatever his merit as a writer, actor and director, on an ethical plane Harold Pinter seems to me to have been intensely flawed, and his moral compass deeply fractured." [84] David Edgar, writing in *The Guardian*, defended Pinter against what he termed Pinter's "being berated by the belligerenti" like Johann Hari, who felt that he did not "deserve" to win the Nobel Prize. [85][86] Later Pinter continued to campaign against the Iraq War and on behalf of other political causes that he supported. As Alderman points out, for example, Pinter signed the mission statement of Jews for Justice for Palestinians in 2005 and its full-page advertisement, "What Is Israel Doing? A Call by Jews in Britain", published in *The Times* on 6 July 2006, [84] and he was a patron of the Palestine Festival of Literature.

#### Career

##### As actor

Pinter's acting career spanned over 50 years and, although he often played villains, included a wide range of roles on stage and in radio, film, and television. [33][87] In addition to roles in radio and television adaptations of his own plays and dramatic sketches, early in his screenwriting career he made several cameo appearances in films based on his own screenplays; for example, as a society man in *The Servant* (1963) and as Mr. Bell in *Accident* (1967), both directed by Joseph Losey; and as a bookshop customer in his later film *Turtle Diary* (1985), starring Michael Gambon, Glenda Jackson, and Ben Kingsley. [33]

Pinter's notable film and television roles included the corrupt lawyer Saul Abrahams, opposite Peter O'Toole, in BBC TV's *Rogue Male* (1976), a remake of the 1941 film noir *Man Hunt*, released on DVD in 2002; and a drunk Irish journalist in *Langrishe, Go Down* (starring Judi Dench and Jeremy Irons) distributed on BBC Two in 1978 [87] and released in movie theatres in 2002. [88] Pinter's later film roles included the criminal Sam Ross in *Mojo* (1997), written and directed by Jez Butterworth, based on Butterworth's play of the same name; Sir Thomas Bertram (his most substantial feature-film role) in *Mansfield Park* (1998), a character that Pinter described as "a very civilised man ... a man of great sensibility but in fact, he's upholding and sustaining a totally brutal system [the slave trade] from which he derives his money"; and Uncle Benny, opposite Pierce Brosnan and Geoffrey Rush, in *The Tailor of Panama* (2001). [33] In television films, he played Mr. Bearing, the father of ovarian cancer patient Vivian Bearing, played by Emma Thompson in Mike Nichols's HBO film of the Pulitzer Prize-winning play *Wit* (2001); and the Director opposite John Gielgud (Gielgud's last role) and Rebecca Pidgeon in *Catastrophe*, by Samuel Beckett, directed by David Mamet as part of *Beckett On Film* (2001). [33][87]

##### As director

Pinter began to direct more frequently during the 1970s, becoming an associate director of the National Theatre (NT) in 1973. [89] He directed almost 50 productions of his own and others' plays for stage, film, and television, including 10 productions of works by Simon Gray: the stage and/or film premi res of *Butley* (stage, 1971; film, 1974), *Otherwise Engaged* (1975), *The Rear Column* (stage, 1978; TV, 1980), *Close of Play* (NT, 1979), *Quartermaine's Terms* (1981), *Life Support* (1997), *The Late Middle Classes* (1999), and *The Old Masters* (2004). [41] Several of those productions starred Alan Bates (1934  2003), who originated the stage and screen roles of not only Butley but also Mick in Pinter's first major commercial success, *The Caretaker* (stage, 1960; film, 1964); and in Pinter's double-bill produced at the Lyric Hammersmith in 1984, he played Nicolas in *One for the Road* and the cab driver in *Victoria Station*. [90] Among over 35 plays that Pinter directed were *Next of*

Kin (1974), by John Hopkins; Blithe Spirit (1976) by Noël Coward; The Innocents (1976) by William Archibald; Circe and Bravo (1986), by Donald Freed; Taking Sides (1995), by Ronald Harwood; and Twelve Angry Men (1996), by Reginald Rose.[89][91]

As playwright

Pinter was the author of 29 plays and 15 dramatic sketches and the co-author of two works for stage and radio.[92] He was considered to have been one of the most influential modern British dramatists,[93][94] Along with the 1967 Tony Award for Best Play for *The Homecoming* and several other American awards and award nominations, he and his plays received many awards in the UK and elsewhere throughout the world.[95] His style has entered the English language as an adjective, "Pinteresque", although Pinter himself disliked the term and found it meaningless.[96]

"Comedies of menace" (1957âˆ’1968)

*The Room* and *The Birthday Party* (1957)

Pinter's first play, *The Room*, written and first performed in 1957, was a student production at the University of Bristol, directed by his good friend, actor Henry Woolf, who also originated the role of Mr. Kidd (which he reprised in 2001 and 2007).[92] After Pinter mentioned that he had an idea for a play, Woolf asked him to write it so that he could direct it to fulfill a requirement for his postgraduate work. Pinter wrote it in three days.[97] The production was described by Billington as "a staggeringly confident debut which attracted the attention of a young producer, Michael Codron, who decided to present Pinter's next play, *The Birthday Party*, at the Lyric Hammersmith, in 1958." [98]

Written in 1957 and produced in 1958, Pinter's second play, *The Birthday Party*, one of his best-known works, was initially both a commercial and critical disaster, despite an enthusiastic review in *The Sunday Times* by its influential drama critic Harold Hobson,[99] which appeared only after the production had closed and could not be reprieved.[98][100] Critical accounts often quote Hobson:

I am well aware that Mr Pinter['s] play received extremely bad notices last Tuesday morning. At the moment I write these [words] it is uncertain even whether the play will still be in the bill by the time they appear, though it is probable it will soon be seen elsewhere. Deliberately, I am willing to risk whatever reputation I have as a judge of plays by saying that *The Birthday Party* is not a Fourth, not even a Second, but a First [as in Class Honours]; and that Pinter, on the evidence of his work, possesses the most original, disturbing and arresting talent in theatrical Londonâˆ’ ... Mr Pinter and *The Birthday Party*, despite their experiences last week, will be heard of again. Make a note of their names.

Pinter himself and later critics generally credited Hobson as bolstering him and perhaps even rescuing his career.[101]

In a review published in 1958, borrowing from the subtitle of *The Lunatic View: A Comedy of Menace*, a play by David Campton, critic Irving Wardle called Pinter's early plays "comedy of menace"âˆ’ a label that people have applied repeatedly to his work.[102] Such plays begin with an apparently innocent situation that becomes both threatening and "absurd" as Pinter's characters behave in ways often perceived as inexplicable by his audiences and one another. Pinter acknowledges the influence of Samuel Beckett, particularly on his early work; they became friends, sending each other drafts of their works in progress for comments.[96][103]

*The Hothouse* (1958/1980), *The Dumb Waiter* (1959), *The Caretaker* (1959), and other early plays

Pinter wrote *The Hothouse* in 1958, which he shelved for over 20 years (See "Overtly political plays and sketches" below). Next he wrote *The Dumb Waiter* (1959), which premiÃ¬red in Germany and was then produced in a double bill with *The Room* at the Hampstead Theatre Club, in London, in 1960.[92] It was then not produced often until the 1980s, and it has been revived more frequently since 2000, including the West End Trafalgar Studios production in 2007. The first



production of *The Caretaker*, at the Arts Theatre Club, in London, in 1960, established Pinter's theatrical reputation.[104] The play transferred to the Duchess Theatre in May 1960 and ran for 444 performances,[105] receiving an Evening Standard Award for best play of 1960.[106] Large radio and television audiences for his one-act play *A Night Out*, along with the popularity of his revue sketches, propelled him to further critical attention.[107] In 1964, *The Birthday Party* was revived both on television (with Pinter himself in the role of Goldberg) and on stage (directed by Pinter at the Aldwych Theatre) and was well received.[108]

By the time Peter Hall's London production of *The Homecoming* (1964) reached Broadway in 1967, Pinter had become a celebrity playwright, and the play garnered four Tony Awards, among other awards.[109] During this period, Pinter also wrote the radio play *A Slight Ache*, first broadcast on the BBC Third Programme in 1959 and then adapted to the stage and performed at the Arts Theatre Club in 1961. *A Night Out* (1960) was broadcast to a large audience on Associated British Corporation's television show *Armchair Theatre*, after being transmitted on BBC Radio 3, also in 1960. His play *Night School* was first televised in 1960 on Associated Rediffusion. The Collection premi red at the Aldwych Theatre in 1962, and *The Dwarfs*, adapted from Pinter's then unpublished novel of the same title, was first broadcast on radio in 1960, then adapted for the stage (also at the Arts Theatre Club) in a double bill with *The Lover*, which was then televised on Associated Rediffusion in 1963; and *Tea Party*, a play that Pinter developed from his 1963 short story, first broadcast on BBC TV in 1965.[92]

Working as both a screenwriter and as a playwright, Pinter composed a script called *The Compartment* (1966), for a trilogy of films to be contributed by Samuel Beckett, Eugene Ionesco, and Pinter, of which only Beckett's film, entitled *Film*, was actually produced. Then Pinter turned his unfilmed script into a television play, which was produced as *The Basement*, both on BBC 2 and also on stage in 1968.[110]

"Memory plays" (1968  1982)

From the late 1960s through the early 1980s, Pinter wrote a series of plays and sketches that explore complex ambiguities, elegiac mysteries, comic vagaries, and other "quicksand-like" characteristics of memory and which critics sometimes classify as Pinter's "memory plays".[111] These include *Landscape* (1968), *Silence* (1969), *Night* (1969), *Old Times* (1971), *No Man's Land* (1975), *The Proust Screenplay* (1977), *Betrayal* (1978), *Family Voices* (1981), *Victoria Station* (1982), and *A Kind of Alaska* (1982). Some of Pinter's later plays, including *Party Time* (1991), *Moonlight* (1993), *Ashes to Ashes* (1996), and *Celebration* (2000) draw upon some features of his "memory" dramaturgy in their focus on the past in the present, but they have personal and political resonances and other tonal differences from these earlier memory plays.[111][112]

Overtly political plays and sketches (1980  2000)

Following a three-year period of creative drought in the early 1980s after his marriage to Antonia Fraser and the death of Vivien Merchant,[113] Pinter's plays tended to become shorter and more overtly political, serving as critiques of oppression, torture, and other abuses of human rights,[114] linked by the apparent "invulnerability of power." [115] Just before this hiatus, in 1979, Pinter re-discovered his manuscript of *The Hothouse*, which he had written in 1958 but had set aside; he revised it and then directed its first production himself at Hampstead Theatre in London, in 1980.[116] Like his plays of the 1980s, *The Hothouse* concerns authoritarianism and the abuses of power politics, but it is also a comedy, like his earlier comedies of menace. Pinter played the major role of Roote in a 1995 revival at the Minerva Theatre, Chichester.[117]

Pinter's brief dramatic sketch *Precisely* (1983) is a duologue between two bureaucrats exploring the absurd power politics of mutual nuclear annihilation and deterrence. His first overtly political one-act play is *One for the Road* (1984). In 1985 Pinter stated that whereas his earlier plays presented metaphors for power and powerlessness, the later ones present literal realities

of power and its abuse.[118] Pinter's "political theater dramatizes the interplay and conflict of the opposing poles of involvement and disengagement." [119] *Mountain Language* (1988) is about the Turkish suppression of the Kurdish language.[75] The dramatic sketch *The New World Order* (1991) provides what Robert Cushman, writing in *The Independent* described as "10 nerve wracking minutes" of two men threatening to torture a third man who is blindfolded, gagged and bound in a chair; Pinter directed the British premiere at the Royal Court Theatre Upstairs, where it opened on 9 July 1991, and the production then transferred to Washington, D.C., where it was revived in 1994.[120] Pinter's longer political satire *Party Time* (1991) premiered at the Almeida Theatre in London, in a double-bill with *Mountain Language*. Pinter adapted it as a screenplay for television in 1992, directing that production, first broadcast in the UK on Channel 4 on 17 November 1992.[121]

Intertwining political and personal concerns, his next full-length plays, *Moonlight* (1993) and *Ashes to Ashes* (1996) are set in domestic households and focus on dying and death; in their personal conversations in *Ashes to Ashes*, Devlin and Rebecca allude to unspecified atrocities relating to the Holocaust.[122] After experiencing the deaths of first his mother (1992) and then his father (1997), again merging the personal and the political, Pinter wrote the poems "Death" (1997) and "The Disappeared" (1998).

Pinter's last stage play, *Celebration* (2000), is a social satire set in an opulent restaurant, which lampoons *The Ivy*, a fashionable venue in London's West End theatre district, and its patrons who "have just come from performances of either the ballet or the opera. Not that they can remember a darn thing about what they saw, including the titles. [These] gilded, foul-mouthed souls are just as myopic when it comes to their own table mates (and for that matter, their food), with conversations that usually connect only on the surface, if there." [123] On its surface the play may appear to have fewer overtly political resonances than some of the plays from the 1980s and 1990s; but its central male characters, brothers named Lambert and Matt, are members of the elite (like the men in charge in *Party Time*), who describe themselves as "peaceful strategy consultants [because] we don't carry guns." [124] At the next table, Russell, a banker, describes himself as a "totally disordered personality ... a psychopath," [125] while Lambert "vows to be reincarnated as '[a] more civilised, [a] gentler person, [a] nicer person'." [126] [127] These characters' deceptively smooth exteriors mask their extreme viciousness. *Celebration* evokes familiar Pinteresque political contexts: "The ritzy loudmouths in 'Celebration' ... and the quieter working-class mumblers of 'The Room' ... have everything in common beneath the surface." [123] "Money remains in the service of entrenched power, and the brothers in the play are 'strategy consultants' whose jobs involve force and violence ... It is tempting but inaccurate to equate the comic power inversions of the social behavior in *Celebration* with lasting change in larger political structures", according to Grimes, for whom the play indicates Pinter's pessimism about the possibility of changing the status quo.[128] Yet, as the Waiter's often comically unbelievable reminiscences about his grandfather demonstrate in *Celebration*, Pinter's final stage plays also extend some expressionistic aspects of his earlier "memory plays", while harking back to his "comedies of menace", as illustrated in the characters and in the Waiter's final speech:

My grandfather introduced me to the mystery of life and I'm still in the middle of it. I can't find the door to get out. My grandfather got out of it. He got right out of it. He left it behind him and he didn't look back. He got that absolutely right. And I'd like to make one further interjection. He stands still. Slow fade.[129]

During 2000-2001, there were also simultaneous productions of *Remembrance of Things Past*, Pinter's stage adaptation of his unpublished Proust Screenplay, written in collaboration with and directed by Di Trevis, at the Royal National

Theatre, and a revival of *The Caretaker* directed by Patrick Marber and starring Michael Gambon, Rupert Graves, and Douglas Hodge, at the Comedy Theatre.[92]

Like *Celebration*, Pinter's penultimate sketch, *Press Conference* (2002), "invokes both torture and the fragile, circumscribed existence of dissent".[130] In its premi re in the National Theatre's two-part production of *Sketches*, despite undergoing chemotherapy at the time, Pinter played the ruthless Minister willing to murder little children for the benefit of "The State".[131]

As screenwriter

Pinter composed 27 screenplays and film scripts for cinema and television, many of which were filmed, or adapted as stage plays.[132] His fame as a screenwriter began with his three screenplays written for films directed by Joseph Losey, leading to their close friendship: *The Servant* (1963), based on the novel by Robin Maugham; *Accident* (1967), adapted from the novel by Nicholas Mosley; and *The Go-Between* (1970), based on the novel by L. P. Hartley.[133] Films based on Pinter's adaptations of his own stage plays are: *The Caretaker* (1963), directed by Clive Donner; *The Birthday Party* (1968), directed by William Friedkin; *The Homecoming* (1973), directed by Peter Hall; and *Betrayal* (1983), directed by David Jones.

Pinter also adapted other writers' novels to screenplays, including *The Pumpkin Eater* (1964), based on the novel by Penelope Mortimer, directed by Jack Clayton; *The Quiller Memorandum* (1966), from the 1965 spy novel *The Berlin Memorandum*, by Elleston Trevor, directed by Michael Anderson; *The Last Tycoon* (1976), from the unfinished novel by F. Scott Fitzgerald, directed by Elia Kazan; *The French Lieutenant's Woman* (1981), from the novel by John Fowles, directed by Karel Reisz; *Turtle Diary* (1985), based on the novel by Russell Hoban; *The Heat of the Day* (1988), a television film, from the 1949 novel by Elizabeth Bowen; *The Comfort of Strangers* (1990), from the novel by Ian McEwan, directed by Paul Schrader; and *The Trial* (1993), from the novel by Franz Kafka, directed by David Jones.[134]

His commissioned screenplays of others' works for the films *The Handmaid's Tale* (1990), *The Remains of the Day* (1990), and *Lolita* (1997), remain unpublished and in the case of the latter two films, uncredited, though several scenes from or aspects of his scripts were used in these finished films.[135] His screenplays *The Proust Screenplay* (1972), *Victory* (1982), and *The Dreaming Child* (1997) and his unpublished screenplay *The Tragedy of King Lear* (2000) have not been filmed.[136] A section of Pinter's *Proust Screenplay* was, however, released as the 1984 film *Swann in Love* (*Un amour de Swann*), directed by Volker Schl ndorff, and it was also adapted by Michael Bakewell as a two-hour radio drama broadcast on BBC Radio 3 in 1995,[137] before Pinter and director Di Trevis collaborated to adapt it for the 2000 National Theatre production.[138]

Pinter's last filmed screenplay was an adaptation of the 1970 Tony Award-winning play *Sleuth*, by Anthony Shaffer, which was commissioned by Jude Law, one of the film's producers.[21] It is the basis for the 2007 film *Sleuth*, directed by Kenneth Branagh.[21][139][140] Pinter's screenplays for *The French Lieutenant's Woman* and *Betrayal* were nominated for Academy Awards in 1981 and 1983, respectively.[141]

2001  2008

From 16 to 31 July 2001, a Harold Pinter Festival celebrating his work, curated by Michael Colgan, artistic director of the Gate Theatre, Dublin, was held as part of the annual Lincoln Center Festival at Lincoln Center in New York City. Pinter participated both as an actor, as Nicolas in *One for the Road*, and as a director of a double bill pairing his last play, *Celebration*, with his first play, *The Room*. [142] As part of a two-week "Harold Pinter Homage" at the World Leaders Festival of Creative Genius, held from 24 September to 30 October 2001, at the Harbourfront Centre, in Toronto, Canada, Pinter presented a dramatic reading of *Celebration* (2000) and also participated in a public interview as part of the International Festival of Authors.[143][144][145]

In December 2001, Pinter was diagnosed with oesophageal cancer, for which, in 2002, he underwent an operation and chemotherapy.[146] During the course of his treatment, he directed a production of his play *No Man's Land*, and wrote and performed in a new sketch, "Press Conference", for a production of his dramatic sketches at the National Theatre, and from 2002 on he was increasingly active in political causes, writing and presenting politically charged poetry, essays, speeches, as well as involved in developing his final two screenplay adaptations, *The Tragedy of King Lear* and *Sleuth*, whose drafts are in the British Library's Harold Pinter Archive (Add MS 88880/2).[147]

From 9 to 25 January 2003, the Manitoba Theatre Centre, in Manitoba, Canada, held a nearly month-long PinterFest, in which over a 130 performances of twelve of Pinter's plays were performed by a dozen different theatre companies.[148] Productions during the Festival included: *The Hothouse*, *Night School*, *The Lover*, *The Dumb Waiter*, *The Homecoming*, *The Birthday Party*, *Monologue*, *One for the Road*, *The Caretaker*, *Ashes to Ashes*, *Celebration*, and *No Man's Land*. [149]

In 2005, Pinter stated that he had stopped writing plays and that he would be devoting his efforts more to his political activism and writing poetry: "I think I've written 29 plays. I think it's enough for me. . . . My energies are going in different directions. . . . over the last few years I've made a number of political speeches at various locations and ceremonies. . . . I'm using a lot of energy more specifically about political states of affairs, which I think are very, very worrying as things stand." [150][151] Some of this later poetry included "The 'Special Relationship'", "Laughter", and "The Watcher".

From 2005, Pinter suffered ill health, including a rare skin disease called pemphigus [152] and "a form of septicaemia that afflict[ed] his feet and made it difficult for him to walk." [153] Yet, he completed his screenplay for the film of *Sleuth* in 2005. [21][154] His last dramatic work for radio, *Voices* (2005), a collaboration with composer James Clarke, adapting selected works by Pinter to music, premièred on BBC Radio 3 on his 75th birthday on 10 October 2005. [155] Three days later, it was announced that he had won the 2005 Nobel Prize in Literature. [156]

In an interview with Pinter in 2006, conducted by critic Michael Billington as part of the cultural programme of the 2006 Winter Olympics in Turin, Italy, Pinter confirmed that he would continue to write poetry but not plays. [152] In response, the audience shouted No in unison, urging him to keep writing. [157] Along with the international symposium on Pinter: *Passion, Poetry, Politics*, curated by Billington, the 2006 Europe Theatre Prize theatrical events celebrating Pinter included new productions (in French) of *Precisely* (1983), *One for the Road* (1984), *Mountain Language* (1988), *The New World Order* (1991), *Party Time* (1991), and *Press Conference* (2002) (French versions by Jean Pavans); and *Pinter Plays, Poetry & Prose*, an evening of dramatic readings, directed by Alan Stanford, of the Gate Theatre, Dublin. [158] In June 2006, the British Academy of Film and Television Arts (BAFTA) hosted a celebration of Pinter's films curated by his friend, the playwright David Hare. Hare introduced the selection of film clips by saying: "To jump back into the world of Pinter's movies . . . is to remind yourself of a literate mainstream cinema, focused as much as Bergman's is on the human face, in which tension is maintained by a carefully crafted mix of image and dialogue." [159]

After returning to London from the Edinburgh International Book Festival, in September 2006, Pinter began rehearsing for his performance of the role of Krapp in Samuel Beckett's one-act monologue *Krapp's Last Tape*, which he performed from a motorised wheelchair in a limited run the following month at the Royal Court Theatre to sold-out audiences and "ecstatic" critical reviews. [160] The production ran for only nine performances, as part of the 50th-anniversary celebration season of the Royal Court Theatre; it sold out within minutes of the opening of the box office and tickets commanded large sums from ticket resellers. [161] One performance was filmed and broadcast on BBC Four on 21 June 2007, and also screened later, as part of the memorial PEN Tribute to Pinter, in New York, on 2 May 2009. [162]

In October and November 2006, Sheffield Theatres hosted *Pinter: A Celebration*.

It featured productions of seven of Pinter's plays: *The Caretaker*, *Voices*, *No Man's Land*, *Family Voices*, *Tea Party*, *The Room*, *One for the Road*, and *The Dumb Waiter*; and films (most his screenplays; some in which Pinter appears as an actor).[163]

In February and March 2007, a 50th anniversary of *The Dumb Waiter*, was produced at the Trafalgar Studios. Later in February 2007, John Crowley's film version of Pinter's play *Celebration* (2000) was shown on More4 (Channel 4, UK). On 18 March 2007, BBC Radio 3 broadcast a new radio production of *The Homecoming*, directed by Thea Sharrock and produced by Martin J. Smith, with Pinter performing the role of Max (for the first time; he had previously played Lenny on stage in 1964). A revival of *The Hothouse* opened at the National Theatre, in London, in July 2007, concurrently with a revival of *Betrayal* at the Donmar Warehouse, directed by Roger Michell.[164]

Revivals in 2008 included the 40th-anniversary production of the American premi re of *The Homecoming* on Broadway, directed by Daniel J. Sullivan.[165] From 8 to 24 May 2008, the Lyric Hammersmith celebrated the 50th anniversary of *The Birthday Party* with a revival and related events, including a gala performance and reception hosted by Harold Pinter on 19 May 2008, exactly 50 years after its London premi re there.

The final revival during Pinter's lifetime was a production of *No Man's Land*, directed by Rupert Goold, opening at the Gate Theatre, Dublin, in August 2008, and then transferring to the Duke of York's Theatre, London, where it played until 3 January 2009.[166] On the Monday before Christmas 2008, Pinter was admitted to Hammersmith Hospital, where he died on Christmas Eve from liver cancer.[167] On 26 December 2008, when *No Man's Land* reopened at the Duke of York's, the actors paid tribute to Pinter from the stage, with Michael Gambon reading Hirst's monologue about his "photograph album" from Act Two that Pinter had asked him to read at his funeral, ending with a standing ovation from the audience, many of whom were in tears:

I might even show you my photograph album. You might even see a face in it which might remind you of your own, of what you once were. You might see faces of others, in shadow, or cheeks of others, turning, or jaws, or backs of necks, or eyes, dark under hats, which might remind you of others, whom once you knew, whom you thought long dead, but from whom you will still receive a sidelong glance, if you can face the good ghost. Allow the love of the good ghost. They possess all that emotion ... trapped. Bow to it. It will assuredly never release them, but who knows ... what relief ... it may give them ... who knows how they may quicken ... in their chains, in their glass jars. You think it cruel ... to quicken them, when they are fixed, imprisoned? No ... no. Deeply, deeply, they wish to respond to your touch, to your look, and when you smile, their joy ... is unbounded. And so I say to you, tender the dead, as you would yourself be tendered, now, in what you would describe as your life.[167][168][169]

#### Posthumous events

##### Funeral

Pinter's funeral was a private, half-hour secular ceremony conducted at the graveside at Kensal Green Cemetery, 31 December 2008. The eight readings selected in advance by Pinter included passages from seven of his own writings and from the story "The Dead", by James Joyce, which was read by actress Penelope Wilton. Michael Gambon read the "photo album" speech from *No Man's Land* and three other readings, including Pinter's poem "Death" (1997). Other readings honoured Pinter's widow and his love of cricket.[167] The ceremony was attended by many notable theatre people, including Tom Stoppard, but not by Pinter's son, Daniel Brand. At its end, Pinter's widow, Antonia Fraser, stepped forward to his grave and quoted from Horatio's speech after the death of Hamlet: "Goodnight, sweet prince, / And flights of angels sing thee to thy rest." [63]

##### Memorial tributes

The night before Pinter's burial, theatre marquees on Broadway dimmed their lights for a minute in tribute,[170] and on the final night of No Man's Land at the Duke of York's Theatre on 3 January 2009, all of the Ambassador Theatre Group in the West End dimmed their lights for an hour to honour the playwright.[171]

Diane Abbott, the Member of Parliament for Hackney North & Stoke Newington proposed an early day motion in the House of Commons to support a residents' campaign to restore the Clapton Cinematograph Theatre, established in Lower Clapton Road in 1910, and to turn it into a memorial to Pinter "to honour this Hackney boy turned literary great." [172] On 2 May 2009, a free public memorial tribute was held at The Graduate Center of The City University of New York. It was part of the 5th Annual PEN World Voices Festival of International Literature, taking place in New York City.[173] Another memorial celebration, held in the Olivier Theatre, at the Royal National Theatre, in London, on the evening of 7 June 2009, consisted of excerpts and readings from Pinter's writings by nearly three dozen actors, many of whom were his friends and associates, including: Eileen Atkins, David Bradley, Colin Firth, Henry Goodman, Sheila Hancock, Alan Rickman, Penelope Wilton, Susan Wooldridge, and Henry Woolf; and a troupe of students from the London Academy of Music and Dramatic Art, directed by Ian Rickson.[174][175]

On 16 June 2009, Antonia Fraser officially opened a commemorative room at the Hackney Empire. The theatre also established a writer's residency in Pinter's name.[176] Most of issue number 28 of Craig Raine's Arts Tri-Quarterly AretÃ© was devoted to pieces remembering Pinter, beginning with Pinter's 1987 unpublished love poem dedicated "To Antonia" and his poem "Paris", written in 1975 (the year in which he and Fraser began living together), followed by brief memoirs by some of Pinter's associates and friends, including Patrick Marber, Nina Raine, Tom Stoppard, Peter Nichols, Susanna Gross, Richard Eyre, and David Hare.[177]

A memorial cricket match at Lord's Cricket Ground between the Gaieties Cricket Club and the Lord's Taverners, followed by performances of Pinter's poems and excerpts from his plays, took place on 27 September 2009.[178]

In 2009, English PEN established the PEN Pinter Prize, which is awarded annually to a British writer or a writer resident in Britain who, in the words of Pinter's Nobel speech, casts an "unflinching, unswerving" gaze upon the world, and shows a "fierce intellectual determination ... to define the real truth of our lives and our societies". The prize is shared with an international writer of courage. The inaugural winners of the prize were Tony Harrison and the Burmese poet and comedian Maung Thura (a.k.a. Zarganar).[179]

#### Being Harold Pinter

In January 2011 Being Harold Pinter, a theatrical collage of excerpts from Pinter's dramatic works, his Nobel Lecture, and letters of Belarusian prisoners, created and performed by the Belarus Free Theatre, evoked a great deal of attention in the public media. The Free Theatre's members had to be smuggled out of Minsk, owing to a government crackdown on dissident artists, to perform their production in a two-week sold-out engagement at La MaMa in New York as part of the 2011 Under the Radar Festival. In an additional sold-out benefit performance at the Public Theater, co-hosted by playwrights Tony Kushner and Tom Stoppard, the prisoner's letters were read by ten guest performers: Mandy Patinkin, Kevin Kline, Olympia Dukakis, Lily Rabe, Linda Emond, Josh Hamilton, Stephen Spinella, Lou Reed, Laurie Anderson, and Philip Seymour Hoffman.[180] In solidarity with the Belarus Free Theatre, collaborations of actors and theatre companies joined in offering additional benefit readings of Being Harold Pinter across the United States.[181]

#### The Harold Pinter Theatre, London

In September 2011, British Theatre owners, Ambassador Theatre Group (ATG) announced it was renaming its Comedy Theatre, Panton Street, London to become The Harold Pinter Theatre. Howard Panter, Joint CEO and Creative Director of ATG told the BBC, "The work of Pinter has become an integral part of the history of the Comedy Theatre. The re-naming of one of our most successful West

End theatres is a fitting tribute to a man who made such a mark on British theatre who, over his 50 year career, became recognised as one of the most influential modern British dramatists." [182]

#### Honours

An Honorary Associate of the National Secular Society, a Fellow of the Royal Society of Literature, and an Honorary Fellow of the Modern Language Association of America (1970),[183][184] Pinter was appointed CBE in 1966[185] and became a Companion of Honour in 2002, having declined a knighthood in 1996.[186] In 1995, he accepted the David Cohen Prize, in recognition of a lifetime of literary achievement. In 1996, he received a Laurence Olivier Special Award for lifetime achievement in the theatre.[187] In 1997 he became a BAFTA Fellow.[188] He received the World Leaders Award for "Creative Genius" as the subject of a week-long "Homage" in Toronto, in October 2001.[189] In 2004, he received the Wilfred Owen Award for Poetry for his "lifelong contribution to literature, 'and specifically for his collection of poetry entitled War, published in 2003'".[190] In March 2006, he was awarded the Europe Theatre Prize in recognition of lifetime achievements pertaining to drama and theatre.[191] In conjunction with that award, the critic Michael Billington coordinated an international conference on Pinter: Passion, Poetry, Politics, including scholars and critics from Europe and the Americas, held in Turin, Italy, from 10 to 14 March 2006.[111][158][192]

In October 2008, the Central School of Speech and Drama announced that Pinter had agreed to become its president and awarded him an honorary fellowship at its graduation ceremony.[193] On his appointment, Pinter commented: "I was a student at Central in 1950â ^51. I enjoyed my time there very much and I am delighted to become president of a remarkable institution." [194] But he had to receive that honorary degree, his 20th, in absentia owing to ill health.[193] His presidency of the school was brief; he died just two weeks after the graduation ceremony, on 24 December 2008.

#### Nobel Prize and Nobel Lecture

On 13 October 2005, the Swedish Academy announced that it had decided to award the Nobel Prize in Literature for that year to Pinter, who "in his plays uncovers the precipice under everyday prattle and forces entry into oppression's closed rooms".[195] Its selection instigated some public controversy and criticism relating both to characteristics of Pinter's work and to his politics.[83] When interviewed that day about his reaction to the announcement, Pinter said: "I was told today that one of the Sky channels said this morning that 'Harold Pinter is dead.' Then they changed their mind and said, 'No, he's won the Nobel prize.' So I've risen from the dead." [196] The Nobel Prize Awards Ceremony and related events throughout Scandinavia took place in December 2005. After the Academy notified Pinter of his award, he had planned to travel to Stockholm to present his Nobel Lecture in person.[197] In November, however, his doctor sent him to hospital and barred such travel, after a serious infection was diagnosed. Pinter's publisher, Stephen Page of Faber and Faber, accepted the Nobel Diploma and Nobel Medal at the Awards Ceremony in his place.[21][198]

Although still being treated in hospital, Pinter videotaped his Nobel Lecture, "Art, Truth and Politics", at a Channel 4 studio. It was projected on three large screens at the Swedish Academy on the evening of 7 December 2005,[21][199] and transmitted on More 4 that same evening in the UK.[200] The 46-minute lecture was introduced on television by David Hare. Later, the text and streaming video formats (without Hare's introduction) were posted on the Nobel Prize and Swedish Academy official websites. It has since been released as a DVD.[201]

Pinter quoted Father John Metcalf speaking to Raymond Seitz, then Minister at the US Embassy in London, "My parishioners built a school, a health centre, a cultural centre. We have lived in peace. A few months ago a Contra force attacked the parish. They destroyed everything: the school, the health centre, the cultural centre. They raped nurses and teachers, slaughtered doctors, in the most brutal manner. They behaved like savages. Please demand that the US

government withdraw its support from this shocking terrorist activity." Seitz responded, "Let me tell you something. In war, innocent people always suffer." Pinter called the US invasion of Iraq "an arbitrary military action inspired by a series of lies upon lies and gross manipulation of the media and therefore of the public", and condemned the British government for its cooperation.[202]

Pinter's lecture has been widely distributed by print and online media and has provoked much commentary and debate,[203] with some commentators accusing Pinter of "anti-Americanism".[204] In his Nobel Lecture, however, Pinter emphasises that he criticises policies and practices of American administrations (and those who voted for them), not all American citizens, many of whom he recognises as "demonstrably sickened, shamed and angered by their government's actions".[202]

#### L'Ã©gion d'honneur

On 18 January 2007, French Prime Minister Dominique de Villepin presented Pinter with France's highest civil honour, the L'Ã©gion d'honneur, at a ceremony at the French Embassy in London. De Villepin praised Pinter's poem "American Football" (1991) stating: "With its violence and its cruelty, it is for me one of the most accurate images of war, one of the most telling metaphors of the temptation of imperialism and violence." In response, Pinter praised France's opposition to the war in Iraq. M. de Villepin concluded: "The poet stands still and observes what doesn't deserve other men's attention. Poetry teaches us how to live and you, Harold Pinter, teach us how to live." He said that Pinter received the award particularly "because in seeking to capture all the facets of the human spirit, [Pinter's] works respond to the aspirations of the French public, and its taste for an understanding of man and of what is truly universal".[205][206] Lawrence Pollard observed that "the award for the great playwright underlines how much Mr Pinter is admired in countries like France as a model of the uncompromising radical intellectual".[205]

#### Scholarly response

Some scholars and critics challenge the validity of Pinter's critiques of what he terms "the modes of thinking of those in power"[207] or dissent from his retrospective viewpoints on his own work.[208] In 1985, Pinter recalled that his early act of conscientious objection resulted from being "terribly disturbed as a young man by the Cold War. And McCarthyism... A profound hypocrisy. 'They' the monsters, 'we' the good. In 1948, the Russian suppression of Eastern Europe was an obvious and brutal fact, but I felt very strongly then and feel as strongly now that we have an obligation to subject our own actions and attitudes to an equivalent critical and moral scrutiny." [209] Scholars agree that Pinter's dramatic rendering of power relations results from this scrutiny.[210]

Pinter's aversion to any censorship by "the authorities" is epitomised in Petey's line at the end of *The Birthday Party*. As the broken-down and reconstituted Stanley is being carted off by the figures of authority Goldberg and McCann, Petey calls after him, "Stan, don't let them tell you what to do!" Pinter told Gussow in 1988, "I've lived that line all my damn life. Never more than now." [211] The example of Pinter's stalwart opposition to what he termed "the modes of thinking of those in power"âthe "brick wall" of the "minds" perpetuating the "status quo"[212]âinfused the "vast political pessimism" that some academic critics may perceive in his artistic work,[213] its "drowning landscape" of harsh contemporary realities, with some residual "hope for restoring the dignity of man." [214]

As Pinter's long-time friend David Jones reminded analytically inclined scholars and dramatic critics, Pinter was one of the "great comic writers": [215]

The trap with Harold's work, for performers and audiences, is to approach it too earnestly or portentously. I have always tried to interpret his plays with as much humor and humanity as possible. There is always mischief lurking in the darkest corners. The world of *The Caretaker* is a bleak one, its characters damaged and lonely. But they are all going to survive. And in their dance to



that end they show a frenetic vitality and a wry sense of the ridiculous that balance heartache and laughter. Funny, but not too funny. As Pinter wrote, back in 1960: "As far as I am concerned *The Caretaker* IS funny, up to a point. Beyond that point, it ceases to be funny, and it is because of that point that I wrote it." [216]

His dramatic conflicts present serious implications for his characters and his audiences, leading to sustained inquiry about "the point" of his work and multiple "critical strategies" for developing interpretations and stylistic analyses of it. [217]

Pinter research collections

Pinter's unpublished manuscripts and letters to and from him are held in the Harold Pinter Archive in the Modern Literary Manuscripts division of the British Library. Smaller collections of Pinter manuscripts are in the Harry Ransom Humanities Research Center, the University of Texas at Austin; [13] The Lilly Library, Indiana University at Bloomington; the Mandeville Special Collections Library, Geisel Library, at the University of California, San Diego; the British Film Institute, in London; and the Margaret Herrick Library, Pickford Center for Motion Picture Study, the Academy of Motion Picture Arts and Sciences, Beverly Hills, California. [218] [219]

See also

Notes

^ Harold Pinter, as quoted in Gussow, *Conversations with Pinter* 103.

^ a b Billington, *Harold Pinter* 1â ^5.

^ For some accounts of the significance of Pinter's Jewish background, see Billington, *Harold Pinter* 2, 40â ^41, 53â ^54, 79â ^81, 163â ^64, 177, 286, 390, 429.

^ a b c Cf. Woolf, Henry (12 July 2007). "My 60 Years in Harold's Gang". *The Guardian* (London: GMG). ISSNÂ 0261-3077. OCLCÂ 60623878. Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu6rYC0X>. Retrieved 26 June 2011.; Woolf, as quoted in Merritt, "Talking about Pinter" 144â ^45; Jacobson, Howard (10 January 2009). "Harold Pinter didn't get my joke, and I didn't get him â ^ until it was too late". *The Independent* (London: INM). ISSNÂ 0951-9467. OCLCÂ 185201487. Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu70UVpG>. Retrieved 26 June 2011.

^ a b Billington, *Harold Pinter* 2.

^ Billington, *Harold Pinter* 5â ^10.

^ Billington, *Harold Pinter* 11.

^ A collection of Pinter's correspondence with Brearley is held in the Harold Pinter Archive in the British Library. Pinter's memorial epistolary poem "Joseph Brearley 1909â ^1977 (Teacher of English)", published in his collection *Various Voices* (177), ends with the following stanza: "You're gone. I'm at your side,/Walking with you from Clapton Pond to Finsbury Park,/And on, and on."

^ Billington, *Harold Pinter* 10â ^11.

^ See also "Introduction by Harold Pinter, Nobel Laureate", 7â ^9 in Watkins, ed., *'Fortune's Fool': The Man Who Taught Harold Pinter: A Life of Joe Brearley*.

^ Billington, *Harold Pinter* 13â ^14.

^ Baker and Ross 127.

^ a b Staff (2011 [last update]). "Harold Pinter: An Inventory of His Collection at the Harry Ransom Humanities Research Center". Harry Ransom Humanities Research Center. University of Texas at Austin. Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu7AvO6f>. Retrieved 26 June 2011.

^ Billington, *Harold Pinter* 29â ^35.

^ Gussow, *Conversations with Pinter* 28â ^29.

^ Baker, "Growing Up," chap. 1 of *Harold Pinter* 2â ^23.

^ Billington, *Harold Pinter* 7â ^9 and 410.

^ Gussow, *Conversations with Pinter* 25.

^ Gussow, *Conversations with Pinter* 8.

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^ Billington, Harold Pinter 410.

^ Supple, T. Baker, and Watkins, in Watkins, ed.

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^ See, e.g., Gussow, *Conversations with Pinter* 25â ^30; Billington, *Harold Pinter* 7â ^16; and Merritt, *Pinter in Play* 194.

^ Billington, *Harold Pinter* 10â ^12.

^ Billington, *Harold Pinter* 20â ^25, 31â ^35; and Batty, *About Pinter* 7.

^ Billington, *Harold Pinter* 20â ^25.

^ Billington, *Harold Pinter* 37; and Batty, *About Pinter* 8.

^ Billington, *Harold Pinter* 31, 36, and 38; and Batty, *About Pinter* xiii and 8.

^ Pinter, "Mac", *Various Voices* 36â ^43.

^ a b c d e Batty, Mark, ed. "Acting". [haroldpinter.org](http://haroldpinter.org). Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu7zN2H6>. Retrieved 29 January 2011.

^ Billington, *Harold Pinter* 20â ^25, 31, 36, and 37â ^41.

^ Billington, *Harold Pinter* 3 and 47â ^48. Pinter's paternal grandmother's maiden name was Baron. He also used the name for an autobiographical character in the first draft of his novel *The Dwarfs*.

^ a b c Batty, Mark, ed. "The Harold Pinter Acting Career". [haroldpinter.org](http://haroldpinter.org). Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu83jkqV>. Retrieved 30 January 2011., Batty, Mark, ed. "Work in Various Repertory Companies 1954â ^1958". [haroldpinter.org](http://haroldpinter.org). Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu88k0a7>. Retrieved 30 January 2011.

^ Billington, *Harold Pinter* 49â ^55.

^ Batty, *About Pinter* 10.

^ Gussow, *Conversations with Pinter* 83.

^ Billington, *Harold Pinter* 20â ^25, 31, 36, 38.

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^ Billington, *Harold Pinter* 252â ^56.

^ Billington, *Harold Pinter* 257â ^67.

^ Fraser, *Must You Go?* 86.

^ a b Billington, *Harold Pinter* 257.

^ Fraser, *Chap. 1: "First Night"*, *Must You Go?* 3â ^19.

^ Fraser, *chap. 1: "First Night"*; *chap. 2: "Pleasure and a Good Deal of Pain"*; *chap. 8: "It Is Here"*; and *chap. 13: "Marriage â ~ Again"*, *Must You Go?* 3â ^33, 113â ^24, and 188â ^201.

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^ Fraser, *Must You Go?* 13.

^ Billington, *Harold Pinter* 253â ^55.

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^ Fraser, *Must You Go?* 29, 65â ^78, and 83.

^ Fraser, Must You Go? 85â ^88.  
 ^ Fraser, "27 November â ~ The Diary of Lady Antonia Pinter", Must You Go? 122â ^23.  
 ^ Billington, Harold Pinter 271â ^76.  
 ^ Billington, Harold Pinter 276.  
 ^ Staff (7 October 1982). "Death of Vivien Merchant Is Ascribed to Alcoholism". The New York Times (New York: NYTC). ISSNÂ 0362-4331. Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu8RM3uX>. Retrieved 26 June 2011.  
 ^ Billington, Harold Pinter 276 and 345â ^47.  
 ^ a b c Billington, Harold Pinter 255.  
 ^ Fraser, Must You Go? 44.  
 ^ a b Billington 254â ^55; cf. 345.  
 ^ a b Staff (1 January 2009). "Pinter ends it all with a double plot". Mail Online. Associated Newspapers Ltd. Archived from the original on 3 July 2011. <http://www.webcitation.org/5zu8VL8OS>. Retrieved 26 June 2011.  
 ^ Fraser, Must You Go? 211: "With all my timings [of Moonlight], Harold calls me his editor. Not so. I was the midwife saying, 'Push, Harold, push,' but the act of creation took place elsewhere and the baby would have been born anyway."  
 ^ See Billington, Harold Pinter 388, 429â ^30.  
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#### Further reading

#### External links

HaroldPinter.org â ^ The Official Website for the International Playwright

Harold Pinter (home and index page)

"Harold Pinter" at Granta (collection of useful links)

"Harold Pinter" at guardian.co.uk ("The best of the Guardian's coverage, including tributes, reviews and articles from the archive," periodically updated)

Harold Pinter at the Internet Broadway Database

Harold Pinter at the Internet Movie Database

"Harold Pinter" in "Times Topics" at nytimes.com (periodically updated collection of news articles, reviews, commentaries, photographs, and Web resources from The New York Times )

"Harold Pinter" on The Mark Shenton Show, TheatreVoice, recorded on 21 February 2007 (critics Michael Billington and Alastair Macaulay review Pinter's People and The Dumb Waiter; director and actor Harry Burton talks about his experiences with Pinter)

"Reputations: Harold Pinter" on TheatreVoice, recorded on 14 October 2005 (critical assessments by Michael Billington, Dan Rebellato, Charles Spencer and Ian Smith)

Working with Pinter, 2007 film by Harry Burton

"Harold Pinter â ^ Interview", British Library Online Gallery: What's On, British Library, 8 September 2008 (Pinter discusses his memories of postwar British theatre with Harry Burton)

Harold Pinter portrait by artist Joe Hill, joe-hill-art.com (offered at auction, with proceeds being donated to charity, on 27 September 2009)

International Harold Pinter Society (Allied Organization of the Modern Language

Association, co-publisher of The Pinter Review)  
Photos of Pinter's grave in Kensal Green Cemetery at Findagrave

#### Persondata

Name

Pinter, Harold

Alternative names

Short description

English playwright, screenwriter, poet, actor, director, author, political activist

Date of birth

1930-10-10

Place of birth

Hackney, London, England

Date of death

2008-12-24

Place of death

London, England

Warwick Castle (i/Ē wĒ´rĒk/ WORR-ik) is a medieval castle developed from an original built by William the Conqueror in 1068. Warwick is the county town of Warwickshire, England, situated on a bend of the River Avon. The original wooden motte-and-bailey castle was rebuilt in stone in the 12th century. During the Hundred Years War, the facade opposite the town was refortified, resulting in one of the most recognisable examples of 14th century military architecture. It was used as a stronghold until the early 17th century, when it was granted to Sir Fulke Greville by James I in 1604. Sir Fulke Greville converted it to a country house. It was owned by the Greville family, who became earls of Warwick in 1759, until 1978 when it was bought by the Tussauds Group.

[edit] Location

Warwick Castle is situated in the town of Warwick, on a sandstone bluff at a bend of the River Avon. The river, which runs below the castle on the east side, has eroded the rock the castle stands on, forming a cliff. The river and cliff form natural defences. When construction began in 1068, four houses belonging to the Abbot of Coventry were demolished to provide room. The castle's position made it strategically important in safeguarding the Midlands against rebellion.[1] During the 12th century, King Henry I was suspicious of Roger de Beaumont, 2ndÂ Earl of Warwick. To counter the earl's influence, Henry bestowed Geoffrey de Clinton with a position of power rivalling that of the earl.[2] The lands he was given included KenilworthÂ ^ a castle of comparable size, cost, and importance,[3] founded by Clinton[4]Â ^ which is about 8 kilometres (5Â mi) to the north. Warwick Castle is about 1.6 kilometres (1Â mi) from Warwick railway station and less than 3.2 kilometres (2.0Â mi) from junction 15 of the M40 motorway; it is also close to Birmingham International Airport.[5]

[edit] History

[edit] Antecedent

An Anglo-Saxon burh was established on the site in 914; with fortifications instigated by Ethelfleda, daughter of Alfred the Great. The burh she established was one of ten which defended Mercia against the marauding Danes. Its position allowed it to dominate the Fosse Way, as well as the river valley and the crossing over the River Avon. Though the motte to the south-west of the present castle is now called "Ethelfleda's Mound", it is in fact part of the later Norman fortifications, and not of Anglo-Saxon origin.[6]

[edit] Middle Ages

After the Norman conquest of England, William the Conqueror established a motte-and-bailey castle at Warwick in 1068 to maintain control of the Midlands as he advanced northwards.[7][8] Building a castle in a pre-existing settlement could require demolishing properties on the intended site. In the case of Warwick, the least recorded of the 11Â urban castles in the 1086 survey, four

houses were torn down to make way for the castle.[9] A motte-and-bailey castle consists of a mound on which usually stands a keep or tower and a bailey, which is an enclosed courtyard. William appointed Henry de Beaumont, the son of a powerful Norman family, as constable of the castle.[1] In 1088, Henry de Beaumont was made the first Earl of Warwick.[1] He founded the Church of All Saints within the castle walls by 1119; the Bishop of Worcester, believing that a castle was an inappropriate location for a church, removed it in 1127[28].

In 1153, the wife of Roger de Beaumont, 2nd Earl of Warwick, was tricked into believing that her husband was dead, and surrendered control of the castle to the invading army of Henry of Anjou, later King Henry II.[1][10] According to the *Gesta Regis Stephani*, a 12th-century historical text, Roger de Beaumont died on hearing the news that his wife had handed over the castle.[11] Henry later returned the castle to the Earls of Warwick as they had been supporters of his mother, Empress Matilda, in The Anarchy of 1135[54].

From 1088, the castle had traditionally belonged to the Earl of Warwick, and it served as a symbol of his power. The castle was taken in 1153 by Henry of Anjou, later Henry II. It has been used to hold prisoners, including some from the Battle of Poitiers in the 14th century. Under the ownership of Richard Neville also known as "Warwick the Kingmaker" Warwick Castle was used in the 15th century to imprison the English king, Edward IV.

During the reign of King Henry II (1154[89]), the motte-and-bailey was replaced with a stone castle. This new phase took the form of a shell keep with all the buildings constructed against the curtain wall.[13] During the barons' rebellion of 1173[74], the Earl of Warwick remained loyal to King Henry II, and the castle was used to store provisions.[1] The castle and the lands associated with the earldom passed down in the Beaumont family until 1242. When Thomas de Beaumont, 6th Earl of Warwick, died the castle and lands passed to his sister, Lady Margery, countess of Warwick in her own right. Her husband died soon after, and while she looked for a suitable husband, the castle was in the ownership of King Henry III. When she married John du Plessis in December 1242, the castle was returned to her.[1] During the Second Barons' War of 1264[67], William Maudit, 8th Earl of Warwick, was a supporter of King Henry III.[1] The castle was taken in a surprise attack by the forces of Simon de Montfort, 6th Earl of Leicester, from Kenilworth Castle in 1264.[1] The walls along the northeastern side of the castle were slighted so that it would be useless to the king.[1] Maudit and his countess were taken to Kenilworth Castle and held until a ransom was paid. After the death of William Maudit in 1267, the title and castle passed to his nephew William de Beauchamp, 9th Earl of Warwick. Following William's death, Warwick Castle passed through seven generations of the Beauchamp family, who over the next 180 years were responsible for most of the additions made to the castle. In 1312, Piers Gaveston, 1st Earl of Cornwall, was captured by Guy de Beauchamp, 10th Earl of Warwick, and imprisoned in Warwick Castle until his execution on 9 June 1312.[1][14] A group of magnates led by the Earl of Warwick and Thomas, 2nd Earl of Lancaster, accused Gaveston of stealing the royal treasure.[15]

Under Thomas de Beauchamp, 11th Earl,[1][16] the castle defences were significantly enhanced in 1330[60] on the north eastern side by the addition of a gatehouse, a barbican (a form of fortified gateway), and a tower on either side of the reconstructed wall, named Caesar's Tower and Guy's Tower.[16][17] The Watergate Tower also dates from this period.[18]

Caesar's and Guy's Towers are residential and may have been inspired by French models (for example Briquebec). Both towers are machicolated and Caesar's Tower features a unique double parapet. The two towers are also vaulted in stone on every storey. Caesar's Tower contained a "grim" basement dungeon;[19] according to local legend dating back to at least 1644 it is also known as Poitiers Tower either because prisoners from the Battle of Poitiers in 1356 may have been imprisoned there or because the ransoms raised from the battle helped to pay for its construction.[1] The gatehouse features murder holes, two drawbridges, a gate, and portcullises gates made from wood or metal.[20] The towers of the gatehouse were machicolated.[21]

The facade overlooking the river was designed as a symbol of the power and wealth of the Beauchamp earls and would have been "of minimal defensive value"; this followed a trend of 14th-century castles being more statements of power than designed exclusively for military use.[22]

[edit] 15th and 16th centuries

The line of Beauchamp earls ended in 1449 when Anne de Beauchamp, 15th Countess of Warwick, died.[1] Richard Neville became the next Earl of Warwick through his wife's inheritance of the title. During the summer of 1469, Neville rebelled against King Edward IV and imprisoned him in Warwick Castle. Neville attempted to rule in the king's name;[1] however, constant protests by the king's supporters forced the Earl to release the king. Neville was subsequently killed in the Battle of Barnet, fighting against King Edward IV in 1471 during the Wars of the Roses. Warwick Castle then passed from Neville to his son-in-law, George Plantagenet. George Plantagenet was executed in 1478 and his lands passed onto Edward Plantagenet, 17th Earl of Warwick; however, Edward Plantagenet was only two when his father died so his lands were taken in the custody of The Crown. He had a claim to the throne and was imprisoned first by Edward IV, then Richard III, and finally by Henry VII. He was held in the Tower of London until he was executed for high treason by Henry VII in 1499;[23] Edward was the last Earl of Warwick of the title's first creation.[1]

In the early 1480s King Richard III instigated the construction of two gun towers, Bear and Clarence Towers, which were left unfinished on his death in 1485; with their own well and ovens, the towers were an independent stronghold from the rest of the castle, possibly in case of mutiny by the garrison. With the advent of gunpowder the position of Keeper of the Artillery was created in 1486.[1]

When antiquary John Leland visited the castle some time between 1535 and 1543, he noted that:

... the dungeon now in ruin standeth in the west-north-west part of the castle. There is also a tower west-north-west, and through it a postern-gate of iron. All the principal lodgings of the castle with the hall and chapel lie on the south side of the castle, and here the king doth much cost in making foundations in the rocks to sustain that side of the castle, for great pieces fell out of the rocks that sustain it.[1]

While in the care of The Crown, Warwick Castle underwent repairs and renovations using about 500 loads of stone. The castle, as well as lands associated with the earldom, was in Crown care from 1478 until 1547, when they were granted to John Dudley with the second creation of the title the Earl of Warwick.[1] When making his appeal for ownership of the castle Dudley said of the castle's condition: "... the castle of its self is not able to lodge a good baron with his train, for all the one side of the said castle with also the dungeon tower is clearly ruinated and down to the ground".[1]

Warwick Castle had fallen into decay due to its age and neglect, and despite his remarks Dudley did not initiate any repairs to the castle.[1] Queen Elizabeth I visited the castle in 1566 during a tour of the country, and again in 1572 for four nights. A timber building was erected in the castle for her to stay in, and Ambrose Dudley, 3rd Earl of Warwick, left the castle to the Queen during her visits.[1] When Ambrose Dudley died in 1590 the title of Earl of Warwick became extinct for the second time. A survey from 1590 recorded that the castle was still in a state of disrepair, noting that lead had been stolen from the roofs of some of the castle's buildings including the chapel.[1] In 1601 Sir Fulke Greville remarked that "the little stone building there was, mightily in decay ... so as in very short time there will be nothing left but a name of Warwick".[1]

Sir Fulke Greville was granted Warwick Castle by King James I in 1604.[24]

In the 17th century the grounds were turned into a garden. The castle's defences were enhanced in the 1640s to prepare the castle for action in the English Civil War. Robert Greville, 2nd Baron Brooke, was a Parliamentarian, and Royalist forces laid siege to the castle. Warwick Castle withstood the

siege and was later used to hold prisoners taken by the Parliamentarians.

[edit] 17th century country house

The conversion of the castle coincided with a period of decline in the use of castles during the 15th and 16th centuries; many were either being abandoned or converted into comfortable residences for the gentry.[25] In the early 17th century, Robert Smythson was commissioned to draw a plan of the castle before any changes were made.[1] In 1604, the ruinous castle was given to Sir Fulke Greville by King James I and was converted into a country house.[7] Whilst the castle was undergoing repairs, it was peripherally involved in the Gunpowder Plot of 1605. The conspirators awaited news of their plot in Dunchurch in Warwickshire. When they discovered the plot had failed they stole cavalry horses from the stables at Warwick Castle to help in their escape.[1] When the title of Earl of Warwick was created for the third time in 1618, the Greville family were still in possession of Warwick Castle. Fulke Greville spent over £20,000 (Â£3Â million as of 2013).[26] renovating the castle; according to William Dugdale, a 17th century antiquary, this made it "a place not only of great strength but extraordinary delight, with most pleasant gardens, walks and thickets, such as this part of England can hardly parallel".[1] On 1Â September 1628 Fulke Greville was murdered in Holborn by his manservant: Ralph Haywoodâ ~a "gentleman"â ~who stabbed the baron in the back after discovering he had been left out of Greville's will. Greville died from his wounds a few days later.[27]

Under Robert Greville, 2nd Baron Brooke, Warwick Castle's defences were enhanced from January to May 1642 in preparation for attack during the First English Civil War. The garden walls were raised, bulwarksâ ~barricades of beams and soil to mount artilleryâ ~were constructed and gunpowder and wheels for two cannons were obtained.[1] Robert Greville was a Parliamentarian, and on 7 August 1642 a Royalist force laid siege to the castle. Greville was not in the castle at the time and the garrison was under the command of Sir Edward Peyto. Spencer Compton, 2nd Earl of Northampton, Lord Lieutenant of Warwickshire commanded the Royalist force. William Dugdale, acting as a herald, called for the garrison commander to surrender the castle, but he was refused. The besieging army opened fire on the castle, to little effect.[1] According to Richard Bulstrode:

...Â our endeavours for taking it were to little purpose, for we had only two small pieces of cannon which were brought from Compton House, belonging to the Earl of Northampton, and those were drawn up to the top of the church steeple, and were discharged at the castle, to which they could do no hurt, but only frightened them within the castle, who shot into the street, and killed several of our men.[28]

The siege was lifted on 23 August 1642 when the garrison was relieved by the forces of Robert Devereux, 3rd Earl of Essex, and the Royalists were forced to retreat to Worcester.[1] After the Battle of Edgehill in 1642Â â ^ the first pitched battle of the English Civil WarÂ â ^ prisoners were held in Caesar's and Guy's Towers.[1] During the Second English Civil War prisoners were again held at the castle, including those from the Battle of Worcester in 1651. A garrison was maintained in the castle complete with artillery and supplies from 1643 to 1660, at its strongest it numbered 302 soldiers. In 1660 the English Council of State ordered the castle governor to disband the garrison and hand over the castle to Francis Greville, 3rd Baron Brooke.[1] The state apartments were found to be outmoded and in poor repair. Under Roger and William Hurlbutt, master carpenters of Warwick, extensive modernization of the interiors was undertaken, 1669â ^78. To ensure that they would be in the latest taste, William was sent down to Dorset to make careful notes of the interiors recently finished at Kingston Lacy for Sir Ralph Bankes to designs by Sir Roger Pratt.[29] On 4 November 1695 the castle was in sufficient state to host a visit by King William III.[1]

Francis Greville, 8th Baron Brooke, undertook a renewed programme of

improvements to Warwick Castle and its grounds. The 8th Baron Brooke was also bestowed with the title Earl of Warwick in 1759, the fourth creation of the title. With the recreation of the title, the castle was back in the ownership of the earls of Warwick. Daniel Garrett's work at Warwick is documented in 1748; Howard Colvin attributed to him the Gothick interior of the Chapel.[31] Lancelot "Capability" Brown had been on hand since 1749.[32] Brown, who was still head gardener at Stowe at the time and had yet to make his reputation as the main exponent of the English landscape garden, was called in by Lord Brooke to give Warwick Castle a more "natural" connection to its river. Brown simplified the long narrow stretch by sweeping it into a lawn that dropped right to the riverbank, stopped at each end by bold clumps of native trees. A serpentine drive gave an impression of greater distance between the front gates and the castle entrance.[33]

Horace Walpole saw Brown's maturing scheme in 1751 and remarked in a letter: "The castle is enchanting. The view pleased me more than I can express; the river Avon tumbled down a cascade at the foot of it. It is well laid out by one Brown who has set up on a few ideas of Kent and Mr Southcote." [34]

In 1754 the poet Thomas Gray, a member of Walpole's Gothicism circle, commented disdainfully on the activity at the castle: ... he [Francis Greville] has sash'd [35] the great apartment ... and being since told, that square sash windows were not Gothic, he has put certain whimwams withinside the glass, which appearing through are to look like fretwork. Then he has scooped out a little burrough in the massy walls of the place for his little self [36] and his children, which is hung with paper and printed linnen, and carved chimney-pieces, in the exact manner of Berkley-square or Argyle Buildings. [1]

Gray's mention of Argyle Buildings, Westminster, London, [37] elicited a connotation of an inappropriately modern Georgian urban development, for the buildings in Argyll Street were a speculation to designs of James Gibbs, 1736-40. [38]

Greville commissioned Italian painter Antonio Canaletto to paint Warwick Castle in 1747, [39] while the castle grounds and gardens were undergoing landscaping by Brown. Five paintings and three drawings of the castle by Canaletto are known, making it the artist's most often represented building in Britain. [40] Canaletto's work on Warwick Castle has been described as "unique in the history of art as a series of views of an English house by a major continental master". [41] As well as the gardens, Greville commissioned Brown to rebuild the exterior entrance porch and stairway to the Great Hall. [42] Brown also contributed Gothick designs for a wooden bridge over the Avon (1758). [43] He was still at work on Warwick Castle in 1760. Timothy Lightoler was responsible for the porch being extended and extra rooms added adjacent to it in 1763-69. [42] and during the same years William Lindley provided a new Dining Room and other interior alterations. [44] In 1786-88 the local builder William Eboral was commissioned to build the new greenhouse conservatory, with as its principal ornament the Warwick Vase, recently purchased in Rome. [45]

In 1802 George Greville, 2nd Earl of Warwick of the new creation, had debts amounting to £115,000 (£8 million as of 2013). [26] The earl's estates, including Warwick Castle, were given to the Earl of Galloway and John FitzPatrick, 2nd Earl of Upper Ossory, in 1806, but the castle was returned to the earls of Warwick in 1813. [1] The Great Hall was reroofed and repaired in Gothic taste in 1830-31 by Ambrose Poynter. [46] Anthony Salvin was responsible for restoring the Watergate Tower in 1861-63. [42] The castle was extensively damaged by a fire in 1871 that started to the east of the Great Hall. Although the Great Hall was gutted, the overall structure was unharmed. [1] Restoration and reparations carried out by Salvin during 1872-75 were subsidised by donations from the public, which raised a total of £9,651 (£670 thousand as of 2013). [26] [1]

[edit] Advent of tourism

Individuals had been visiting the castle since the end of the 17th century [47]



and this grew in importance through the 19th century. In 1858 Queen Victoria visited the 4th earl with great local celebrations. However by 1885 it would appear the visitors were becoming a nuisance as the earl closed the castle to visitors, causing consternation in the town. A local report stated, 'One day last week eight American visitors who were staying at one of the principal hotels left somewhat hurriedly in consequence of their being unable to gain admission to the castle'.[47] It soon re-opened again and by 1900 had a ticket office and was employing a permanent guide.[47] By 1936 Arthur Mee was enthusing not just that "these walls have seen something of the splendour of every generation of our [English] story", with rooms "rich in treasure beyond the dreams of avarice" but also that "their rooms are open to all who will".[48] The collection of armoury on display at Warwick Castle is regarded as second only to that of the Tower of London.[49]

Through the 20th century successive earls expanded its tourism potential until, in 1978, after 374 years in the Greville family, it was sold to a media and entertainment company,[50] the Tussauds Group who opened it as a tourist attraction. Tussauds performed extensive restorations to the castle and grounds. In 2001, Warwick Castle was named one of Britain's "Top 10 historic houses and monuments" by the British Tourist Authority; the list included Tower of London, Stonehenge, and Edinburgh Castle.[51] Warwick Castle was recognised as Britain's best castle by the Good Britain Guide 2003.[52] Around this time it was getting in excess of half a million visitors a year.[53]

[edit] Heritage protection

The castle is protected against unauthorised change as a Scheduled Ancient Monument[7] in recognition of its status as a "nationally important" archaeological site or historic building,[54] and is a Grade I listed building[42] together with its boundary walls, stables, conservatory, mill and lodge.[42]

In May 2007 Tussauds was purchased by Merlin Entertainments who continue to operate the castle on a lease, having sold the freehold to Nick Leslau's Prestbury Group on 17 July 2007.[55]

On 23 June 2006, a £20,000 stained glass window was damaged by teenage vandals and a ceremonial sword stolen, recovered soon after.[56]

[edit] The Warwick trebuchet

In June 2005, Warwick Castle became home to one of the world's largest working siege engines. The trebuchet is 18 metres (59½ ft) tall, made from over 300 pieces of oak and weighs 22 tonnes (24½ short tons).[57] The machine, which was made in Wiltshire, is situated on the riverbank below the castle. It takes eight men half an hour to load and release [58], the process involves four men running in 4 metres (13½ ft) tall wheels to lift the counterweight, weighing 6 tonnes (7½ short tons) into the air. It is designed to be capable of hurling projectiles distances of up to 300 metres (980½ ft) and as high as 25 metres (82½ ft) and can throw projectiles weighing up to 150 kilograms (330½ lb).[58] On 21 August 2006, the trebuchet claimed the record as the most powerful catapult of its type when it sent a projectile weighing 13 kilograms (29½ lb) a distance of 249 metres (817½ ft) at a speed of 260 kilometres per hour (160½ mph), beating the previous record held by a machine in Denmark.[59]

[edit] Seasonal exhibits

Other tourist attractions include "Flight of the Eagles'" (a bird show, featuring bald eagles, vultures, and sea eagles),[60] archery displays, Jousting, "The Trebuchet Show" and "The Sword In The Stone Show". The Castle is also home to "The Castle Dungeon", a live actor experience similar to that of "London Dungeons". Warwick Castle is the subject of many ghost stories.[61] One such instance is that of Fulke Greville who is said to haunt the Watergate Tower despite having been murdered in Holborn. The castle's reputation for being haunted is used as a tourist attraction with events such as "Warwick Ghosts Alive", a live-action show telling the story of Fulke Greville's murder.[62] Musical events at the castle have included carolling, with performances by bands such as the Royal Spa Brass.[63][64]

[edit] Layout

The current castle, built in stone during the reign of King Henry II, is on the same site as the earlier Norman motte-and-bailey castle. A keep used to stand on the motte which is on the south west of the site, although most of the structure now dates from the post-medieval period.[1] In the 17th century the motte was landscaped with the addition of a path.[65] The bailey was incorporated into the new castle and is surrounded by stone curtain walls.[1]

When Warwick Castle was rebuilt in the reign of King Henry II it had a new layout with the buildings against the curtain walls. The castle is surrounded by a dry moat on the northern side where there is no protection from the river or the old motte; the perimeter of the walls is 130 metres (140Â yd) long by 82 metres (90Â yd) wide.[1] The two entrances to castle are in the north and west walls. There was originally a drawbridge over the moat in the north east. In the centre of the north west wall is a gateway with Clarence and Bears towers on either side; this is a 15th century addition to the fortifications of the castle.[1] The residential buildings line the eastern side of the castle, facing the River Avon. These buildings include the great hall, the library, bedrooms, and the chapel.[1]

[edit] Owners

Over its 950 years of history Warwick Castle has been owned by 36 different individuals, plus four periods as crown property under seven different monarchs. It was the family seat of three separate creations of the Earls of Warwick, and has been a family home for members of the Beaumont, Beauchamp, Neville, Plantagenet, Dudley and Greville families. The first creation of the Earldom specifically included the right of inheritance through the female line, so the castle three times had a woman (or girl) as the owner. Eleven of the owners were under 20 when they inherited, including a girl aged two and a boy aged three. At least three owners died in battle, two were executed and one murdered. Every century except the 21st has seen major building work or adaptations at the castle.

[edit] Grounds and park

Formal gardens belonging to Warwick Castle were first recorded in 1534.[66] Landscaping in the 17th century added spiral paths to the castle motte during Fulke Greville's programme of restoration.[1][65] Francis Greville commissioned Lancelot Brown to relandscape the castle grounds; he began working on the grounds and park in 1749 and had completed his work by 1757, having spent about £2,293 (£260Â thousand as of 2013).[26] on the project.[67] The gardens cover 2.8 square kilometres (690Â acres).[66] Robert Marnock created formal gardens in the castle's grounds in 1868â ^69.[66] Started in 1743 and originally known as Temple Park, Castle Park is located to the south of the castle. Its original name derived from the Knights Templar, who used to own a manor in Warwick. Houses around the perimeter of the park were demolished and the land they stood on incorporated into the park.[1] Attempts to make profits from the park in the late 18th century included leasing it for grazing, growing wheat, and keeping sheep.[1]

A water-powered mill in the castle grounds was probably built under Henry de Beaumont, 1stÂ Earl of Warwick.[1] By 1398 the mill had been relocated to just outside the eastern castle walls, on the west bank of the River Avon. Both mills were subject to flooding. By 1644, an engine house had been added to the mill.[1] The mill was reused as an electricity generating plant after it had stopped being used to grind, but once Warwick Castle was fitted with mains electricity in 1940, the mill was no longer required and was dismantled in 1954.[1] Adjacent to the mill is The Mill Garden which is privately owned but open to the public. Interesting views of the castle can be seen from this garden (see photo on the right).

[edit] See also

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[edit] External links

Resort theme parks

SEA LIFE

Locations in the UK and the Republic of Ireland

Locations in Germany

Locations in North America

Locations in Asia

Locations in Oceania

Locations elsewhere

## Locations in theme parks

Madame Tussauds  
Amsterdam  
Bangkok  
Berlin  
Blackpool  
Busan  
Hollywood  
Hong Kong  
Jakarta  
Las Vegas  
London  
New York  
Shanghai  
Sydney  
Tokyo  
Vienna  
Washington, D.C.  
The Dungeons  
'Eye' attractions  
Wild Life Centres  
Australian Tree Top Adventures  
Other attractions

Abisin Abbas ([aË bisÉ\*n aË bas]; 26 February 1902Â â ^ 20 October 1961), better known by his pseudonym Andjar Asmara ([anË dÊ´ar asË mara]), was a dramatist and filmmaker active in the cinema of the Dutch East Indies. Born in Alahan Panjang, West Sumatra, he first worked as a reporter in Batavia (modern day Jakarta). He became a writer for the Padangsche Opera in Padang, where he developed a new, dialogue-centric style, which later spread throughout the region. After returning to Batavia in 1929, he spent over a year as a theatre and film critic. In 1930 he joined the Dardanella touring troupe as a writer. He went to India in an unsuccessful bid to film his stage play Dr Samsi.

After leaving Dardanella in 1936, Andjar established his own troupe. He also worked at a publishers, writing serials based on successful films. In 1940 he was asked to join The Teng Chun's company, Java Industrial Film, helping with marketing and working as a director for two productions. After the Japanese occupation, during which time he stayed in theatre, Andjar made a brief return to cinema. He directed three films in the late 1940s and wrote four screenplays, which were produced as films in the early 1950s. He published a novel, Noesa Penida (1950). Afterward he worked for the remainder of his life writing serials based on local films and publishing film criticism. Historians recognise him as a pioneer of theatre and one of the first native Indonesian film directors, although he had little creative control of his productions.

### [edit] Early life and theatre

Andjar was born Abisin Abbas[1] in Alahan Panjang, West Sumatra, on 26Â February 1902. He gravitated toward traditional theatre at a young age after visits from the wandering Wayang Kassim and Juliana Opera stambul troupes; he pretended to act with his friends in stage plays which they had seen.[4] After completing his formal education up to the Meer Uitgebreid Lager Onderwijs (junior high school) levelÂ â ^ first in Malay-language schools then Dutch onesÂ â ^ he moved to Batavia (modern day Jakarta). He worked as a reporter for two daily newspapers, Bintang Timoer and Bintang Hindia; he may have also worked on a farm.[4]

Around 1925, having had little success in Batavia, Andjar moved to Padang, where he was a reporter for the daily Sinar Soematera. At the same time, he worked with the city's Padangsche Opera, writing stage plays. In contrast to the standard musical theatre of the time, bangsawan, he promoted a more natural style, using dialogue instead of song to convey the story;[4] he referred to this as toneel, based on the Dutch word for theatre. Among the works he wrote

for the Padangsche Opera were adaptations of Melati van Agam, a 1923 work by Swan Pen,[a][4] and Sitti Nurbaya, a 1923 novel by Marah Roesli. These works were well received.[4]

In the late 1920s, after spending some two years in Medan with the daily Sinar Soematra, Andjar returned to Batavia and in 1929 helped establish the magazine Doenia Film, a Malay adaptation of the Dutch-language magazine Filmland; although an adaptation, Doenia Film also contained original coverage of the domestic theatre and film industry. At the time, the cinema of the Indies was becoming established: the first domestic film, Loetoeng Kasaroeng (The Lost Lutung), was released in 1926, and four additional films were released in 1927 and 1928. Andjar wrote extensively regarding local cinematic and theatrical productions; for example, the Indonesian film critic Salim Said writes Andjar inspired the marketing for 1929's Njai Dasima, which emphasised the exclusively native cast.[b] In 1930 Andjar left Doenia Film and was replaced by Bachtiar Effendi.

Andjar became a writer for the theatrical troupe Dardanella in November 1930, working under the group's founder Willy A. Piedro.[c] Andjar believed the troupe to be dedicated to the betterment of the toneel as an art form and not only motivated by financial interests, as were the earlier stambul troupes.[d] He wrote and published many plays with the group's backing, including Dr Samsi and Singa Minangkabau (The Lion of Minangkabau).[4] Andjar also worked as a theatre critic, writing several pieces on the history of local theatre, sometimes using his birth name and sometimes his pseudonym. In 1936 Andjar went with Dardanella to India to record a film adaptation of his drama Dr Samsi, which followed a doctor who was blackmailed after an unscrupulous Indo discovered he had an illegitimate child. The deal fell through, however, and Andjar left India with his wife Ratna.

[edit] Film career and death

Upon his return to the Indies, Andjar formed another theatrical troupe, Bolero, with Effendi, but left the troupe around 1940 to work at Kolf Publishers in Surabaya. Effendi was left as the head of Bolero, which then became more politicised. At Kolf Andjar edited the publisher's magazine Poestaka Timoer.[1] As his work entailed writing synopses and serials based on popular films for Kolf's magazine, he became increasingly involved in the film industry. He was soon asked by The Teng Chun, with whom he had maintained a business relationship, to direct a film for his company Java Industrial Film (JIF); with this Andjar became one of several noted theatrical personnel who migrated to film following Albert Balink's 1937 hit Terang Boelan (Full Moon).

After handling the marketing for Rentjong Atjeh (Rencong of Aceh, 1940), Andjar made his directorial debut in 1940 with Kartinah, a war-time romance starring Ratna Asmara. Academia was critical of the film, believing it to lack educational value. In 1941 he directed Noesa Penida, a tragedy based in Bali, for JIF; the film was remade in 1988. In these films, he had little creative control, and performed as what the Indonesian entertainment journalist Eddie Karsito describes as a dialogue coach. Camera angles and locations were chosen by the cinematographer, who was generally also the producer.

During the Japanese occupation from 1942 to 1945, the nation's film industry nearly ceased to exist: all but one studio were closed, and all films released were propaganda pieces to assist the Japanese war effort and promote the Greater East Asia Co-Prosperity Sphere. Andjar was not involved in these but was excited by the artistic merits of Japanese films. Although he wrote several short stories during this time, three of which were published in the pro-Japanese newspaper Asia Raja in 1942, Andjar focused on theatre, forming the troupe Tjahaya Timoer. He often visited the Cultural Centre (Keimin Bunka Sidosho) in Jakarta, where two employees, D. Djajakusuma and Usmar Ismail, discussed filmmaking with him. Both became influential film directors during the 1950s.[e]

After Indonesia's independence, Andjar moved to Purwokerto to lead the daily Perdjoengan Rakjat.[1] After the paper collapsed, he returned to film, film a piece entitled Djauh di Mata for the Netherlands Indies Civil Administration in

1948. This was followed by two additional films, *Anggrek Bulan* (Moon Orchid; 1948) and *Gadis Desa* (Maiden from the Village; 1949), both based on plays he wrote several years earlier.[1] In 1950, Andjar published his only novel, *Noesa Penida*, a critique of the Balinese caste system, which followed lovers from different levels of the social hierarchy.[35] Meanwhile, he continued to write and publish paperback serials adapted from local films.

Andjar's screenplay *Dr Samsi* was finally adapted as a film in 1952 by Ratna Asmara, who had become Indonesia's first female film director with her 1950 film *Sedap Malam* (Tuberose). The adaptation starred Ratna and Raden Ismail. It would prove Andjar's last screenwriting credit during his lifetime. Although no longer writing films, Andjar remained active in the country's film industry. In 1955 he headed the inaugural Indonesian Film Festival, which was criticized when it gave the Best Picture Award to two films, Usmar Ismail's *Lewat Djam Malam* (After the Curfew) and Lilik Sudjio's *Tarmina*. Critics wrote that *Lewat Djam Malam* was easily the stronger of the two and suggested that Djamaluddin Malik, *Tarmina*'s producer, had influenced the jury's decision.[f]

In 1958 Asmara became the head of the entertainment magazine *Varia*, where the fellow director Raden Ariffien served as his deputy. Asmara held the position until his death; among other roles, he wrote a series of memoirs on the history of theatre in the country.[1] He died on 20 October 1961 in Cipanas, West Java, during a trip to Bandung and was buried in Jakarta.

[edit] Legacy

Andjar's toneels were generally based on day-to-day experiences, rather than the tales of princes and ancient wars which were standard at the time. Regarding Andjar's toneels, the Indonesian literary critic Bakri Siregar writes that Andjar's stage plays, as well as those of fellow dramatist Njoo Cheong Seng, revitalised the genre and made the works more realistic. However, he considered the conflict in these works to have been poorly developed. Andjar believed that the *Padangsch*e Opera's performances influenced other troupes in West Sumatra to adapt the toneel format, which later spread throughout the Indies.

Matthew Isaac Cohen, a scholar of Indonesian performing arts, describes Andjar as "Indonesia's foremost theater critic during the colonial period", noting that he wrote extensively on the history of theatre in the Indies. Cohen also believes that Andjar also worked to justify the toneel style and distance it from the earlier *stambul*. Even after entering the film industry, Andjar considered the theatre more culturally significant than cinema. However, the Indonesian journalist Soebagio I.N. writes that Andjar remains best known for his film work.

Andjar was one of the first native Indonesian film directors, with Bachtiar Effendi, Soeska, and Inoe Perbatasari.[g] Said writes that Andjar was forced to follow the whims of the ethnic Chinese film moguls, which resulted in the films' shift toward commercial orientation, rather than the prioritisation of artistic merit. The film historian Misbach Yusa Biran writes that Andjar and his fellow journalists, upon joining JIF, brought with them new ideas that helped the company flourish until it closed after the arrival of the Japanese; the company and its subsidiaries released fifteen films in two years.

[edit] Filmography

*Kartinah* (1940) ^ as director, scriptwriter, and story writer  
*Noesa Penida* (1941) ^ as director and story writer  
*Djauh Dimata* (Out of Sight; 1948) ^ as director and story writer  
*Anggrek Bulan* (Moon Orchid; 1948) ^ as director  
*Gadis Desa* (Maiden from the Village; 1949) ^ as director and story writer  
*Sedap Malam* (Tuberose; 1950) ^ as story writer  
*Pelarian dari Pagar Besi* (Escape from the Iron Fence; 1951) ^ as story writer  
*Musim Bunga di Selabintana* (Flowers in Selabintana; 1951) ^ as story writer  
*Dr Samsi* (1952) ^ as story writer  
*Noesa Penida* (*Pelangi Kasih Pandansari*) (*Noesa Penida* [*Pandansari's Rainbow of Love*]; 1988) ^ as story writer (posthumous credit)



^ Pen may have been Parada Harahap, who had been Andjar's editor at Bintang Hindia (I.N. 1981, p. 213).

^ During this period the Indonesian National Awakening was in full force; the year before the Youth Pledge, which affirmed that all natives of the Indonesian archipelago are one people, had been read at the Second Youth Congress (Ricklefs 2001, p. 233).

^ Piedro, the son of a circus performer, was of Russian descent and initially wrote many of Dardanella's stage plays (Biran 2009, pp. 14, 17).

^ In his final letter as editor of Doenia Film, as quoted by Biran (2009, pp. 6, 14, 20), Andjar wrote that he was joining Dardanella to help promote toneel as an art form to the best of his abilities.

^ Ismail's 1950 film Darah dan Doa (released internationally as The Long March, literally Blood and Prayers) is generally considered the first truly Indonesian film (Biran 2009, p. 45), while Djajakusuma was known for incorporating various aspects of traditional Indonesian culture in his films (Sen & Hill 2000, p. 156).

^ Said (1982, p. 44) writes that Malik had previously influenced a contest for favourite actress in 1954, ensuring that an actress from his company, Persari, was chosen.

^ The earliest film directors in the Dutch East Indies, such as L. Heuveldorp, G. Kruger, the Wong brothers, and Lie Tek Swie, were either European or ethnic Chinese (Biran 2009, pp. 97, 102)

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#### [edit] External links

Works by Andjar Asmara

Directed

Kartinah (1940)

Noesa Penida (1941)

Djauh Dimata (1948)

Anggrek Bulan (1948)

Gadis Desa (1949)

Written

Kartinah (1940)

Noesa Penida (1941)

Djauh Dimata (1948)

Gadis Desa (1949)

Sedap Malam (1950)

Pelarian dari Pagar Besi (1951)

Musim Bunga di Selabintana (1951)

Dr Samsi (1952)

Noesa Penida (Pelangi Kasih Pandansari) (1988)

Hydrogen

1H

Appearance

colorless gas

Purple glow in its plasma state

Spectral lines of hydrogen

General properties

Name, symbol, number

hydrogen, H, 1

Pronunciation  
 /Ē haĒ<sup>a</sup>drĒ dĒ<sup>´</sup>Ē n/ HY-drĒ -jĒ n[1]  
 Metallic category  
 nonmetal  
 Group, period, block  
 1,Ā 1, s  
 Standard atomic weight  
 1.008(1)  
 Electron configuration  
 1s1  
 1  
 History  
 Discovery  
 Henry Cavendish[2][3](1766)  
 Named by  
 Antoine Lavoisier[4](1783)  
 Physical properties  
 Color  
 colorless  
 Phase  
 gas  
 Density  
 (0 Ā°C, 101.325 kPa)  
 0.08988 g/L  
 Liquid density at m.p.  
 0.07 (0.0763 solid)[5] gĀ·cmĀ<sup>´</sup>3  
 Liquid density at b.p.  
 0.07099 gĀ·cmĀ<sup>´</sup>3  
 Melting point  
 14.01Ā K,Ā -259.14Ā Ā°C,Ā -434.45Ā Ā°F  
 Boiling point  
 20.28Ā K,Ā -252.87Ā Ā°C,Ā -423.17Ā Ā°F  
 Triple point  
 13.8033Ā KĀ (-259Ā°C),Ā 7.042Ā kPa  
 Critical point  
 32.97 K, 1.293 MPa  
 Heat of fusion  
 (H2) 0.117 kJĀ·molĀ<sup>´</sup>1  
 Heat of vaporization  
 (H2) 0.904 kJĀ·molĀ<sup>´</sup>1  
 Molar heat capacity  
 (H2) 28.836 JĀ·molĀ<sup>´</sup>1Ā·KĀ<sup>´</sup>1  
 Vapor pressure  
 P (Pa)  
 1  
 10  
 100  
 1 k  
 10 k  
 100 k  
 at T (K)  
 15  
 20  
 Atomic properties  
 Oxidation states  
 1, -1  
 (amphoteric oxide)  
 Electronegativity  
 2.20 (Pauling scale)  
 Ionization energies

1st: 1312.0 kJ·mol<sup>-1</sup>

Covalent radius

31±5 pm

Van der Waals radius

120 pm

Miscellanea

Crystal structure

hexagonal

Magnetic ordering

diamagnetic[6]

Thermal conductivity

0.1805 W·m<sup>-1</sup>·K<sup>-1</sup>

Speed of sound

(gas, 27 °C) 1310 m·s<sup>-1</sup>

CAS registry number

1333-74-0

Most stable isotopes

Main article: Isotopes of hydrogen

⋅ r

Hydrogen is a chemical element with symbol H and atomic number 1. With an atomic weight of 1.00794 u (1.007825 u for hydrogen-1), hydrogen is the lightest element and its monatomic form (H<sup>1</sup>) is the most abundant chemical substance, constituting roughly 75% of the Universe's baryonic mass.[7]

Non-remnant stars are mainly composed of hydrogen in its plasma state.

At standard temperature and pressure, hydrogen is a colorless, odorless, tasteless, non-toxic, nonmetallic, highly combustible diatomic gas with the molecular formula H<sub>2</sub>. Naturally occurring atomic hydrogen is rare on Earth because hydrogen readily forms covalent compounds with most non-metallic elements and is present in the water molecule and in most organic compounds. Hydrogen plays a particularly important role in acid-base chemistry with many reactions exchanging protons between soluble molecules.

In ionic compounds, it can take a negative charge (an anion known as a hydride and written as H<sup>-</sup>), or as a positively charged species H<sup>+</sup>. The latter cation is written as though composed of a bare proton, but in reality, hydrogen cations in ionic compounds always occur as more complex species.

The most common isotope of hydrogen is protium (name rarely used, symbol <sup>1</sup>H) with a single proton and no neutrons. As the simplest atom known, the hydrogen atom has been of theoretical use. For example, as the only neutral atom with an analytic solution to the Schrödinger equation, the study of the energetics and bonding of the hydrogen atom played a key role in the development of quantum mechanics.

Hydrogen gas was first artificially produced in the early 16th century, via the mixing of metals with strong acids. In 1766, Henry Cavendish was the first to recognize that hydrogen gas was a discrete substance,[8] and that it produces water when burned, a property which later gave it its name: in Greek, hydrogen means "water-former".

Industrial production is mainly from the steam reforming of natural gas, and less often from more energy-intensive hydrogen production methods like the electrolysis of water.[9] Most hydrogen is employed near its production site, with the two largest uses being fossil fuel processing (e.g., hydrocracking) and ammonia production, mostly for the fertilizer market.

Hydrogen is a concern in metallurgy as it can embrittle many metals,[10] complicating the design of pipelines and storage tanks.[11]

Properties

Combustion

Hydrogen gas (dihydrogen or molecular hydrogen)[12] is highly flammable and will burn in air at a very wide range of concentrations between 4% and 75% by volume.[13] The enthalpy of combustion for hydrogen is 286 kJ/mol:[14]

$2 \text{ H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2 \text{ H}_2\text{O}(\text{l}) + 572 \text{ kJ}$  (286 kJ/mol)[note 1]

Hydrogen gas forms explosive mixtures with air if it is 4–74% concentrated

and with chlorine if it is 5-95% concentrated. The mixtures spontaneously explode by spark, heat or sunlight. The hydrogen autoignition temperature, the temperature of spontaneous ignition in air, is 500 °C (932 °F).[15] Pure hydrogen-oxygen flames emit ultraviolet light and are nearly invisible to the naked eye, as illustrated by the faint plume of the Space Shuttle Main Engine compared to the highly visible plume of a Space Shuttle Solid Rocket Booster. The detection of a burning hydrogen leak may require a flame detector; such leaks can be very dangerous. The destruction of the Hindenburg airship was an infamous example of hydrogen combustion; the cause is debated, but the visible flames were the result of combustible materials in the ship's skin.[16] Because hydrogen is buoyant in air, hydrogen flames tend to ascend rapidly and cause less damage than hydrocarbon fires. Two-thirds of the Hindenburg passengers survived the fire, and many deaths were instead the result of falls or burning diesel fuel.[17]

H<sub>2</sub> reacts with every oxidizing element. Hydrogen can react spontaneously and violently at room temperature with chlorine and fluorine to form the corresponding hydrogen halides, hydrogen chloride and hydrogen fluoride, which are also potentially dangerous acids.[18]

Electron energy levels

Main article: Hydrogen atom

The ground state energy level of the electron in a hydrogen atom is 13.6 eV, which is equivalent to an ultraviolet photon of roughly 92 nm wavelength.[19]

The energy levels of hydrogen can be calculated fairly accurately using the Bohr model of the atom, which conceptualizes the electron as "orbiting" the proton in analogy to the Earth's orbit of the Sun. However, the electromagnetic force attracts electrons and protons to one another, while planets and celestial objects are attracted to each other by gravity. Because of the discretization of angular momentum postulated in early quantum mechanics by Bohr, the electron in the Bohr model can only occupy certain allowed distances from the proton, and therefore only certain allowed energies.[20]

A more accurate description of the hydrogen atom comes from a purely quantum mechanical treatment that uses the Schrödinger equation or the Feynman path integral formulation to calculate the probability density of the electron around the proton.[21] The most complicated treatments allow for the small effects of special relativity and vacuum polarization. In the quantum mechanical treatment, the electron in a ground state hydrogen atom has no angular momentum at all - an illustration of how different the "planetary orbit" conception of electron motion differs from reality.

Elemental molecular forms

There exist two different spin isomers of hydrogen diatomic molecules that differ by the relative spin of their nuclei.[22] In the orthohydrogen form, the spins of the two protons are parallel and form a triplet state with a molecular spin quantum number of 1 ( $\frac{1}{2} + \frac{1}{2}$ ); in the parahydrogen form the spins are antiparallel and form a singlet with a molecular spin quantum number of 0 ( $\frac{1}{2} - \frac{1}{2}$ ). At standard temperature and pressure, hydrogen gas contains about 25% of the para form and 75% of the ortho form, also known as the "normal form".[23] The equilibrium ratio of orthohydrogen to parahydrogen depends on temperature, but because the ortho form is an excited state and has a higher energy than the para form, it is unstable and cannot be purified. At very low temperatures, the equilibrium state is composed almost exclusively of the para form. The liquid and gas phase thermal properties of pure parahydrogen differ significantly from those of the normal form because of differences in rotational heat capacities, as discussed more fully in Spin isomers of hydrogen.[24] The ortho/para distinction also occurs in other hydrogen-containing molecules or functional groups, such as water and methylene, but is of little significance for their thermal properties.[25]

The uncatalyzed interconversion between para and ortho H<sub>2</sub> increases with increasing temperature; thus rapidly condensed H<sub>2</sub> contains large quantities of the high-energy ortho form that converts to the para form very slowly.[26] The ortho/para ratio in condensed H<sub>2</sub> is an important consideration in the

preparation and storage of liquid hydrogen: the conversion from ortho to para is exothermic and produces enough heat to evaporate some of the hydrogen liquid, leading to loss of liquefied material. Catalysts for the ortho-para interconversion, such as ferric oxide, activated carbon, platinized asbestos, rare earth metals, uranium compounds, chromic oxide, or some nickel[27] compounds, are used during hydrogen cooling.[28]

#### Phases

#### Compounds

##### Covalent and organic compounds

While  $H_2$  is not very reactive under standard conditions, it does form compounds with most elements. Hydrogen can form compounds with elements that are more electronegative, such as halogens (e.g., F, Cl, Br, I), or oxygen; in these compounds hydrogen takes on a partial positive charge.[29] When bonded to fluorine, oxygen, or nitrogen, hydrogen can participate in a form of medium-strength noncovalent bonding called hydrogen bonding, which is critical to the stability of many biological molecules.[30][31] Hydrogen also forms compounds with less electronegative elements, such as the metals and metalloids, in which it takes on a partial negative charge. These compounds are often known as hydrides.[32]

Hydrogen forms a vast array of compounds with carbon called the hydrocarbons, and an even vaster array with heteroatoms that, because of their general association with living things, are called organic compounds.[33] The study of their properties is known as organic chemistry[34] and their study in the context of living organisms is known as biochemistry.[35] By some definitions, "organic" compounds are only required to contain carbon. However, most of them also contain hydrogen, and because it is the carbon-hydrogen bond which gives this class of compounds most of its particular chemical characteristics, carbon-hydrogen bonds are required in some definitions of the word "organic" in chemistry.[33] Millions of hydrocarbons are known, and they are usually formed by complicated synthetic pathways, which seldom involve elementary hydrogen.

#### Hydrides

Compounds of hydrogen are often called hydrides, a term that is used fairly loosely. The term "hydride" suggests that the H atom has acquired a negative or anionic character, denoted  $H^-$ , and is used when hydrogen forms a compound with a more electropositive element. The existence of the hydride anion, suggested by Gilbert N. Lewis in 1916 for group I and II salt-like hydrides, was demonstrated by Moers in 1920 by the electrolysis of molten lithium hydride ( $LiH$ ), producing a stoichiometry quantity of hydrogen at the anode.[36] For hydrides other than group I and II metals, the term is quite misleading, considering the low electronegativity of hydrogen. An exception in group II hydrides is  $BeH_2$ , which is polymeric. In lithium aluminium hydride, the  $AlH_4^-$  anion carries hydridic centers firmly attached to the Al(III).

Although hydrides can be formed with almost all main-group elements, the number and combination of possible compounds varies widely; for example, there are over 100 binary borane hydrides known, but only one binary aluminium hydride.[37] Binary indium hydride has not yet been identified, although larger complexes exist.[38]

In inorganic chemistry, hydrides can also serve as bridging ligands that link two metal centers in a coordination complex. This function is particularly common in group 13 elements, especially in boranes (boron hydrides) and aluminium complexes, as well as in clustered carboranes.[39]

#### Protons and acids

Oxidation of hydrogen removes its electron and gives  $H^+$ , which contains no electrons and a nucleus which is usually composed of one proton. That is why  $H^+$  is often called a proton. This species is central to discussion of acids. Under the Bronsted-Lowry theory, acids are proton donors, while bases are proton acceptors.

A bare proton,  $H^+$ , cannot exist in solution or in ionic crystals, because of its unstoppable attraction to other atoms or molecules with electrons. Except at the high temperatures associated with plasmas, such protons cannot be

removed from the electron clouds of atoms and molecules, and will remain attached to them. However, the term 'proton' is sometimes used loosely and metaphorically to refer to positively charged or cationic hydrogen attached to other species in this fashion, and as such is denoted "H+" without any implication that any single protons exist freely as a species.

To avoid the implication of the naked "solvated proton" in solution, acidic aqueous solutions are sometimes considered to contain a less unlikely fictitious species, termed the "hydronium ion" ( $\text{H}_3\text{O}^+$ ). However, even in this case, such solvated hydrogen cations are thought more realistically physically to be organized into clusters that form species closer to  $\text{H}_9\text{O}_4^+$

4.[40] Other oxonium ions are found when water is in solution with other solvents.[41]

Although exotic on Earth, one of the most common ions in the universe is the  $\text{H}^+$  ion, known as protonated molecular hydrogen or the trihydrogen cation.[42]

#### Isotopes

Hydrogen has three naturally occurring isotopes, denoted  $1\text{H}$ ,  $2\text{H}$  and  $3\text{H}$ . Other, highly unstable nuclei ( $4\text{H}$  to  $7\text{H}$ ) have been synthesized in the laboratory but not observed in nature.[43][44]

$1\text{H}$  is the most common hydrogen isotope with an abundance of more than 99.98%. Because the nucleus of this isotope consists of only a single proton, it is given the descriptive but rarely used formal name protium.[45]

$2\text{H}$ , the other stable hydrogen isotope, is known as deuterium and contains one proton and one neutron in its nucleus. Essentially all deuterium in the universe is thought to have been produced at the time of the Big Bang, and has endured since that time. Deuterium is not radioactive, and does not represent a significant toxicity hazard. Water enriched in molecules that include deuterium instead of normal hydrogen is called heavy water. Deuterium and its compounds are used as a non-radioactive label in chemical experiments and in solvents for  $1\text{H}$ -NMR spectroscopy.[46] Heavy water is used as a neutron moderator and coolant for nuclear reactors. Deuterium is also a potential fuel for commercial nuclear fusion.[47]

$3\text{H}$  is known as tritium and contains one proton and two neutrons in its nucleus. It is radioactive, decaying into helium-3 through beta decay with a half-life of 12.32 years.[39] It is so radioactive that it can be used in luminous paint, making it useful in such things as watches. The glass prevents the small amount of radiation from getting out.[48] Small amounts of tritium occur naturally because of the interaction of cosmic rays with atmospheric gases; tritium has also been released during nuclear weapons tests.[49] It is used in nuclear fusion reactions,[50] as a tracer in isotope geochemistry,[51] and specialized in self-powered lighting devices.[52] Tritium has also been used in chemical and biological labeling experiments as a radiolabel.[53]

Hydrogen is the only element that has different names for its isotopes in common use today. During the early study of radioactivity, various heavy radioactive isotopes were given their own names, but such names are no longer used, except for deuterium and tritium. The symbols D and T (instead of  $2\text{H}$  and  $3\text{H}$ ) are sometimes used for deuterium and tritium, but the corresponding symbol for protium, P, is already in use for phosphorus and thus is not available for protium.[54] In its nomenclatural guidelines, the International Union of Pure and Applied Chemistry allows any of D, T,  $2\text{H}$ , and  $3\text{H}$  to be used, although  $2\text{H}$  and  $3\text{H}$  are preferred.[55]

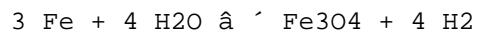
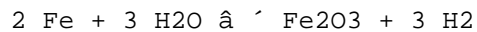
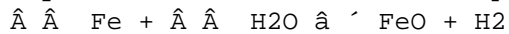
#### History

##### Discovery and use

In 1671, Robert Boyle discovered and described the reaction between iron filings and dilute acids, which results in the production of hydrogen gas.[56][57] In 1766, Henry Cavendish was the first to recognize hydrogen gas as a discrete substance, by naming the gas from a metal-acid reaction "flammable air". He speculated that "flammable air" was in fact identical to the hypothetical substance called "phlogiston"[58][59] and further finding in 1781 that the gas produces water when burned. He is usually given credit for its discovery as an element.[2][3] In 1783, Antoine Lavoisier gave the element

the name hydrogen (from the Greek ὕδρo meaning water and γένος meaning creator)[4] when he and Laplace reproduced Cavendish's finding that water is produced when hydrogen is burned.[3]

Lavoisier produced hydrogen for his famous experiments on mass conservation by reacting a flux of steam with metallic iron through an incandescent iron tube heated in a fire. Anaerobic oxidation of iron by the protons of water at high temperature can be schematically represented by the set of following reactions:



Many metals such as zirconium undergo a similar reaction with water leading to the production of hydrogen.

Hydrogen was liquefied for the first time by James Dewar in 1898 by using regenerative cooling and his invention, the vacuum flask.[3] He produced solid hydrogen the next year.[3] Deuterium was discovered in December 1931 by Harold Urey, and tritium was prepared in 1934 by Ernest Rutherford, Mark Oliphant, and Paul Harteck.[2] Heavy water, which consists of deuterium in the place of regular hydrogen, was discovered by Urey's group in 1932.[3] François Isaac de Rivaz built the first internal combustion engine powered by a mixture of hydrogen and oxygen in 1806. Edward Daniel Clarke invented the hydrogen gas blowpipe in 1819. The Bunsen burner's lamp and limelight were invented in 1823.[3]

The first hydrogen-filled balloon was invented by Jacques Charles in 1783.[3] Hydrogen provided the lift for the first reliable form of air-travel following the 1852 invention of the first hydrogen-lifted airship by Henri Giffard.[3] German count Ferdinand von Zeppelin promoted the idea of rigid airships lifted by hydrogen that later were called Zeppelins; the first of which had its maiden flight in 1900.[3] Regularly scheduled flights started in 1910 and by the outbreak of World War I in August 1914, they had carried 35,000 passengers without a serious incident. Hydrogen-lifted airships were used as observation platforms and bombers during the war.

The first non-stop transatlantic crossing was made by the British airship R34 in 1919. Regular passenger service resumed in the 1920s and the discovery of helium reserves in the United States promised increased safety, but the U.S. government refused to sell the gas for this purpose. Therefore, H<sub>2</sub> was used in the Hindenburg airship, which was destroyed in a midair fire over New Jersey on May 6, 1937.[3] The incident was broadcast live on radio and filmed. Ignition of leaking hydrogen is widely assumed to be the cause, but later investigations pointed to the ignition of the aluminized fabric coating by static electricity. But the damage to hydrogen's reputation as a lifting gas was already done.

In the same year the first hydrogen-cooled turbogenerator went into service with gaseous hydrogen as a coolant in the rotor and the stator in 1937 at Dayton, Ohio, by the Dayton Power & Light Co,[60] because of the thermal conductivity of hydrogen gas this is the most common type in its field today.

The nickel hydrogen battery was used for the first time in 1977 aboard the U.S. Navy's Navigation technology satellite-2 (NTS-2).[61] For example, the ISS,[62] Mars Odyssey[63] and the Mars Global Surveyor[64] are equipped with nickel-hydrogen batteries. In the dark part of its orbit, the Hubble Space Telescope is also powered by nickel-hydrogen batteries, which were finally replaced in May 2009, more than 19 years after launch, and 13 years over their design life.

#### Role in quantum theory

Because of its relatively simple atomic structure, consisting only of a proton and an electron, the hydrogen atom, together with the spectrum of light produced from it or absorbed by it, has been central to the development of the theory of atomic structure.[65] Furthermore, the corresponding simplicity of the hydrogen molecule and the corresponding cation H<sub>2</sub><sup>+</sup> allowed fuller understanding of the nature of the chemical bond, which followed shortly after the quantum mechanical treatment of the hydrogen atom had been developed in the mid-1920s.

One of the first quantum effects to be explicitly noticed (but not understood



at the time) was a Maxwell observation involving hydrogen, half a century before full quantum mechanical theory arrived. Maxwell observed that the specific heat capacity of H<sub>2</sub> unaccountably departs from that of a diatomic gas below room temperature and begins to increasingly resemble that of a monatomic gas at cryogenic temperatures. According to quantum theory, this behavior arises from the spacing of the (quantized) rotational energy levels, which are particularly wide-spaced in H<sub>2</sub> because of its low mass. These widely spaced levels inhibit equal partition of heat energy into rotational motion in hydrogen at low temperatures. Diatomic gases composed of heavier atoms do not have such widely spaced levels and do not exhibit the same effect.[66]

#### Natural occurrence

Hydrogen, as atomic H, is the most abundant chemical element in the universe, making up 75% of normal matter by mass and over 90% by number of atoms (most of the mass of the universe, however, is not in the form of chemical-element type matter, but rather is postulated to occur as yet-undetected forms of mass such as dark matter and dark energy).[67] This element is found in great abundance in stars and gas giant planets. Molecular clouds of H<sub>2</sub> are associated with star formation. Hydrogen plays a vital role in powering stars through proton-proton reaction and CNO cycle nuclear fusion.[68]

Throughout the universe, hydrogen is mostly found in the atomic and plasma states whose properties are quite different from molecular hydrogen. As a plasma, hydrogen's electron and proton are not bound together, resulting in very high electrical conductivity and high emissivity (producing the light from the Sun and other stars). The charged particles are highly influenced by magnetic and electric fields. For example, in the solar wind they interact with the Earth's magnetosphere giving rise to Birkeland currents and the aurora. Hydrogen is found in the neutral atomic state in the interstellar medium. The large amount of neutral hydrogen found in the damped Lyman-alpha systems is thought to dominate the cosmological baryonic density of the Universe up to redshift  $z=4$ . [69]

Under ordinary conditions on Earth, elemental hydrogen exists as the diatomic gas, H<sub>2</sub> (for data see table). However, hydrogen gas is very rare in the Earth's atmosphere (1 ppm by volume) because of its light weight, which enables it to escape from Earth's gravity more easily than heavier gases. However, hydrogen is the third most abundant element on the Earth's surface,[70] mostly in the form of chemical compounds such as hydrocarbons and water.[39] Hydrogen gas is produced by some bacteria and algae and is a natural component of flatus, as is methane, itself a hydrogen source of increasing importance.[71]

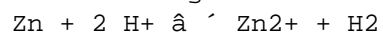
A molecular form called protonated molecular hydrogen (H<sub>3</sub><sup>+</sup>) is found in the interstellar medium, where it is generated by ionization of molecular hydrogen from cosmic rays. This charged ion has also been observed in the upper atmosphere of the planet Jupiter. The ion is relatively stable in the environment of outer space due to the low temperature and density. H<sub>3</sub><sup>+</sup> is one of the most abundant ions in the Universe, and it plays a notable role in the chemistry of the interstellar medium.[72] Neutral triatomic hydrogen H<sub>3</sub> can only exist in an excited form and is unstable.[73] By contrast, the positive hydrogen molecular ion (H<sub>2</sub><sup>+</sup>) is a rare molecule in the universe.

#### Production

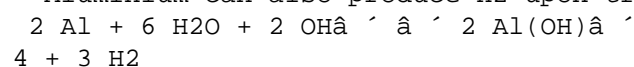
H<sub>2</sub> is produced in chemistry and biology laboratories, often as a by-product of other reactions; in industry for the hydrogenation of unsaturated substrates; and in nature as a means of expelling reducing equivalents in biochemical reactions.

#### Laboratory

In the laboratory, H<sub>2</sub> is usually prepared by the reaction of dilute non-oxidizing acids on some reactive metals such as zinc with Kipp's apparatus.



Aluminium can also produce H<sub>2</sub> upon treatment with bases:



The electrolysis of water is a simple method of producing hydrogen. A low

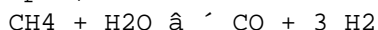
voltage current is run through the water, and gaseous oxygen forms at the anode while gaseous hydrogen forms at the cathode. Typically the cathode is made from platinum or another inert metal when producing hydrogen for storage. If, however, the gas is to be burnt on site, oxygen is desirable to assist the combustion, and so both electrodes would be made from inert metals. (Iron, for instance, would oxidize, and thus decrease the amount of oxygen given off.) The theoretical maximum efficiency (electricity used vs. energetic value of hydrogen produced) is in the range 80%–94%. [74]



In 2007, it was discovered that an alloy of aluminium and gallium in pellet form added to water could be used to generate hydrogen. The process also creates alumina, but the expensive gallium, which prevents the formation of an oxide skin on the pellets, can be re-used. This has important potential implications for a hydrogen economy, as hydrogen can be produced on-site and does not need to be transported. [75]

#### Industrial

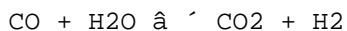
Hydrogen can be prepared in several different ways, but economically the most important processes involve removal of hydrogen from hydrocarbons. Commercial bulk hydrogen is usually produced by the steam reforming of natural gas. [76] At high temperatures (1000–1400 K, 700–1100 °C or 1300–2000 °F), steam (water vapor) reacts with methane to yield carbon monoxide and H<sub>2</sub>.



This reaction is favored at low pressures but is nonetheless conducted at high pressures (2.0 MPa, 20 atm or 600 inHg). This is because high-pressure H<sub>2</sub> is the most marketable product and Pressure Swing Adsorption (PSA) purification systems work better at higher pressures. The product mixture is known as "synthesis gas" because it is often used directly for the production of methanol and related compounds. Hydrocarbons other than methane can be used to produce synthesis gas with varying product ratios. One of the many complications to this highly optimized technology is the formation of coke or carbon:



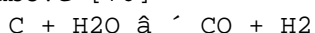
Consequently, steam reforming typically employs an excess of H<sub>2</sub>O. Additional hydrogen can be recovered from the steam by use of carbon monoxide through the water gas shift reaction, especially with an iron oxide catalyst. This reaction is also a common industrial source of carbon dioxide: [76]



Other important methods for H<sub>2</sub> production include partial oxidation of hydrocarbons: [77]



and the coal reaction, which can serve as a prelude to the shift reaction above: [76]



Hydrogen is sometimes produced and consumed in the same industrial process, without being separated. In the Haber process for the production of ammonia, hydrogen is generated from natural gas. [78] Electrolysis of brine to yield chlorine also produces hydrogen as a co-product. [79]

#### Thermochemical

There are more than 200 thermochemical cycles which can be used for water splitting, around a dozen of these cycles such as the iron oxide cycle, cerium(IV) oxide-cerium(III) oxide cycle, zinc zinc-oxide cycle, sulfur-iodine cycle, copper-chlorine cycle and hybrid sulfur cycle are under research and in testing phase to produce hydrogen and oxygen from water and heat without using electricity. [80] A number of laboratories (including in France, Germany, Greece, Japan, and the USA) are developing thermochemical methods to produce hydrogen from solar energy and water. [81]

#### Anaerobic corrosion

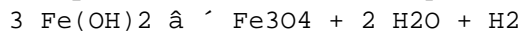
Under anaerobic conditions, iron and steel alloys are slowly oxidized by the protons of water concomitantly reduced in molecular hydrogen (H<sub>2</sub>). The anaerobic corrosion of iron leads first to the formation of ferrous hydroxide

(green rust) and can be described by the following reaction:



In its turn, under anaerobic conditions, the ferrous hydroxide ( $\text{Fe}(\text{OH})_2$ ) can be oxidized by the protons of water to form magnetite and molecular hydrogen.

This process is described by the Schikorr reaction:



ferrous hydroxide  $\rightarrow$  magnetite + water + hydrogen

The well crystallized magnetite ( $\text{Fe}_3\text{O}_4$ ) is thermodynamically more stable than the ferrous hydroxide ( $\text{Fe}(\text{OH})_2$ ).

This process occurs during the anaerobic corrosion of iron and steel in oxygen-free groundwater and in reducing soils below the water table.

Geological occurrence: the serpentinization reaction

In the absence of atmospheric oxygen ( $\text{O}_2$ ), in deep geological conditions prevailing far away from Earth atmosphere, hydrogen ( $\text{H}_2$ ) is produced during the process of serpentinization by the anaerobic oxidation by the water protons ( $\text{H}^+$ ) of the ferrous ( $\text{Fe}^{2+}$ ) silicate present in the crystal lattice of the fayalite ( $\text{Fe}_2\text{SiO}_4$ , the olivine iron-endmember). The corresponding reaction leading to the formation of magnetite ( $\text{Fe}_3\text{O}_4$ ), quartz ( $\text{SiO}_2$ ) and hydrogen ( $\text{H}_2$ ) is the following:



fayalite + water  $\rightarrow$  magnetite + quartz + hydrogen

This reaction closely resembles the Schikorr reaction observed in the anaerobic oxidation of the ferrous hydroxide in contact with water.

Formation in transformers

From all the fault gases formed in power transformers, hydrogen is the most common and is generated under most fault conditions; thus, formation of hydrogen is an early indication of serious problems in the transformer's life cycle.[82]

Applications

Consumption in processes

Large quantities of  $\text{H}_2$  are needed in the petroleum and chemical industries. The largest application of  $\text{H}_2$  is for the processing ("upgrading") of fossil fuels, and in the production of ammonia. The key consumers of  $\text{H}_2$  in the petrochemical plant include hydrodealkylation, hydrodesulfurization, and hydrocracking.  $\text{H}_2$  has several other important uses.  $\text{H}_2$  is used as a hydrogenating agent, particularly in increasing the level of saturation of unsaturated fats and oils (found in items such as margarine), and in the production of methanol. It is similarly the source of hydrogen in the manufacture of hydrochloric acid.  $\text{H}_2$  is also used as a reducing agent of metallic ores.[83]

Hydrogen is highly soluble in many rare earth and transition metals[84] and is soluble in both nanocrystalline and amorphous metals.[85] Hydrogen solubility in metals is influenced by local distortions or impurities in the crystal lattice.[86] These properties may be useful when hydrogen is purified by passage through hot palladium disks, but the gas's high solubility is a metallurgical problem, contributing to the embrittlement of many metals,[10] complicating the design of pipelines and storage tanks.[11]

Apart from its use as a reactant,  $\text{H}_2$  has wide applications in physics and engineering. It is used as a shielding gas in welding methods such as atomic hydrogen welding.[87][88]  $\text{H}_2$  is used as the rotor coolant in electrical generators at power stations, because it has the highest thermal conductivity of any gas. Liquid  $\text{H}_2$  is used in cryogenic research, including superconductivity studies.[89] Because  $\text{H}_2$  is lighter than air, having a little more than 1/15 of the density of air, it was once widely used as a lifting gas in balloons and airships.[90]

In more recent applications, hydrogen is used pure or mixed with nitrogen (sometimes called forming gas) as a tracer gas for minute leak detection. Applications can be found in the automotive, chemical, power generation, aerospace, and telecommunications industries.[91] Hydrogen is an authorized food additive (E 949) that allows food package leak testing among other

anti-oxidizing properties.[92]

Hydrogen's rarer isotopes also each have specific applications. Deuterium (hydrogen-2) is used in nuclear fission applications as a moderator to slow neutrons, and in nuclear fusion reactions.[3] Deuterium compounds have applications in chemistry and biology in studies of reaction isotope effects.[93] Tritium (hydrogen-3), produced in nuclear reactors, is used in the production of hydrogen bombs,[94] as an isotopic label in the biosciences,[53] and as a radiation source in luminous paints.[95]

The triple point temperature of equilibrium hydrogen is a defining fixed point on the ITS-90 temperature scale at 13.8033 Å kelvins.[96]

#### Coolant

Hydrogen is commonly used in power stations as a coolant in generators due to a number of favorable properties that are a direct result of its light diatomic molecules. These include low density, low viscosity, and the highest specific heat and thermal conductivity of all gases.

#### Energy carrier

Hydrogen is not an energy resource,[97] except in the hypothetical context of commercial nuclear fusion power plants using deuterium or tritium, a technology presently far from development.[98] The Sun's energy comes from nuclear fusion of hydrogen, but this process is difficult to achieve controllably on Earth.[99] Elemental hydrogen from solar, biological, or electrical sources require more energy to make it than is obtained by burning it, so in these cases hydrogen functions as an energy carrier, like a battery. Hydrogen may be obtained from fossil sources (such as methane), but these sources are unsustainable.[97]

The energy density per unit volume of both liquid hydrogen and compressed hydrogen gas at any practicable pressure is significantly less than that of traditional fuel sources, although the energy density per unit fuel mass is higher.[97] Nevertheless, elemental hydrogen has been widely discussed in the context of energy, as a possible future carrier of energy on an economy-wide scale.[100] For example, CO<sub>2</sub> sequestration followed by carbon capture and storage could be conducted at the point of H<sub>2</sub> production from fossil fuels.[101] Hydrogen used in transportation would burn relatively cleanly, with some NO<sub>x</sub> emissions,[102] but without carbon emissions.[101] However, the infrastructure costs associated with full conversion to a hydrogen economy would be substantial.[103]

#### Semiconductor industry

Hydrogen is employed to saturate broken ("dangling") bonds of amorphous silicon and amorphous carbon that helps stabilizing material properties.[104] It is also a potential electron donor in various oxide materials, including ZnO,[105][106] SnO<sub>2</sub>, CdO, MgO,[107] ZrO<sub>2</sub>, HfO<sub>2</sub>, La<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, SrTiO<sub>3</sub>, LaAlO<sub>3</sub>, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, ZrSiO<sub>4</sub>, HfSiO<sub>4</sub>, and SrZrO<sub>3</sub>. [108]

#### Biological reactions

H<sub>2</sub> is a product of some types of anaerobic metabolism and is produced by several microorganisms, usually via reactions catalyzed by iron- or nickel-containing enzymes called hydrogenases. These enzymes catalyze the reversible redox reaction between H<sub>2</sub> and its component two protons and two electrons. Creation of hydrogen gas occurs in the transfer of reducing equivalents produced during pyruvate fermentation to water.[109]

Water splitting, in which water is decomposed into its component protons, electrons, and oxygen, occurs in the light reactions in all photosynthetic organisms. Some such organisms, including the alga *Chlamydomonas reinhardtii* and cyanobacteria, have evolved a second step in the dark reactions in which protons and electrons are reduced to form H<sub>2</sub> gas by specialized hydrogenases in the chloroplast.[110] Efforts have been undertaken to genetically modify cyanobacterial hydrogenases to efficiently synthesize H<sub>2</sub> gas even in the presence of oxygen.[111] Efforts have also been undertaken with genetically modified alga in a bioreactor.[112]

#### Safety and precautions

Hydrogen poses a number of hazards to human safety, from potential detonations

and fires when mixed with air to being an asphyxiant in its pure, oxygen-free form.[113] In addition, liquid hydrogen is a cryogen and presents dangers (such as frostbite) associated with very cold liquids.[114] Hydrogen dissolves in many metals, and, in addition to leaking out, may have adverse effects on them, such as hydrogen embrittlement,[115] leading to cracks and explosions.[116] Hydrogen gas leaking into external air may spontaneously ignite. Moreover, hydrogen fire, while being extremely hot, is almost invisible, and thus can lead to accidental burns.[117]

Even interpreting the hydrogen data (including safety data) is confounded by a number of phenomena. Many physical and chemical properties of hydrogen depend on the parahydrogen/orthohydrogen ratio (it often takes days or weeks at a given temperature to reach the equilibrium ratio, for which the data is usually given). Hydrogen detonation parameters, such as critical detonation pressure and temperature, strongly depend on the container geometry.[113]

See also

Notes

<sup>^</sup> 286 kJ/mol: energy per mole of the combustible material (hydrogen)

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#### External links

Stephen William Hawking, CH, CBE, FRS, FRSA (born 8 January 1942) is a British theoretical physicist, cosmologist, and author. Among his significant scientific works have been a collaboration with Roger Penrose on gravitational singularities theorems in the framework of general relativity, and the theoretical prediction that black holes emit radiation, often called Hawking radiation. Hawking was the first to set forth a cosmology explained by a union of the general theory of relativity and quantum mechanics. He is a vocal supporter of the many-worlds interpretation of quantum mechanics.

He is an Honorary Fellow of the Royal Society of Arts, a lifetime member of the Pontifical Academy of Sciences, and a recipient of the Presidential Medal of Freedom, the highest civilian award in the United States. Hawking was the Lucasian Professor of Mathematics at the University of Cambridge between 1979 and 2009.

Hawking has achieved success with works of popular science in which he discusses his own theories and cosmology in general; his *A Brief History of Time* stayed on the British Sunday Times best-sellers list for a record-breaking 237 weeks. Hawking has a motor neurone disease related to amyotrophic lateral sclerosis (ALS), a condition that has progressed over the years. He is almost entirely paralysed and communicates through a speech generating device. He married twice and has three children.

#### Early life and education

Stephen Hawking was born on 8 January 1942 to Frank and Isobel Hawking. Despite family financial constraints, both parents had attended Oxford University, where Frank had studied medicine and Isobel Philosophy, Politics and Economics. The two met shortly after the beginning of the Second World War

at a medical research institute where Isobel was working as a secretary and Frank as a medical researcher. Hawking's parents lived in Highgate but as London was under attack during the Second World War, his mother went to Oxford to give birth in greater safety. He has two younger sisters, Philippa and Mary, and an adopted brother, Edward. Hawking began his schooling at the Byron House School; he later blamed its "progressive methods" for his failure to learn to read while at the school.

In 1950, when his father became head of the division of parasitology at the National Institute for Medical Research, Hawking and his family moved to St Albans, Hertfordshire. The eight-year-old Hawking attended St Albans High School for Girls for a few months; at that time, younger boys could attend one of the houses. In St Albans, the family were considered highly intelligent and eccentric. They lived a frugal existence in a large, cluttered, and poorly maintained house, and travelled in a converted London taxicab. The family placed a high value on education, with regular trips to museums, and meals spent with everyone reading in silence. During one of Hawking's father's frequent absences working in Africa, the rest of the family spent four months in Majorca visiting his mother's friend Beryl and her husband, the poet Robert Graves. On their return to England, Hawking attended Radlett School for a year and from September 1952, St Albans School. Hawking's father wanted his son to attend the well-regarded Westminster School, but 13-year-old Hawking was ill on the day of the scholarship examination. His family could not afford the school fees without the financial aid of a scholarship, so Hawking remained at St Albans. As a positive consequence, Hawking remained with the close group of friends with whom he enjoyed board games, the manufacture of fireworks, model aeroplanes and boats, and long discussions about Christianity and extrasensory perception. From 1958, and with the help of the mathematics teacher Dikran Tahta, they built a computer from clock parts, an old telephone switchboard and other recycled components.

Although at school he was known as "Einstein", Hawking was not initially successful academically. With time, he began to show considerable aptitude for scientific subjects, and inspired by Tahta, decided to study mathematics at university.[24] Hawking's father advised him to study medicine, concerned that there were few jobs for mathematics graduates, and wanted Hawking to attend University College, Oxford, his own alma mater. As it was not possible to read mathematics there at the time, Hawking decided to study physics and chemistry, and despite his headmaster's advice to wait till the next year, took the scholarship examinations in March 1959. Following his good performance on examination and on interview, University College accepted Hawking and offered him a scholarship.

#### University studies

Hawking went up to Oxford in October 1959 at the age of 17. For the first 18 months he was bored and lonely: he was younger than many other students, and found the academic work "ridiculously easy". His physics tutor, Robert Berman, later said, "It was only necessary for him to know that something could be done, and he could do it without looking to see how other people did it." A change occurred during his second and third year when, according to Berman, Hawking made more effort "to be one of the boys". He developed into a popular, lively and witty college member, interested in classical music and science fiction. Part of the transformation resulted from his decision to join the college Boat Club, where he coxed a rowing team. The rowing trainer at the time noted that Hawking cultivated a daredevil image, steering his crew on risky courses that led to damaged boats.

Hawking has estimated that he studied for only approximately 1000 hours during his three years at Oxford. These unimpressive study habits made sitting his Finals a challenge, and he decided to answer only theoretical physics rather than those requiring factual knowledge. A first-class honours degree was a condition of acceptance for his planned graduate study in cosmology at the University of Cambridge with Fred Hoyle. Anxious, he slept poorly the night before the examinations and the final result was on the borderline between

first and second class honours, making a viva necessary. Hawking was concerned that he was viewed as a lazy and difficult student, so when asked at the oral examination to describe his future plans said, "If you award me a First, I will go to Cambridge. If I receive a Second, I shall stay in Oxford, so I expect you will give me a First." He was held in higher regard than he believed: as Berman commented, the examiners "were intelligent enough to realize they were talking to someone far cleverer than most of themselves". After receiving a first-class BA (Hons.) degree, and following a trip to Iran with a friend, he began his graduate work at Trinity Hall, Cambridge in October 1962.

Hawking's first year as a doctoral student was a difficult one. He was initially disappointed to find that he had been assigned Dennis William Sciama as a supervisor rather than Hoyle, and he found his training in mathematics inadequate for work in general relativity and cosmology. He was also struggling with his health. Hawking had noticed clumsiness during his final year at Oxford, including a fall on some stairs and difficulties when rowing.[45] The problems worsened, and his speech became slightly slurred; his family noticed the issues when he returned home for Christmas and medical investigations were begun. The diagnosis of motor neurone disease came when Hawking was 21. At the time doctors gave him a life expectancy of two years. but Hawking's illness has advanced more slowly than typical cases of ALS.[51] After his diagnosis, Hawking fell into a depression; though his doctors advised that he continue with his studies, he felt there was little point. At the same time, however, his relationship with Jane Wilde, friend of his sister, and whom he had met shortly before his diagnosis, continued to develop. The couple were engaged in October 1964. Hawking later said that the engagement "gave him something to live for." Despite the disease's progressionâ ~Hawking had difficulty walking without support, and his speech was almost unintelligibleâ ~he now returned to his work with enthusiasm. Hawking started developing a reputation for brilliance and brashness when he publicly challenged the work of Fred Hoyle and his student Jayant Narlikar at a lecture in June 1964. When Hawking began his graduate studies, there was much debate in the physics community about the prevailing theories of the creation of the universe: the Big Bang and the Steady State theories. Inspired by Roger Penrose's theorem of a spacetime singularity in the centre of black holes, Hawking applied the same thinking to the entire universe, and during 1965 wrote up his thesis on this topic. There were other positive developments: Hawking received a research fellowship at Gonville and Caius College, and he and Jane were married on July 14, 1965. He completed his doctorate in March 1966, and his essay entitled "Singularities and the Geometry of Space-Time" shared top honours with one by Penrose to win that year's Adams Prize.

#### Career

1966â ^75

The first years of marriage were hectic: Jane lived in London during the week as she completed her degree and they travelled to the United States several times for conferences and physics-related visits. The couple had difficulty finding housing that was within Hawking's walking distance to the Department of Applied Mathematics and Theoretical Physics (DAMTP). Jane began a Ph.D/program, and a son, Robert, was born in May 1967. In his work, and in collaboration with Penrose, Hawking extended the singularity theorem concepts first explored in his Ph.D. thesis. This included not only the existence of singularities but also the theory that the universe might have started as a singularity. Their joint essay was the runner-up in the 1968 Gravity Research Foundation competition. In 1970 they published a proof that if the universe obeys the general theory of relativity and fits any of the models of physical cosmology developed by Alexander Friedmann, then it must have begun as a singularity.[70]

During the late 1960s, Hawking's physical abilities declined once again: he began to use crutches and ceased lecturing regularly. As he slowly lost the ability to write, he developed compensatory visual methods, including seeing equations in terms of geometry. The physicist Werner Israel later compared the

achievements to Mozart composing an entire symphony in his head.[74] Hawking was, however, fiercely independent and unwilling to accept help or make concessions for his disabilities. Jane Hawking later noted that "Some people would call it determination, some obstinacy. I've called it both at one time or another." He required much persuasion to accept the use of a wheelchair at the end of the 1960s. Hawking was a popular and witty colleague, but his illness as well as his reputation for brashness and intelligence distanced him from some. In 1969, Hawking accepted a specially created 'Fellowship for Distinction in Science' to remain at Caius.

A daughter, Lucy, was born in 1970. Soon after Hawking discovered what became known as the second law of black hole dynamics, that the event horizon of a black hole can never get smaller. With James M. Bardeen and Brandon Carter, he proposed the four laws of black hole mechanics, drawing an analogy with thermodynamics. To Hawking's irritation, Jacob Bekenstein, a graduate student of John Wheeler, went furtherâ ~and ultimately correctlyâ ~applying thermodynamic concepts literally. In the early 1970s, Hawking's work with Carter, Werner Israel and David C. Robinson strongly supported Wheeler's no-hair theorem that no matter what the original material from which a black hole is created it can be completely described by the properties of mass, electrical charge and rotation.[85] His essay titled "Black Holes" won the Gravity Research Foundation Award in January 1971. Hawking's first book *The Large Scale Structure of Space-Time* written with George Ellis was published in 1973.

Beginning in 1973, Hawking moved into the study of quantum gravity and quantum mechanics. His work in this area was spurred by a visit to Moscow and discussions with Yakov Borisovich Zel'dovich and Alexander Starobinsky, whose work showed that according to the uncertainty principle rotating black holes emit particles. To Hawking's annoyance, his much-checked calculations produced findings that contradicted his second law, which claimed black holes could never get smaller, and supported Bekenstein's reasoning about their entropy. His results, which Hawking presented from 1974, showed that black holes emit radiation, known today as Hawking radiation, which may continue until they exhaust their energy and evaporate.[92][93] Initially, Hawking radiation was controversial. However by the late 1970s and following the publication of further research, the discovery was widely accepted as a significant breakthrough in theoretical physics. In March 1974, a few weeks after the announcement of Hawking radiation, Hawking was invested as a Fellow of the Royal Society, one of the youngest scientists to be so honoured.

Hawking rarely discussed his illness and physical challenges, evenâ ~in a precedent set during their courtshipâ ~with Jane. Hawking's disabilities meant that the responsibilities of home and family rested firmly on his wife's increasingly overwhelmed shoulders, leaving him more time to think about physics. When in 1974 Hawking was appointed to the Sherman Fairchild Distinguished Scholar visiting professorship at the California Institute of Technology (Caltech), Jane proposed that a graduate or post-doctoral student live with them and help with his care. Hawking accepted, and Bernard Carr travelled to California with them as the first of many students who fulfilled this role.[103] The family spent a generally happy and stimulating year in Pasadena. Hawking worked with his friend on the faculty, Kip Thorne, and engaged him in scientific wager about whether the dark star Cygnus X-1 was a black hole. The wager was a surprising "insurance policy" against the proposition that black holes did not exist. Hawking acknowledged that he had lost the bet in 1990, which was the first of several that he was to make with Thorne and others. Hawking has maintained ties to Caltech, spending a month there almost every year since this first visit.

1975â ~1990

Hawking returned to Cambridge in 1975 to a new home, a new jobâ ~as Reader. Don Page, with whom Hawking had begun a close friendship at CalTech, arrived to work as the live-in graduate student assistant. With Page's help and that of a secretary, Jane's responsibilities were reduced so she could return to her thesis and her new interest in singing. The mid to late 1970s were a period of

growing public interest in black holes and of the physicist who was studying them. Hawking was regularly interviewed for print and television. He also received increasing academic recognition of his work. In 1975 he was awarded both the Eddington Medal and the Pius XI Gold Medal, and in 1976 the Dannie Heineman Prize, the Maxwell Prize and the Hughes Medal. Hawking was appointed a professor with a chair in gravitational physics in 1977. The following year he received the Albert Einstein Medal and an honorary doctorate from the University of Oxford. The Hawking family welcomed a third child, Timothy, in April 1979. That autumn Hawking was appointed the Lucasian Professor of Mathematics at the University of Cambridge, a position he held for 30 years until he retired in 2009.[116] Hawking's inaugural lecture as Lucasian Professor of Mathematics was titled: "Is the end in sight for Theoretical Physics" and proposed  $N=8$  Supergravity as the leading theory solve many of the outstanding problems physicists were studying. Hawking's promotion coincided with a health crisis which led to Hawking accepting, albeit reluctantly, some nursing services at home. At the same time he was also making a transition in his approach to physics, becoming more intuitive and speculative rather than insisting on mathematical proofs. "I would rather be right than rigorous" he told Kip Thorne. In 1981 he proposed that information in a black hole is irretrievably lost when a black hole evaporates. This information paradox violates the fundamental tenet of quantum mechanics, and was to lead to years of debate, including "the Black Hole War" with Leonard Susskind and Gerard 't Hooft.[121]

In December 1977, Jane had met organist Jonathan Hellyer Jones when singing in a church choir. Hellyer Jones became close to the Hawking family, and by the mid 1980s, he and Jane had developed romantic feelings for each other. According to Jane, her husband was accepting of the situation, stating "he would not object so long as I continued to love him." Jane and Hellyer Jones determined not to break up the family and their relationship remained platonic for a long period.

Cosmological inflationâ ~a theory proposing that following the Big Bang the universe initially expanded incredibly rapidly before settling down to a slower expansionâ ~was proposed by Alan Guth and also developed by Andrei Linde. Following a conference in Moscow in October 1981, Hawking and Gary Gibbons organized a three-week Nuffield Workshop in the summer of 1982 on the Very Early Universe at Cambridge University, which focussed mainly on inflation theory.[129][130] Hawking also began a new line of quantum theory research into the origin of the universe. In 1981 at a Vatican conference he presented work suggesting that there might be no boundaryâ ~or beginning or endingâ ~to the universe. He subsequently developed the research in collaboration with Jim Hartle, and in 1983 they published developed a model, known as the Hartleâ ^Hawking state. It proposed that prior to the Planck epoch, the universe had no boundary in space-time; before the Big Bang, time did not exist and the concept of the beginning of the universe is meaningless.[133] The initial singularity of the classical Big Bang models was replaced with a region akin to the North Pole. One cannot travel north of the North Pole, but there is no boundary thereâ ~it is simply the point where all north-running lines meet and end. Initially the no-boundary proposal predicted a closed universe which had implications about the existence of God. As Hawking explained "If the universe has no boundaries but is self-contained... then God would not have had any freedom to choose how the universe began." But Hawking did not rule out the existence of a Creator, asking in A Brief History of Time "Is the unified theory so compelling that it brings about its own existence?" In his early work, Hawking spoke of God in a metaphorical sense. In A Brief History of Time he wrote: "If we discover a complete theory, it would be the ultimate triumph of human reasonâ ~for then we should know the mind of God." [138] In the same book he suggested the existence of God was unnecessary to explain the origin of the universe.[139] Later discussions with Neil Turok led to the realisation that it is also compatible with an open universe. Further work by Hawking in the area of arrows of time led to the 1985 publication of a paper theorising that if the

no-boundary proposition were correct, then when the universe stopped expanding and eventually collapsed, time would run backwards. A paper by Don Page and Raymond Laflamme led Hawking to withdraw this concept. Honours continued to be awarded: in 1981 Hawking he was awarded the American Franklin Medal, and in 1982 made a Commander of the Order of the British Empire (CBE). Awards do not pay the bills, however, and motivated by the need to finance the children's education and home expenses, in 1982 Hawking determined to write a popular book about the universe that would be accessible to the general public. Instead publishing with an academic press, he signed a contract with Bantam Books, a mass market publisher, and received a large advance for his book. A first draft of the book, called *A Brief History of Time* was completed in 1984. During a visit to CERN in Geneva in the summer of 1985, Hawking contracted pneumonia which in his condition was life-threatening; he was so ill that Jane was asked if life support should be terminated. She refused but the consequence was a tracheotomy, which would require round-the-clock nursing care, and remove what remained of his speech. The National Health Service would pay for a nursing home but Jane was determined that he would live at home. The cost of the care was funded by an American foundation. Nurses were hired for the three shifts required to provide the round-the-clock support he required. One of those employed was Elaine Mason, a vivacious woman who was to become Hawking's second wife.

For his communication, Hawking initially raised his eyebrows to choose letters on a spelling card. But he then received a computer program called the "Equalizer" from Walt Woltoz. In a method he uses to this day, using a switch he selects phrases, words or letters from a bank of about 2500-3000 that are scanned. The program was originally run on desktop computer. However Elaine Mason's husband David, a computer engineer, adapted a small computer and attached it to his wheelchair. Released from the need to use somebody to interpret his speech, Hawking commented that "I can communicate better now than before I lost my voice." The voice he uses has an American accent and is no longer produced.[162] Despite the availability of other voices, Hawking has retained his original voice, saying that he prefers his current voice and identifies with it.[163] At this point, Hawking activated a switch using his hand and could produce up to 15 words a minute. Lectures were prepared in advance, and sent to the speech synthesiser in short sections as they were delivered.

One of first messages Hawking produced in on his speech generating device was a request for his assistant to help him finish writing *A Brief History of Time*. Peter Guzzardi, his editor at Bantam, pushed him to explain his ideas clearly in non-technical language, a process that required multiple revisions from an increasingly irritated Hawking. The book was published in April 1988 in the US and in June in the UK, and proved to be extraordinary success, rising quickly to the top of bestseller lists in both countries and remaining there for weeks and months.[168] The book was translated into multiple languages, and ultimately sold an estimated 9 million copies.[168] Media attention was intense, and *Newsweek* magazine cover and a television special both described him as "Master of the Universe". Success led to significant financial rewards, but also the challenges of celebrity status. Hawking travelled extensively to promote his work. He had difficulty refusing the invitations and visitors which left limited time for work and his students. Some colleagues were resentful of the attention Hawking received, feeling it was due of his disability. He received further academic recognition, including five further honorary degrees, the Gold Medal of the Royal Astronomical Society (1985), the Paul Dirac Medal (1987) and, jointly with Penrose, the prestigious Wolf Prize (1988). In 1989, he was named a Companion of Honour by Queen Elizabeth II.

1990 to 2000

Hawking's marriage had been strained for many years. Jane felt overwhelmed by the intrusion into their family life of the required nurses and assistants. The impact of his celebrity was challenging for colleagues and family members, and in one interview Jane described her role as "simply to tell him that he's not



God." [178] Hawking's agnostic views of religion also contrasted with her strong Christian faith, and resulted in tension. [178] In the late 1980s Hawking had grown close to one of his nurses, Elaine Mason, to the dismay of some colleagues, carers and family members who were disturbed by her strength of personality and protectiveness. Hawking told Jane that he was leaving her for Mason, and departed the family home in February 1990. Following his divorce from Jane in the spring of 1995, Hawking married Mason in September, declaring "It's wonderfulâI have married the woman I love." Hawking pursued his work in physics: in 1993 he co-edited a book on Euclidean quantum gravity with Gary Gibbons, and published a collected edition of his own articles on black holes and the Big Bang. In 1994 at Cambridge's Newton Institute, Hawking and Penrose delivered a series of six lectures, which were published in 1996 as "The Nature of Space and Time". In 1997 he conceded a 1991 public scientific wager made with Kip Thorne and John Preskill of Caltech. Hawking had bet that Penrose's proposal of a "cosmic censorship conjecture"âthat there could be no "naked singularities" unclothed within a horizonâwas correct. After discovering his concession might have been premature, a new, more refined, wager was made. This specified that such singularities would occur without extra conditions. The same year, Thorne, Hawking and Preskill made another bet, this time concerning the black hole information paradox. [188] Thorne and Hawking argued that since general relativity made it impossible for black holes to radiate and lose information, the mass-energy and information carried by Hawking Radiation must be "new", and not from inside the black hole event horizon. Since this contradicted the quantum mechanics of microcausality, quantum mechanics theory would need to be rewritten. Preskill argued the opposite, that since quantum mechanics suggests that the information emitted by a black hole relates to information that fell in at an earlier time, the concept of black holes given by general relativity must be modified in some way. [189] Hawking also maintained his public profile, including bringing science to a wider audience. In 1992 a film version of "A Brief History of Time"âdirected by Errol Morris and produced by Stephen Spielbergâwas premiered. Hawking had wanted the film to be scientific rather than biographical, but was persuaded otherwise. The film, while a critical success, was however not widely released. A popular-level collection of essays, interviews and talk titled Black Holes and Baby Universes and Other Essays was published in 1993 and six-part television series Stephen Hawking's Universe and companion book appeared in 1997. This time, as Hawking insisted, the focus was entirely on science. He also made several appearances in popular media. At the release party for the home video version of the "A Brief History of Time", Leonard Nimoy, who had played Spock on Star Trek, learnt that Hawking was interested in appearing on the show. Nimoy made the necessary contact and Hawking appeared as himself on Star Trek: The Next Generation in 1993. The same year, his synthesiser voice was recorded for the Pink Floyd song "Keep Talking", and in 1999 for an appearance on The Simpsons. In 1999 Hawking was awarded the Julius Edgar Lilienfeld Prize of the American Physical Society. [199] The same year, Jane Hawking published a memoir, Music to Move the Stars, describing her marriage to Hawking and its breakdown. Its revelations caused a sensation in the media, but as was his usual practice regarding his personal life, Hawking made no public comment except to say that he did not read biographies about himself.

2000 to present

Following his second marriage, Hawking's family felt excluded and marginalized from his life. [201] Soon after turn of the century, and for a period of about five years, family and staff became increasingly worried that the scientist was being physically abused. [201] Police investigations took place, but were closed as Hawking refused to make a complaint. [203][201][204]

Hawking continued his writings for a popular audience, publishing The Universe in a Nutshell in 2001, and A Briefer History of Time which he wrote in 2005 with Leonard Mlodinow to update his earlier works to make them accessible to a wider audience, and God Created the Integers, which appeared in 2006. In 2004, Hawking announced that he was conceding the 1997 bet with Preskill because he

now believed that black hole horizons should fluctuate and leak information.[188] Along with Thomas Hertog at the European Organization for Nuclear Research (CERN), in 2006 Hawking proposed a theory of "top-down cosmology", which says that the universe had no unique initial state and therefore that it is inappropriate to formulate a theory that predicts the universe's current configuration from one particular initial state.[208] Top-down cosmology posits that in some sense, the present "selects" the past from a superposition of many possible histories. In doing so, the theory suggests a possible resolution of the fine-tuning question.[209]

The same year Hawking and Elaine quietly divorced,[210] following which Hawking resumed closer relationships with Jane, his children and grandchildren.[178] Reflecting this happier period a revised version of Jane's book called *Travelling to Infinity, My Life with Stephen* was published in 2007.[201] The same year, Hawking and his daughter, Lucy, published *George's Secret Key to the Universe*, a children's book designed to explain theoretical physics in an accessible fashion and featuring characters similar to those in the Hawking family.[212] This first book was followed by sequels in 2009 and 2011.[214]

Hawking continued to feature regularly on the screen: documentaries entitled *The Real Stephen Hawking*: (2001) and *"Stephen Hawking: Profile"* (2002), a TV film *Hawking* about the period around the onset of Hawking's illness (2004), and a documentary series *Stephen Hawking, Master of the Universe* (2008).[217] Hawking made further appearances in animated form on *The Simpsons*,[219] and *Futurama*[220] and in person on *The Big Bang Theory*. [221] Over the years, Hawking maintained his public profile with a series of attention-getting and often controversial statements: he has asserted that computer viruses were a form of life, that humans should use genetic engineering to avoid being outsmarted by computers, and that aliens likely exist and contact with them avoided.[225][226] Hawking has expressed his concerns that life on earth is risk due to "a sudden nuclear war, a genetically engineered virus or other dangers we have not yet thought of".[227] He views spaceflight and the colonisation of space as necessary for the future of humanity.[227][228] Motivated by an desire both to increase public interest in spaceflight and a desire to show the potential of people with disabilities, in 2007 he participated in zero-gravity flight in a "Vomit Comet", courtesy of Zero Gravity Corporation, during which he experienced weightlessness eight times.[229][230][227]

Hawking's disease-related deterioration has continued to decline, and in 2005 he began to control his communication device with movements of his cheek muscles,[233][234] with a rate of about one word per minute.[233] With this decline there is a risk of him acquiring locked-in syndrome, so Hawking is collaborating with research brainâ€ˆcomputer interface that could translate Hawking's brain patterns into switch activations.[234][235] In 2002, following a UK-wide vote, the BBC included him in their list of the 100 Greatest Britons.[236] Hawking was awarded the Copley (2006) Medal from the Royal Society,[237] the Spanish Fonseca Prize (2008),[238] America's highest civilian honour, the Presidential Medal of Freedom (2009),[239] and the Russian Fundamental Physics Prize (2012).[240]

Several buildings have been named after him, including the Stephen W. Hawking Science Museum in San Salvador, El Salvador,[241] the Stephen Hawking Building in Cambridge,[242] and the Stephen Hawking Centre at Perimeter Institute in Canada.[243]

Hawking presided over the unveiling of the "Chronophage" (time-eating) Corpus Clock at Corpus Christi College Cambridge in September 2008.[244]

As required by university regulations, Hawking retired as Lucasian Professor of Mathematics in 2009. He has continued to work as director of research at the Department of Applied Mathematics and Theoretical Physics, and has no plans to retire.[245]

Hawking has stated that he is "not religious in the normal sense" and he believes that "the universe is governed by the laws of science. The laws may

have been decreed by God, but God does not intervene to break the laws." [246] In an interview published in *The Guardian*, Hawking regarded the concept of Heaven as a myth, believing that there is "no heaven or afterlife" and that such a notion was a "fairy story for people afraid of the dark." [138] At Google's Zeitgeist Conference in 2011, Hawking said that "philosophy is dead." He believes philosophers "have not kept up with modern developments in science" and that scientists "have become the bearers of the torch of discovery in our quest for knowledge." He said that philosophical problems can be answered by science, particularly new scientific theories which "lead us to a new and very different picture of the universe and our place in it." [247] In August 2012 Hawking narrated the Enlightenment segment of the 2012 Summer Paralympics opening ceremony. [248]

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##### Children's fiction

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#### External links

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The Queluz National Palace (Portuguese: Palácio Nacional de Queluz, Portuguese pronunciation: [kɛ̃ˈɛ̃ ɛ̃ˈũ]) is a Portuguese 18th-century palace located at Queluz, a freguesia of the modern-day Sintra Municipality, in the Lisbon District. One of the last great Rococo buildings to be designed in Europe,[1] the palace was conceived as a summer retreat for Dom Pedro of Braganza, later to become husband and then king consort to his own niece, Queen Maria I. It served as a discreet place of incarceration for Queen Maria as her descent into madness continued in the years following Dom Pedro's death in 1786. Following the destruction by fire of the Ajuda Palace in 1794, Queluz Palace became the official residence of the Portuguese prince regent, John VI, and his family and remained so until the Royal Family fled to Brazil in 1807 following the French invasion of Portugal.[2]

Work on the palace began in 1747 under the architect Mateus Vicente de Oliveira. Despite being far smaller, the palace is often referred to as the Portuguese Versailles.[3] From 1826, the palace slowly fell from favour with the Portuguese sovereigns. In 1908, it became the property of the state. Following a serious fire in 1934, which gutted the interior, the palace was extensively restored, and today is open to the public as a major tourist attraction.

One wing of the palace, the Pavilion of Dona Maria, built between 1785 and 1792 by the architect Manuel Caetano de Sousa, is now a guest house allocated to foreign heads of state visiting Portugal.

[edit] Architecture and history

Queluz's architecture is representative of the final extravagant period of Portuguese culture that followed the discovery of Brazilian gold in 1690.[4] From the beginning of the 18th century many foreign artists and architects were employed in Portugal to satisfy the needs of the newly enriched aristocracy; they brought with them classical ideas of architecture which derived from the Renaissance. In its design, Queluz is a revolt against the earlier, heavier, Italian-influenced Baroque which preceded the Rococo style throughout



Europe.[4]

Comparisons with the far larger and more Baroque Versailles are unwarranted: Versailles is referred to as having "an aura of majesty" and it was built and dedicated to exhibit in stone "all the glories of France,"[5] whereas the far smaller palace at Queluz has been described as "exquisite rather than magnificent" and looking like "a very expensive birthday cake".[6] In its frivolity, the architecture of Queluz reflects the lifestyle led by the Portuguese royal family at the time of building: during the reign of Dom Pedro's brother, Joseph I, when Portugal was in practice governed by a valido or favourite, the Marquis of Pombal. Pombal encouraged the royal family to while away their days in the country and leave affairs of state to him.[4] Thus the extravagant, almost whimsical architecture of Queluz, set apart from the capital city, exactly represents the politics and social events of Portugal during this era, and the carefree and flamboyant lives led by its occupants.[4] Queluz's role as a haven for those without responsibility was, however, to be short-lived.

On the accession to the throne of Dom Pedro's wife Maria in 1777, Pombal was dismissed, and Dom Pedro and Maria ruled jointly in his place, using the partially completed Rococo palace at Queluz as a retreat from affairs of state in much the same way as Frederick the Great used Europe's other famed Rococo palace, Sanssouci.[7]

The site chosen for this summer retreat was in a secluded hollow.[8] It had originally been owned by the Marquess of Castelo Rodrigo. When the ruling Spanish were driven from Portugal in 1640, the property was confiscated, and Rodrigo was accused of having collaborated with the Spanish. The estate and its hunting lodge then became one of the many properties of the Portuguese king, João IV. He set it aside as one of the properties reserved for the second son of the reigning monarch.[9] Thus it came into the hands of Dom Pedro, the second son of João V.

The architect, Mateus Vicente de Oliveira, had trained under Ludovice of Ratisbon and Jean Baptiste Robillon[10] during the construction of the royal palace and convent of Mafra. The more sombre and massive classical palace at Mafra does not appear to have influenced the design for Queluz, which is in a lighter, more airy style.[1] Work began in 1747 and continued rapidly until 1755, when it was interrupted by the Great Earthquake of 1755, after which the labourers were more urgently required for the reconstruction of the city. The earthquake proved to be a catalyst, because the urban rebuilding process stimulated the development of the arts in Portugal.[4] The subsequent architecture of Queluz was influenced by new ideas and concepts. When work recommenced in 1758, the design was adapted for fear of another earthquake. Thus the later works take the form of low, long buildings, more structurally stable than a single high block: as a result, viewed from a distance the palace resembles long enfilades linked by higher pavilions rather than one single construction.[11]

[edit] Exterior

The public façade of the palace faces directly onto a town square and takes the form of two low, symmetrical, quadrant wings which flank the forward-reaching wings of a small central corps de logis, thus forming a semi-circular cour d'honneur (see key 1). The southern of the two quadrant wings is terminated by the onion-domed chapel, while the northern wing contained the kitchens and servants' quarters (see keys 2, 1 and 13).[12] The only decoration comes from the simple classical pediments above the windows. This façade, that most readily seen from the town, presents a decorous and impassive public face with one of the most architecturally severe elevations of the palace (see illustration right).

Oliveira was directly responsible for the "Ceremonial Façade" of the "corps de logis", the rectangular block which forms the nucleus of the palace, and some of the interior courtyards. His former tutor, the Frenchman Jean-Baptiste Robillon, was in charge of the gardens, many buildings, and the Rococo interiors. He in turn was assisted by Jean-Baptiste Pillement and other French

and Portuguese artists. The "Ceremonial Façade" is the best-known view of the palace. With classical proportions, it is externally decorated by travertine rendering and delicately carved cartouches over the windows. It has been described as a "harmonious example of Portuguese Baroque".[9] This façade with its single-storey flanking wings forms a three-sided courtyard containing the "Hanging Garden" – so called because like the Hanging Gardens of Babylon it is on a raised terrace (see key 5).

The second major part of the palace is the great western wing, known as the Robillon wing or Robillon Pavilion, which illustrates better than any other the excesses of Baroque and Rococo architecture (see key 9). Completed in 1779, it has a doric colonnade which runs the entire length of its western and southern façades, the roof of which provides a balustraded balcony accessible from the floor above (see key 10). Owing to the topography of the site, the eastern side appears as a single-storey building, with only the upper floor visible above the ground in the "Hanging Garden". The balustrade on the roof of the Robillon wing is broken by heavy segmental pediments adorned with reclining statuary figures; the balustrade itself is also adorned with flambeaux, statuary and heavy armorial trophies (see illustration below).

The Robillon wing contains an entrance to the palace reached by flights of ingeniously designed graduated steps. Their design creates an illusion of a longer and higher perspective, centred on a corner of a terrace because of exigencies of the site, and divided mid-flight so as not to lead the eye and footstep towards an angle of the colonnade beyond. The steps are adorned with elaborate statuary (see key 11). The bays of the façade are stuccoed rose-pink, contrasting with the motifs and pilasters in natural stone (see illustration).

In 1760, Pombal arranged for Dom Pedro to marry the king's unstable daughter Maria, the heiress to the throne. Pombal encouraged the couple to live with their children in the unfinished palace at Queluz, away from the seat of government. It had always been a favourite retreat of the couple and was their principal home before Maria's accession. Further enlargements were made to reflect the palace's elevation from country retreat to royal palace. However, Maria had dismissed Pombal on her accession and, as a ruling monarch, she did not have time to while away her hours in the country. Dom Pedro interfered little in affairs of state, preferring to spend his time on religious matters.[13]

By the death of Dom Pedro in 1786, all the interior work was completed.[14] This was fortunate, as from this period his widow's mental health deteriorated, until in 1794, she and her court took up official and full-time residence at Queluz. There the now completely insane Queen could be hidden from the view of her subjects. Her eldest son, later King João VI, was appointed Regent and ruled from Lisbon and the great palace at Mafra.[15]

In 2004, the World Monuments Fund began a program to restore the lead sculptures by British sculptor John Cheere, as well as some of the other features of the garden. The project is ongoing.

[edit] Interior


The interior of the palace received no less attention to detail and design than the exterior. French artisans were employed to decorate the rooms, many of which are small, their walls and ceilings painted to depict allegorical and historical scenes. Polished red bricks were frequently used for the floors, for a rustic appearance as well as coolness in hot weather.[1] The many tall pavilions which link the various lower wings of the palace allow for a series of long low rooms broken by higher and lighter rooms. A predominant feature of the interiors is the azulejos: polychrome glazed tiles, often in a chinoiserie style with tones of blues and yellows contrasting with muted reds. Materials for use on the interior included stone imported from Genoa and woods from Brazil, Denmark and Sweden, while coloured marbles were imported from Italy.[17] Many of the palace's rooms were severely damaged by fire in 1934, and much was lost.

[edit] The state apartments

[edit] The Sala das Mangas

The Sala das Mangas (the only room in the state apartments to fully survive the 1934 fire) is a long gallery lined with tiled wall panels (illustrated below). The gallery leads to the enfilade of state rooms, all of which have been fully restored. The formal rooms of the palace consist of three large halls: The Hall of Ambassadors, The Music Room and the Ball Room. Other smaller rooms include the Gun Room (where hunting parties would assemble), which is a frescoed salon painted with trees and foliage by Pillement.

[edit] The Music Room

The Music Room (illustrated below) which follows the "Sala dos Embaixadores" is decorated with gilded and painted wood and was redesigned in 1768. The ceiling inset with painted cartouches is notable for the intricate ribbed scheme of its design, similar to that of the vestibule at Caserta.[16] The Music Room is decorated in a more neoclassical style than the other state rooms, reflecting its redesign in the period following the Baroque Rococo in the final half of the 18th century. This room was the setting for the large concerts for which the palace was famous.[18] The room still contains the Empire grand piano decorated with gilt appliques.[16] Above the piano hangs a . Like many other rooms of the palace, the Music Room is lit by huge crystal chandeliers.

[edit] The Ball Room

The Ballroom, the last of the palace's three largest rooms,[19] (illustrated below) was designed by Robillon in 1760. To create this oval room the architect combined five smaller rooms.[20] The ormolu Rococo ornament takes the form of heavy gilding to the walls and ceiling, of such richness that it has been compared with that of François de Cuvilliés' Amalienburg at Schloss Nymphenburg.[18] The walls and doors are mirrored and the painted and gilded, coffered ceiling is supported by golden caryatids.[21]

[edit] The Hall of Ambassadors

The Hall of Ambassadors ("Sala dos Embaixadores"), sometimes called the throne room or the Hall of Mirrors, was designed by Robillon in 1757 and is one of the largest reception rooms in the palace.[18] This long low room has a ceiling painted by Francisco de Melo which depicts the Portuguese royal family attending a concert during the reign of Queen Maria I. The room is extremely wide and light, spanning the full width of the palace, with tall windows on both sides. Between each window is a semi-circular gilt console table above which are pier glasses adorned with crystal sconces. The throne dais, set in an apse, is flanked by gilded and mirrored columns, and the floor is a chequer board pattern of black and white marble tiles.[22]

[edit] The Chapel

During the occupancy of the palace by Dom Pedro and Maria I, the chapel was central to the daily routine of their court. It was no coincidence that the chapel was the first part of the palace to be completed and was consecrated as early as 1752. Religion was one of Dom Pedro's favourite interests. During the reign of his wife he attended to matters spiritual and she to matters temporal. The Queen's interest in religion was, however, no less fevered than that of her husbandâ ~the couple attended mass several times a day.[13] Following Dom Pedro's death, the Queen abandoned all festivities at the palace, and state receptions assumed the air of religious ceremonies.[13] Finally the Queen's instability and religious mania degenerated into complete insanity.[14] Queluz and its chapel then became her permanent retreat from the world until she was forced to flee from the advancing French in 1807 to Brazil. She died there in Rio de Janeiro in 1816.

The chapel beneath its large onion dome is dark and cavernous and decorated with carved giltwood, the detailing highlighted in red, green, blue and pink, by the Portuguese sculptor Silvestre Faria Lobo.[21] The upper level has galleries for the use of royal personages who would sit apart from the

congregation. One of these galleries contains a small Rococo pipe organ. A feature of the chapel is the ornate portable font, its marble basin resting in an elaborate Rococo frame surmounted by a carved wood cover.[23]

[edit] The private apartments

The private rooms of the palace are far smaller and more intimate than the formal state rooms and contain many royal mementos and curios which belonged to the rooms' former occupants. Amongst the more remarkable rooms in this suite are the Sala das Merendas, the Queen's Boudoir and the King's Bedroom.

[edit] Sala das Merendas

This was the royal family's private dining room. The decoration continues the theme used in some of the more formal and public rooms, with tiled panels illustrating courtiers in sylvan poses. These panels, like much other work in the palace, were produced by João Valentim and José Conrado Rosa.[24]

[edit] The Queen's Boudoir

This was one of the private rooms used by Maria I during her time at Queluz. It is designed in the form of a bower, with a trellis pattern on the ceiling which is reflected in the design of the marquetry floor (illustrated below), giving the impression of being in a pergola rather than an interior.[14] The marquetry floors of the private rooms distinguish these smaller more intimate rooms from the larger state rooms where such delicate features would have been damaged by more frequent use. The walls of the boudoir are heavily mirrored and contain overdoor and mirror carouches by José Conrado Rosa.[25] Next to the boudoir is the Queen's bedroom; it was from this light and airy room that the demented shrieks of the Queen were reported by William Beckford, who visited the palace in 1794.[26]

[edit] The King's Bedroom

The King's Bedroom (illustrated below) has been described as one of the most "fantastic" rooms in the palace.[14] Although actually square, it gives the illusion of being completely circular, with a domed ceiling supported by columns of mirrored glass. Between the columns are cartouches depicting scenes from the tales of Don Quixote. João VI died in this room in 1826. The room contains a large bust of the King showing his "pendulous jowls and unattractive face".[24]

[edit] Grounds

Queluz is famed for the glory of its gardens,[10] which include a large topiary parterre laid out in the manner of Le Nôtre at the rear of the palace (see key 14). The Flemish influences, including the canals, in the garden are the work of the Dutch gardener Gerald van der Kolk, who assisted Robillon from 1760.[27] Formal terraces and walkways are given extra interest by statuary and fountains. The dominant feature of the principal parterre is the "Portico dos Cavalinhos", a garden temple flanked by two allegorical equestrian statues depicting Fames, and two sphinxes (see final illustration) surreally dressed in 18th-century costume, combining the formal and the fantastic.[28] This surreal theme continues elsewhere in the gardens where such motifs as the rape of the Sabines and the death of Abel alternate with statuary of donkeys dressed in human clothing. Deeper in the gardens is a grotto complete with a cascade. Later to be a popular feature in Portuguese gardens, the Queluz cascade was the first artificial waterfall to be constructed near Lisbon.[28]

An avenue of huge magnolias forms the approach to the classical Robillon wing of the palace (see key 7), while from the wing a double staircase leads to the canal. More than 100 metres (330 ft) long, the walls of the canal are decorated with tiled panels depicting seascapes and associated scenes. This is the largest of a series of canals in the gardens bordered with chinoiserie-style azulejo tiles. Fed by a stream, the sluice gates to the canals are only opened in May. During the 18th century, the canals were the setting for fêtes champêtres during which fully rigged ships would sail in processions with

figures aboard in allegorical costumes.[29]

The gardens also contain a fountain with tritons and dolphins which has been attributed to Bernini.[30] There are further fountains and statuary in the lower gardens, set within tall hedges of yew and cypress, and magnolia and mulberry trees planted by Marshal Junot during the French occupation in the Napoleonic wars.[31]

[edit] Later history

Following a fire at the Ajuda Palace in 1794, the Prince Regent John VI and his wife Carlotta Joaquina began to use Queluz themselves. The Robillon wing was enlarged and given an upper floor for the use of the princess and her nine children.[32] These additions were destroyed in the fire of 1934.[32] To escape the forces of Napoleon I in 1807, the Portuguese royal family abandoned Queluz and fled to Brazil. The French occupational forces took control of the palace, and their commander, Marshal Junot, made several alterations to the building.[14] On the royal family's return from exile in 1821, the King preferred to live at Mafra, leaving his wife, the Spanish Queen Carlotta Joaquina, to occupy Queluz with her aunt Princess Maria Francisca Benedita.[32] The King visited Queluz infrequently. It was on one of these rare visits that João VI died in the circular domed King's Bedroom in 1826.[15]

Carlotta Joaquina, sometimes described as sinister,[33] is said to have been ambitious and violent. Her features were reportedly ugly, and she was short in stature. Whatever her shortcomings she lived in great style at Queluz, employing an orchestra which William Beckford described as the finest in Europe.[24] The Queen also had a small private theatre in the gardens, of which nothing remains today.[24] She died at the palace in 1830.[24]

Following the death of Carlotta Joaquina, Queluz saw only intermittent use as a royal residence and was not again the primary residence of Portuguese royals. Carlotta Joaquina's son King Miguel used the palace during the three-year civil war which he fought against his brother King Pedro IV,[32] before being forced by his brother in 1834 to abdicate and go into exile. A year later, Pedro IV died of tuberculosis at the age of 35 at Queluz, the palace of his birth. Pedro I's daughter Maria II ruled until her death in 1853 and was succeeded by her son Pedro V. Following his untimely death in the cholera epidemic of 1861, the throne passed to his brother Luís. From this time the royal family lived chiefly at the rebuilt Ajuda Palace in Lisbon. On the assassination of Luís's son Carlos I in 1908, the palace passed into the ownership of the state. Portugal was in the turmoil of revolution and the monarchy fell two years later.

[edit] Queluz, National Monument

In the 21st century, the palace gardens, once an irrigated oasis in the centre of parched farmland, are bounded by the "Radial de Sintra" motorway which feeds traffic towards Lisbon and away from Sintra. However, transportation and tourism have been the saviours of the palace. Since 1940 it has been open to the public as a museum. It houses much of the former royal collection, including furniture, Arraiolos carpets, paintings, and Chinese and European ceramics and porcelain.[2]

In 1957, the "Dona Maria Pavilion" in the palace's east wing was transformed into a guest house for visiting heads of state.[2] Today the palace's principal rooms are therefore not simply museums, but the setting for official entertaining.

The town square that the palace faces, "Largo do Palácio de Queluz", remains relatively unaltered since the 18th century. The large houses, once the homes of courtiers, and the former Royal Guard quarters with its campanile are still clustered around the palace. In latter years, the town of Queluz has expanded considerably to become one of the suburbs of Lisbon. The Palace of Queluz is one of Lisbon's many tourist attractions.

[edit] See also

<sup>^</sup> a b c Lowndes, p. 179.

<sup>^</sup> a b c IPPAR

- ^ Fielding, p. 275.
- ^ a b c d e Dynes, p. 178.
- ^ Rey, p. 44.
- ^ Fielding, p. 275
- ^ Powell, pp. 95â ^101.
- ^ Lowndes. p. 179.
- ^ a b Dynes, p. 181.
- ^ a b Fielding, p. 276.
- ^ Fielding, p.276.
- ^ Lowndes, p. 175.
- ^ a b c Maria I of Portugal
- ^ a b c d e f Fielding, p. 279.
- ^ a b Fielding, p.279.
- ^ a b c d Dynes, p. 182.
- ^ Lowndes, p.179
- ^ a b c d Dynes, p. 183.
- ^ Lowndes. pp. 178â ^183
- ^ Dynes, p 183.
- ^ a b Lowndes, p. 183.
- ^ Lowndes, p. 178.
- ^ Lowndes, p.185.
- ^ a b c d e Lowndes, p. 181.
- ^ Dynes, p. 184.
- ^ Lowndes, p. 181
- ^ a b Dynes, p. 186.
- ^ a b c Fielding, p. 277.
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- ^ Lowndes, p. 180.

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[edit] External links

Coordinates: 38°45′20″N 9°15′23″W﻿ / ﻿38.7506°N 9.2587°W﻿ / 38.7506; -9.2587

Dover Athletic Football Club is an association football team based in the town of Dover, Kent, England. The club was formed in 1983 after the dissolution of the town's previous club, Dover, whose place in the Southern League was taken by the new club. In the 1989â ^90 season Dover Athletic won the Southern League championship, but failed to gain promotion to the Football Conference as the club's ground did not meet the required standard. Three seasons later the team won this title again and this time gained promotion to the Conference, where they spent nine seasons before being relegated. In April 2008 the club won the championship of Division One South and with it promotion to the Isthmian League Premier Division. The following season Dover won the championship of this division and gained promotion to Conference South.

The team usually wear white shirts and are consequently nicknamed the Whites. They have played at the Crabble Athletic Ground since the club's formation. The club's best performance in the FA Cup was an appearance in the third round proper in the 2010â ^11 season, while the best performance registered in the FA Trophy, the national competition for higher-level non-league clubs, was a run to the semi-finals in the 1997â ^98 season.

[edit] History

For a statistical breakdown by season, see Dover Athletic F.C. seasons

Dover Athletic F.C. was formed in 1983 after the town's previous club, Dover, folded due to its debts. The new club took Dover's place in the Southern League Southern Division,[2] with former Dover player Alan Jones as manager and a team consisting mainly of reserve players from the old club.[5] Initially Athletic struggled, finishing second from bottom of the table in the 1984â ^85 season.[5] In November 1985 Steve McRae, who had succeeded Jones a year earlier, was sacked and replaced by Chris Kinnear.[5]

Under Kinnear the club's fortunes turned round, with two top-five finishes followed by the Southern Division championship, and with it promotion, in the 1987â ^88 season. The team started strongly in the Premier Division, finishing in sixth place at the first attempt, and then winning the championship in the 1989â ^90 season.[7] The club was denied promotion to the Football Conference, however, as the Crabble Athletic Ground did not meet the standard required for that league.[2] After finishing fourth and second in the subsequent two seasons, Dover won the title again in the 1992â ^93 season and this time were admitted to the Conference.[7]

Although Dover finished in eighth place in their first season in the Conference,[8] the following season saw the club struggling against relegation, and Kinnear was dismissed due to a combination of the team's poor performances and his own personal problems.[5][9] John Ryan was appointed as the club's new manager,[10] but his reign was a short one and he was dismissed when the club lost seven of its first eight matches in the 1995â ^96 season.[11] The club then appointed former England international Peter Taylor as manager, but he was unable to steer the team away from the foot of the table, and Dover held onto their place in the Conference only because Northern Premier League runners-up Boston United failed to submit their application for promotion before the required deadline.[11]

Bill Williams took over as manager in 1997 and proved to be Dover's most successful Conference manager, leading the club to the FA Trophy semi-finals in the 1997â ^98 season and a best ever league finish of sixth place in the 1999â ^2000 season.[7][12] Williams left the club to take a senior position with Conference rivals Kingstonian in May 2001.[12] By now the club was in severe financial difficulties, with a number of directors resigning and debts exceeding Â£100,000. Amid the crisis the entire board of directors resigned, forcing the club's Supporters' Trust to take over the running of the club,[13] and manager Gary Bellamy was sacked after just six months in the job.[14][15] Former Everton goalkeeper Neville Southall took over but was dismissed just three months later, with Clive Walker taking over in March 2002 with the club rooted to the foot of the table.[16] The club finished the season bottom of the Conference and was relegated back to the Southern League Premier Division.[17] The club's ongoing financial problems led to it entering a Company Voluntary Arrangement (CVA), a process by which insolvent companies offset their debts against future profits, due to debts that were now estimated at Â£400,000.[18]

In Dover's first season back in the Southern League Premier Division the Whites finished in third place, albeit 17Â points adrift of Tamworth, who claimed the one promotion place available that season. A poor start to the following season saw Walker replaced by Richard Langley.[19] Dover finished the season in 19th place, before being switched to the Isthmian League Premier Division in the summer of 2004 following a re-organisation of the English football league system.[7] The new season started with six successive defeats, which saw Langley sacked, and the financial problems continued, with the club coming within two months of being closed down.[20][21] Dover were relegated to

the Isthmian League Division One at the end of the season,[7] but were saved from possible extinction in January 2005 when former director Jim Parmenter returned to head up a consortium that took over the club.[22] Parmenter quickly sacked manager Steve Browne and convinced Clive Walker to return to the club to replace him,[23] and also arranged for the club's outstanding CVA debts to be cleared, putting the club on a firm financial footing for the first time in many years.[24]

Dover Athletic narrowly missed out on an immediate return to the Premier Division in the 2005â ^06 season, reaching the play-offs for promotion but losing out to Tonbridge Angels.[25] The following season Dover again reached the play-offs but lost in the semi-final to Hastings United,[26] after which Walker did not have his contract renewed and was replaced by former Gillingham manager Andy Hessenthaler.[4] In his first season in charge he led the club to the Division One South championship and promotion to the Isthmian League Premier Division.[27] The following season Dover won a second consecutive championship and thus gained promotion to Conference South.[28] In the 2009â ^10 season, Dover reached the play-offs for promotion to the Conference National, but lost at the semi-final stage to Woking.[29] The following season the club reached the third round of the FA Cup for the first time after wins over Kent rivals Gillingham in the first round[30] and another League Two club, Aldershot Town, in the second round.[31]

[edit] Colours and crest

Dover Athletic's traditional colours are white and black,[32] which were also the colours worn by the earlier Dover club.[33] Away colours worn by the club have included red,[32] yellow and blue.[1] The club's crest contains a stylised representation of the town's two most famous landmarks, Dover Castle and the white cliffs, enclosed in a circle bearing the club's name. The club's shirts have been sponsored by companies including Criccieth Homes, Paul Brown of Dover, Jenkins and Pain and cross-channel operators Hoverspeed and SeaFrance.[1][32][34]

[edit] Stadium

Dover Athletic's home ground since the club's foundation has been the Crabble Athletic Ground, which was also the home of the former Dover club.[2] The word Crabble, which is also found in the name of a local corn mill,[35] may derive from the Old English crabba hol, meaning a hole in which crabs are found.[36] The stadium, commonly known simply as "Crabble"[37] or, imprecisely, as "The Crabble", [38][39] forms part of a larger council-owned complex,[40] and the earlier Dover club originally shared the lower pitch with a rugby club, but moved to the upper pitch in the 1950s, adding a grandstand in 1951, followed soon after by terracing and floodlights.[2]

Dover Athletic continued to make improvements to the ground, although not in time to allow the club to take its place in the Football Conference in 1990. Subsequently new turnstiles were installed and two new terraces and a second grandstand added. These improvements meant that the club was able to gain promotion after its second Southern League title in 1993.[2] The stadium's modern capacity is 6,500, with 1,000Â seats and 4,900Â spectators under cover.[1]

In 2007 the club announced that under the new sponsorship deal with SeaFrance the stadium would be known officially as the SeaFrance Crabble Stadium, but a year later it was announced that the deal would not be renewed due to the ferry operator's financial constraints.[32][41] On 1 July 2008 local car dealership Perry's was announced as the club's new main sponsor and the stadium rebranded as the Perry's Crabble Stadium,[40] an arrangement which lasted until 2012. Between 2003 and 2004 it was known as the Hoverspeed Stadium under the terms of another such agreement.[42] Margate played their home matches at Crabble for two seasons from 2002 until 2004, while their own Hartsgate Park ground was being redeveloped.[43]

[edit] Supporters

In the club's early days Athletic struggled to attract crowds of over 150,[5] but by the time the club reached the Conference, crowds at Crabble were averaging around 1,000.[44][45][46] After the club's relegation to the Isthmian



League Division One South, the average attendance fell to just over 800,[47] but when the club returned to the Premier Division for the 2008â ^09 season, the average attendance at the Crabble was 1,293, the highest in the division.[48] The highest home attendance in the club's history was 4,186 for a match against Oxford United in the first round proper of the FA Cup on 16 November 2002.[49] Although Athletic's improved monetary position means that the Supporters' Trust is no longer required to financially support the club, it remains active as a fundraising organisation.[50]

[edit] Statistics and records

Dover Athletic's highest finish in the English football league system was in the 1999â ^2000 season, in which the team finished in sixth place in the Football Conference, the highest level of non-league football and the fifth level overall. The Whites have made 12 appearances in the final qualifying round of the FA Cup, but only twice progressed to the first round proper. In the 2010â ^11 season, Dover reached the third round for the first time, defeating Football League Two teams Gillingham and Aldershot Town in the first two rounds before losing to Huddersfield Town of Football League One. In the 1997â ^98 season the Whites reached the semi-finals of the FA Trophy but missed out on an appearance at Wembley, losing to Cheltenham Town. The largest number of points the team has accrued is 102 in the 1989â ^90 season, and the highest total number of goals scored in a season is 89, scored in 40Â matches in the 1985â ^86 season.[7] The team's biggest ever win was a 8â ^0 defeat of East Preston in September 2009,[51] and the heaviest defeat was a 7â ^1 loss to Poole Town in April 1984.[52]

The holder of the record for most appearances for Dover Athletic is Jason Bartlett, who played in 539 matches, and the all-time top goalscorer is Lennie Lee, with 160Â goals.[49] The club's record signing is Dave Leworthy, who joined the club from Farnborough Town in 1993 for Â£50,000,[1] which at the time was the highest transfer fee ever paid between non-league clubs.[53] The highest confirmed fee received by the club was also Â£50,000, paid by Brentford in 1997 for Ricky Reina.[1]

[edit] Players

updated 2 February 2013[54]Note: Flags indicate national team as has been defined under FIFA eligibility rules. Players may hold more than one non-FIFA nationality.

N.B. The Conference South does not use a squad numbering system.

[edit] Former players

For a list of former Dover Athletic players with Wikipedia articles, see Category:Dover Athletic F.C. players.

[edit] Managers

Dover Athletic have had 17 permanent managers (excluding caretaker managers) in the club's 25-year history, with Chris Kinnear's 10-year stint being the longest. The shortest stay was Ian Hendon who was announced as manager on 28 May 2010 and resigned only 18 days later to join Andy Hessenthaler at Gillingham.

[edit] Honours

[edit] Rivalries

Dover Athletic's main rivalry is with nearby Folkestone Invicta.[69] A meeting between the two teams in 2004 was watched by a crowd of 2,278, a record attendance for a league match at Invicta's ground.[70] The club also has a rivalry with Margate.[71] In the 2001â ^02 season, when both teams were in the Football Conference, the two games between Margate and Dover were watched by a combined total of more than 6,000 spectators. The game played at Margate's Hartsdown Park stadium drew a crowd of 3,676, and 2,325 were in attendance for the game at Dover.[72]

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[edit] External links

This article is about the England-born actor and entomologist. For the American entomologist, see William Henry Edwards.

Henry Edwards (August 27, 1827 â ^ June 9, 1891), known as "Harry", was an English-born stage actor, writer and entomologist who gained fame in Australia, San Francisco and New York City for his theater work.

Edwards was drawn to the theater early in life, and he appeared in amateur productions in London. After sailing to Australia, Edwards appeared professionally in Shakespearean plays and light comedies primarily in Melbourne and Sydney. Throughout his childhood in England and his acting career in Australia, he was greatly interested in collecting insects, and the National Museum of Victoria used the results of his Australian fieldwork as part of the genesis of their collection.

In San Francisco, Edwards was a founding member of the Bohemian Club, and a gathering in Edwards' honor was the spark which began the club's traditional summer encampment at the Bohemian Grove.[3] As well, Edwards cemented his reputation as a preeminent stage actor and theater manager. After writing a series of influential studies on Pacific Coast butterflies and moths he was elected life member of the California Academy of Sciences. Relocating to the East Coast, Edwards spent a brief time in Boston theater. This led to a connection to Wallack's Theatre and further renown in New York City. There, Edwards edited three volumes of the journal *Papilio* and published a major work about the life of the butterfly.[2] His large collection of insect specimens served as the foundation of the American Museum of Natural History's butterfly and moth studies.

Edwards' wide-ranging studies and observations of insects brought him into contact with specimens not yet classified. Upon discovering previously unknown insects he would give them names, which led to a number of butterfly, moth and

beetle species bearing "Hy. Edw." (for Henry Edwards) as an attribution.[4] From his theater interests to entomology, Edwards carried forward an appreciation of Shakespeareâin the designation of new insect species he favored female character names from Shakespeare's plays.

[edit] Early career

Henry Edwards was born to Hannah and Thomas Edwards (c. 1794â1857) at Brook House in Ross-on-Wye, Herefordshire, England, on August 27, 1827, and was christened on September 14.[5] From his older brother William, he picked up an interest in examining insects. He collected butterflies as a hobby, and studied them under the tutelage of Edward Doubleday. His solicitor father intended a law career for his son, but after a brief period of unsuccessful study, Edwards took a position at a counting house in London, and began acting in amateur theater. He then journeyed to join his brother William who had settled in Australia, nine miles (14 km) north-west of Melbourne along the bank of Merri Creek, a location then called Merrivale. Aboard the sailing ship *Ganges* from March to June 1853, he wrote descriptions of creatures such as the albatross that he encountered for the first time.[5] After arriving in Melbourne, Edwards began collecting and cataloging the insects he found on his brother's land, and further afield. Within two years, he had gathered 1,676 species of insects, shot and mounted 200 birds, and pressed some 200 botanical specimens.[5] This collection and that of William Kershaw were purchased by Frederick McCoy to form the nucleus of the new National Museum of Victoria.[5]

The first Australian stage appearance by Edwards was with George Selth Coppin's company at the Queen's Theatre in Melbourne. Later, he joined Gustavus Vaughan Brooke's theatrical group. The part of Petruchio, the male lead in Shakespeare's *The Taming of the Shrew*, was filled by Edwards at the Princess's Theatre in Sydney in November, 1859, playing opposite tragedian Avonia Jones as Katharine.[6] In December that year Brooke retired from management, yielding the reins of his company to the team of Edwards and George Fawcett Rowe, English actor and playwright. Brooke continued to act under Edwards and Rowe: his starring performance in April 1860 as Louis XI in Dion Boucicault's play of the same name was a stirring portrayal that Edwards, playing Jacques d'Armagnac, Duke of Nemours, recalled vividly for the rest of his life.[6] Sharing the stage again in August, Brooke and Edwards were well received in their portrayal of twin brothers in a production of Shakespeare's *The Comedy of Errors* in Melbourne, the first Australian mounting of that work.[6] As a twist to pique public interest, Edwards and Brooke exchanged roles after two weeks' run. However, not all of Edwards' performances were successful: his turn at Angelo in Shakespeare's *Measure for Measure* was called "invertebrate"[6] by drama critic William John Lawrence; in Lawrence's estimation, Edwards and his fellow actors paled against the powerful performance of Avonia Jones as Isabella.[6]

The renowned entomologist and collector William Sharp Macleay was sought out by Edwards whenever his stage appearances took him to Sydney. Beginning in 1858, Macleay mentored Edwards and encouraged him to search for more insect specimens when his theater obligations allowed. Robust and adventuresome, Edwards occasionally trekked out into the wilds of Australia on the hunt for insects. While in Sydney, Edwards went up two times in a hot air balloon as a favor to George Coppin, narrowly avoiding severe injury or death in the first ascent.[7] Edwards' further travels included New Zealand,[8] Peru, Panama and Mexico in pursuit of insects and dramatic roles.[4]

[edit] San Francisco

In 1865, Edwards began a 12-year residence in San Francisco, California. At the 1870 United States Census, Edwards reported himself as a non-voting foreign-born resident, a comedian by trade, living in a home worth \$1,000.[9] Edwards lived in San Francisco with a white woman listed in the census as "Mariana", born in England, age 40, and a 16-year-old Chinese servant named Heng Gim.[9] The woman Mariana was likely Edwards's wife,[10] the former Marianne Elizabeth Woolcott Bray who was born about 1822â1823 in New Street, Birmingham.[6] In 1851 at the age of 28, Bray married Gustavus Vaughan Brooke,

and the two went to Australia to manage Brooke's then-new theater company. It was there that Edwards met Brooke and his wife, but after several years of the two men working together, Brooke remarried in February 1863, taking Avonia Jones (1836â ^1867)[11] as his second wife. Brooke died in an accident at sea in January 1866, and Avonia Jones Brooke died in New York City the next year.[12] Later reports spoke of Edwards marrying Brooke's widow, without naming her.[10]

In 1868â ^1869 Edwards leased and managed the Metropolitan Theater,[13] and he was a founding member of the acting company of the California Theatre, which opened in January 1869.[14] The theater was directed and managed by actor John McCullough, and among the more notable productions was *As You Like It* in May 1872, with McCullough playing Orlando and Edwards the banished Duke Senior. Walter M. Leman, who carried the part of Adam, opined in 1886 that "never since time was has Shakespeare's charming idyl been better put upon the stage." [15]

Edwards was one of the founders and the first vice president of the Bohemian Club, and served two terms as president, 1873â ^1875.[16] He hosted Shakespeare celebrations at the club in April 1873, 1875 and 1877, and a Bohemian Christmas celebration in December 1877: "The Feast of Reason and Flow of Soul".[17] Edwards became a director of the San Francisco Art Association, and spoke for Lotta Crabtree at the dedication of Lotta's Fountain in September, 1875.[13]

Still very much interested in insects, Edwards spent his spare time at the California Academy of Sciences studying butterflies under Hans Hermann Behr, the academy's curator for Lepidoptera, the scientific order of moths and butterflies.[4] Elected a member of the academy in 1867, he concentrated on describing the structure and habits of moths and butterflies on the Pacific coast from British Columbia to Baja California. He went to visit John Muir in Yosemite Valley in June 1871, with a letter of introduction from Jeanne Carr, the wife of California's chief geologist Ezra S. Carr. The letter described Edwards as "one of Nature's truest and most devoted disciples", a sojourner who "has the keys to the Kingdom".[18] After the visit, Muir occasionally sent specimens from the Sierras to add to Edwards' collection, carried to San Francisco by men such as geologist and artist Clarence King who were returning from Yosemite field study. Edwards presented a series of papers to the academy entitled *Pacific Coast Lepidoptera*, [13] and classified two species as new to science. He named one *Gyros muiri* for Muir, with "Hy. Edw." as the attribution.[19] In 1872, Muir sent Edwards a letter, writing "You are now in constant remembrance, because every flying flower is branded with your name." [4] In 1873, Edwards became the curator of entomology at the academy, and began to serve on the Publications Committee which produced the journal *Proceedings of the California Academy of Sciences*. Beginning early that year, he accompanied and befriended George Robert Crotch on the latter's insect-collecting tour of California, Oregon and British Columbia. In 1874, Edwards began to serve as one of the academy's vice presidents, and for the academy in late 1874 after Crotch's death from tuberculosis, he published a memorial tribute to the man.[20] Edwards also wrote one of many tributes to academician Louis Agassiz at his death in late 1873. At the academy on January 2, 1877, Edwards was elected member for life.[21]

Though successful in San Francisco, Edwards decided to head for Boston and New York City to see if his career as an actor could benefit from appearances in the eastern United States.[22] On June 29, 1878, somewhat fewer than 100 of his Bohemian friends gathered in the woods near Taylorville, California (present-day Samuel P. Taylor State Park), for a night-time send-off party in Edwards' honor.[23] Bohemian Club historian Porter Garnett later wrote that the men at the "nocturnal picnic" were "provided with blankets to keep them warm and a generous supply of liquor for the same purpose".[3] Japanese lanterns were used for illumination and decoration. This festive gathering was repeated without Edwards by club members the next year, and every year thereafter, eventually evolving and expanding into the club's annual summer encampment at the Bohemian Grove,[3] famous (or infamous) for the casual commingling of top politicians and powerful captains of industry in attendance.[24]

[edit] Boston to New York

In late 1878, Edwards joined a theater company in Boston, replacing another actor as "Schelm, Chief of Police" at a revival of the spectacle *The Exiles* at the Boston Theatre on Washington Street.[25] After a four-week run, he performed in other productions at the theater through the 1879-1880 season.[26] In June, Edwards answered the 1880 census to report himself an England-born actor living with his English wife "Marian" and his Chinese servant, Gim Hing.[27]

From Boston, Edwards moved to New York to stay for some ten years, performing on stage and participating in insect studies. He was active in the Brooklyn and New York Entomological Societies. In 1881, he co-founded and edited a butterfly enthusiast's periodical entitled *Papilio*, named for the genus *Papilio* in the swallowtail butterfly family, *Papilionidae*. [4] Edwards served as editor until January 1884 when he gave the reins to his friend Eugene Murray-Aaron of Philadelphia.[28] *Papilio* was published until 1885 when its subscription base was merged into the more general *Entomologia Americana*, published by the Brooklyn Entomological Society.

Beginning in December 1880 under Lester Wallack, the charismatic son of the theater's founder, Edwards was associated with Wallack's Theatre in New York, called the "finest theatre company in America".[29] Now in his 50s, the entomologist and actor appeared in such representative British dramatic roles as Prince Malleotti in *Forget Me Not*, Max Harkaway in *London Assurance*, Baron Stein in *Diplomacy*, and Master Walter in *The Hunchback*, reprising James Sheridan Knowles's earlier portrayal. Edwards used Wallack's Theatre as his professional mailing address, and helped manage it upon occasion. Wallack, already head "Shepherd" of the Lambs Club, a modest meetinghouse of professional stage actors, invited Edwards to join.[30] Once a Lamb, Edwards threw his energies in with those of Wallack and other club members to aid newspaper editor Harrison Grey Fiske in the organization of a charitable fund to support destitute actors or their widows. Wallack was made president of the resulting Actors' Fund. A year after its first meeting on July 15, 1882 at Wallack's Theatre, Edwards was made secretary, a position he held for one year. His wife joined the Women's Executive Committee of the Fund.[31]

Edwards appeared in early 1882 at Palmer's Theatre on Broadway and West 30th Street in a production of the English comedy *The School for Scandal*. Wallack stalwart John Gibbs Gilbert reached the height of his fame in the production, playing Sir Peter Teazle. As Sir Oliver Surface, Edwards, too, was lauded- Gilbert and Edwards shared the stage with Stella Boniface, Osmond Tearle, Gerald Eyre, Madame Ponisi and Rose Coghlan.[32]

Gathering together under one cover his various short subjects, essays, and elegies to fallen friends, Edwards published in 1883 a wryly humorous book entitled *A Mingled Yarn*, including tales of travels and stories of his time in the Bohemian Club. Dedicated to the Bohemians, "with grateful memories, and feelings of affectionate regard,"[33] the book was favorably reviewed in the *New York Tribune*. This review was reprinted in the *Literary News*: "Mr. Edwards's remarkable for attainments in science no less than for versatile proficiency in the art of acting- presents a rare type of the union of talents greatly divergent and seldom found in one and the same person." [34]

In 1886, Edwards was interviewed for *The Theatre*, a weekly magazine published in New York. Edwards was described as "unusually popular and genial", with a "charming English" wife and a Chinese servant named Charlie who "adores his employers" and had served them for 17 years.[35] The Edwards' home was observed to be comfortable but decorated with an astonishing collection of wonders from around the globe. Displayed amid the biological specimens, rugs, china, furniture, and valuable photographs were paintings executed by other actors, including ones by Edward Askew Sothern and Joseph Jefferson. Edwards showed letters he had received from a wide array of notables such as writers William Makepeace Thackeray, Charles Dickens, Anthony Trollope and naturalists Charles Darwin, Louis Agassiz and John Lubbock, 1st Baron Avebury. One floor of the residence was seen to be wholly devoted to the entomologist's collection of specimens, which Edwards said was insured for \$17,000, [35] \$440,000 in current



value. Surrounded by his exotic possessions and "in the most perfect congeniality with his wife", Edwards was reported to be the host of a "cultivated home".[35]

[edit] Last years

Two years after Alfred, Lord Tennyson, completed his *Idylls of the King*, a poetic telling of the King Arthur legend, Edwards and George Parsons Lathrop adapted it to the stage as a drama in four acts. The result was *Elaine*, a story of young love between Elaine of Astolat and Lancelot, fashioned with "flower-like fragility" and "winning touches of tenderness".[36] Its first public presentation was a staged "author's reading" at Madison Square Theatre on April 28, 1887, at which Edwards played the part of Elaine's father, Lord Astolat.[37] Months later it was presented by the company of A. M. Palmer, without Edwards in the cast, opening on December 6, 1887, at the same venue. The production proved both popular and profitable for Lathrop and Edwards.[38] Annie Russell's Elaine was admired for her "sweet simplicity and pathos which captured nearly every heart".[39] After a successful six-week New York run, Palmer took Elaine on the road.[36][38]

Actors associated with Wallack's Theatre announced to the public that beginning in February 1888 a final series of old comedies would be revived, after which the company would be disbanded.[36] Edwards served as stage manager for the run, and reprised several of his earlier roles including those of Max Harkaway in *London Assurance* and Colonel Rockett in *Old Heads and Young Hearts*. [40] Taking part once again in *The School for Scandal*, the sixth and final play of the nostalgic series, Edwards received high praise for his depiction of a wealthy Englishman recently returned from India: "there is probably no better Sir Oliver on our stage than Mr. Edwards." [36] "Justly esteemed" [10] in the role, he was called a "sterling player", representative "of a school which is fast disappearing". [36]

A testimonial production of *Hamlet* was mounted at the Metropolitan Opera House on May 21, 1888, to celebrate the life and accomplishments of an aging Lester Wallack, and to raise money to ease the chronic sciatica that arrested his career. "One of the greatest casts ever assembled" [29] was formed into a company composed of Edwards as the priest, Edwin Booth as Hamlet, Lawrence Barrett as the ghost, Frank Mayo as the king, John Gibbs Gilbert as Polonius, Rose Coghlan as the player queen and Helena Modjeska as Ophelia. Other stars made cameo appearances, and Wallack was assisted up onto the stage to address the standing room crowd at intermission. Notables such as Mayor Hewitt and General Sherman were in attendance. More than \$10,000 was raised for Wallack's care. In the following months, Edwards teamed with other actors and Wallack's wife to help him write his memoir; [41] Wallack died in September. [29]

The next year, Edwards published a significant treatise entitled *Bibliographic Catalogue of the Described Transformation of North American Lepidoptera*. [4] In response to an invitation and after arranging a business contract, he traveled back to Australia to accept a position as stage manager of a theatrical company in Melbourne. Frustrated with the experience, Edwards sailed back to New York the next year with the intention of returning to acting, but poor health kept him from full enjoyment of the limelight. In March, Edwards appeared as Holofernes in *Love's Labour's Lost* at Augustin Daly's Daly Theatre, but was often short of breath and unable to keep pace with the runâhis part was given to a young Tyrone Power who also covered Edwards' old role of Sir Oliver Surface for Daly's road show of *The School for Scandal*. [10]

To regain his strength, Edwards and his wife took a carriage to a rustic cottage refuge in Arkville in the Catskill Mountains but isolation, plain food and rest yielded little improvement. A physician was called and he informed Mrs. Edwards that there would be no recovery for her husband from the advanced Bright's disease with complications from chronic pneumonia [10] so she brought him back to New York City. Edwards died at home at 185 East 116th Street in East Harlem late on June 9, 1891, just hours after returning. [4]

[edit] Legacy

After his death, Edwards' collection of 300,000 insect specimens, [2] one of

the largest in the United States, was bought by his friends for \$15,000[42] for the financial benefit of his widow, and donated to the American Museum of Natural History (AMNH) as the cornerstone of their collection.[4] Mrs. Harry Edwards also donated some of his other specimens, including two eggs of the order Rajiformes, the true rays.[43] Museum trustees purchased the 500 volumes of entomology texts and 1,200 pamphlets[44] owned by Edwards to form the "Harry Edwards Entomological Library", one of the handful of important book acquisitions made by the AMNH to expand their library in its early years.[45] William Schaus, a student that Edwards guided and encouraged, but never met in person,[5] went on to further define moth and butterfly characteristics in a large body of published work.[4]

The "Hy. Edw." designation appended to some butterfly species names indicates first description by Henry Edwards. This is not to be confused with the "Edw." designation which stands for William Henry Edwards, an unrelated contemporary and correspondent of Edwards'.[4] At least two specimens were designated "Mrs. Hy. Edwards." because they were collected and identified by his wife.[46][47] Edwards named many butterflies in the families Theclinae, Nymphalidae, Papilionidae and Lycaenidae, but his largest contribution was in the description of moth species in North America including Mexico: Arctiidae, Bombycidae, Hepialidae, Sesiidae, Noctuidae, Sphingidae, Lasiocampidae, Dalceridae, Dysderidae, Geometridae, Pyralidae, Saturniidae, Thyatiridae, Urodidae and Zygaenidae.[8] In choosing names, Edwards favored female characters from the plays of William Shakespeare, such as Ophelia from Hamlet, Hermia from A Midsummer Night's Dream, and Desdemona from Othello.[48] For example, Edwards collected, classified and named the moth species *Catocala ophelia*[49] and *Catocala hermia* in 1880,[50] and *Catocala desdemona* in 1882.[51]

[edit] Birth dates

The birth date that Edwards gave as his own varied depending on the time and place he was asked. Parish records show he was christened in England on September 14, 1827, and corroborating this date he gave his age as 25 in June 1853 when he first arrived in Australia.[5] However, when questioned in San Francisco for the 1870 United States Census, he gave his birth year as 1830.[9] Ten years later in Boston, he reported his age as 45,[9] implying a birth year of 1835, but he returned to supplying the year 1830 along with the date August 27 for the brief biographical sketches used by theater and entomological publications. Two years before he died, he told a reporter from the *Lorgnette* that he was born in 1832.[5] A prominent obituary in The New York Times reported that his family gave his birthday as September 23, 1830, but that some published lists of actors' ages, "not always trustworthy", put his birth year at 1824.[10]

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Notes

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"To my valued friend Chas. W. Stoddard -  
with my most affectionate regards

San Francisco. Dec 9, 1871  
Hy. Edwards."

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Persondata

Name

Edwards, Henry

Alternative names

Harry Edwards

Short description

British-born entomologist

Date of birth

August 27, 1827

Place of birth

Ross-on-Wye, Herefordshire, England

Date of death

June 9, 1891

Place of death

New York City

The Flag of Portugal (Portuguese: *Bandeira de Portugal*) is the national flag of the Portuguese Republic. It is a rectangular bicolour with a field unevenly divided into green on the hoist, and red on the fly. The lesser version of the national coat of arms (i.e. armillary sphere and Portuguese shield) is centred over the colour boundary at equal distance from the upper and lower edges. On June 30, 1911, less than a year after the downfall of the constitutional monarchy, this design was officially adopted for the new national flag, after selection by a special commission whose members included Columbano Bordalo Pinheiro, João Chagas and Abel Botelho.

The conjugation of the new field colours, especially the use of green, was not traditional in the Portuguese national flag's composition and represented a radical republican-inspired change that broke the bond with the former religious monarchical flag. Since a failed republican insurrection on January 31, 1891, red and green had been established as the colours of the Portuguese Republican Party and its associated movements, whose political prominence kept growing until it reached a culmination period following the Republican revolution of October 5, 1910. In the ensuing decades, these colours were popularly propagandized as representing the hope of the nation (green) and the blood (red) of those who died defending it, as a means to endow them with a more patriotic and dignified, therefore less political, sentiment.

The current flag design represents a dramatic change in the evolution of the Portuguese standard, which had always been closely associated with the royal arms. Since the country's foundation, the national flag developed from the blue&cross-on-white armorial square banner of King Afonso I to the liberal monarchy's arms over a blue-and-white rectangle. In between, major changes associated with determinant political events contributed to its evolution into the current design.

[edit] Design

The decree that legally replaced the flag used under the constitutional monarchy with the new design was approved by the Constituent Assembly and published in government diary no. 141 (Portuguese: *diário do Governo*), on June 19, 1911. On June 30, this decree had its regulations officially published in government diary no. 150.[1]

[edit] Construction

The flag's length is equal to 1 1⁄2 times its width, which translates into an aspect ratio of 2:3. The background is vertically divided into two colours:

dark green on the hoist side, and scarlet red on the fly. The colour division is made in a way that green spans 2/5 of the length and the remaining 3/5 are filled by red (ratio 2-3).[1] The lesser version of the national coat of arms (without the laurel wreaths) is a white-rimmed national shield on top of a black-highlighted yellow armillary sphere is positioned over the border between both colours.

The armillary sphere has a diameter equal to 1/2 width and is equidistant from the upper and lower edges of the flag.[1] The sphere, drawn in perspective, possesses six edge-embossed arcs, four of which are great circles and two are small circles. The great circles represent the ecliptic (wider oblique arc), the equator, and two meridians. These last three are positioned so that the intersections between each two arcs make a right angle; one meridian lies on the flag's plane while the other is perpendicular to it. The small circles consist of two parallels (the tropics), each tangent to one of the ecliptic-meridian intersections.[2]

Vertically centred over the sphere is the national shield, a white-rimmed curved bottom red shield charged with a white inescutcheon. Its height and width are equal to 7/10 and 6/10 of the sphere's diameter, respectively. The shield is positioned in a way that its limits intersect the sphere:[2]

at the inflection points of the distal edges of the Tropic of Cancer's anterior half (top) and Tropic of Capricorn's posterior half (bottom);  
at the intersection of the lower edges of the ecliptic's posterior half and of the equator's anterior half (dexter or viewer's left side); and  
at the intersection of the upper edge of the ecliptic's anterior half with the lower edge of the equator's posterior half (sinister or viewer's right side).

A curious aspect of the official design is the absence of a segment of the Tropic of Capricorn, between the national shield and the ecliptic arc.[2]

The white inescutcheon is itself charged with five smaller blue shields (escudetes or quinas) arranged like a Greek cross (1+3+1). Each quina holds five white bezants displayed in the form of a saltire (2+1+2). The red bordure is charged with seven yellow castles: three on the chief portion (one in each corner and one in the middle), two in the middle points of each quadrant of the curved base (rotated 45° degrees), and two more on each side of the bordure, over the flag's horizontal middle line. Each castle is composed by a base building, showing a closed (yellow) gate, on top of which stand three battlemented towers.[2] In heraldic terminology, the shield's blazon is described as Argent, five escutcheons in cross azure each charged with five plates in saltire, on a bordure gules seven towers triple-turreted Or, three in chief.a

The colour tones of the flag are not accurately specified in any legal document. Approximate tones are listed below:[2]

Scheme

Red

Green

Yellow

Blue

White

Black

PMS

485 CVC

349 CVC

803 CVC

288 CVC

â ~

Black 6 CVC

RGB

255-0-0

0-102-0

255-255-0

0-51-153  
255-255-255  
0-0-0  
#FF0000  
#006600  
#FFFF00  
#003399  
#FFFFFF  
#000000  
CMYK  
0-100-100-0  
100-35-100-30  
0-0-100-0  
100-100-25-10  
0-0-0-0  
0-0-0-100

[edit] Background

The Republican revolution of October 5, 1910, brought a need to replace the symbols of the overthrown monarchy, represented in the first instance by the old national flag and anthem. The choice of the new flag was not one without conflict, especially over the colours, as partisans of the republican red-and-green faced opposition from supporters of the traditional royal blue-and-white. Blue also carried a strong religious meaning as it was the colour of Our Lady of the Conception (Portuguese: Nossa Senhora da Conceição), who was crowned Queen and Patroness of Portugal by King John IV, so its removal or replacement from the future flag was justified by Republicans as one of the many measures needed to secularize the state.[3]

After the presentation and discussion of the many proposals,[4] a governmental commission was set up on October 15, 1910. It included Columbano Bordalo Pinheiro (painter), João Chagas (journalist), Abel Botelho (writer) and two military leaders of 1910: Ladislau Pereira and Afonso Palla.[3] This commission ultimately chose the red-and-green of the Portuguese Republican Party, delivering an explanation based on patriotic reasons,[5] which disguised the political significance behind the choice, as these had been the colours present on the banners of the rebellious during the republican insurrection of January 31, 1891, in Porto, and during the monarchy-overthrowing revolution, in Lisbon.[6]

The commission considered that red should "(...) be present as one of the main colours, because it is the battling, warm, virile colour, par excellence. It is the colour of conquest and laughter. A singing, burning, joyful colour (...) Recalls the idea of blood and urges to achieve victory". An explanation for the inclusion of the green was harder to come up with, given that it was not a traditional colour of the Portuguese flag's history. Eventually, it was justified on the grounds that, during the 1891 insurrection, this was the colour present on the revolutionary flag that "sparked the redeeming lightning" of republicanism. Finally, white (on the shield) represented "a beautiful and fraternal colour, into which all other colours merge themselves, colour of simplicity, of harmony and peace", adding that "(...) it is this same colour that, charged with enthusiasm and faith by the red cross of Christ, marks the Discoveries epic cycle".[5]

The Manueline armillary sphere, which had been present on the national flag under the reign of John VI, was revived because it consecrated the "Portuguese epic maritime history (...) the ultimate challenge, essential to our collective life.". The Portuguese shield was kept, being positioned over the armillary sphere. Its presence would immortalize the "human miracle of positive bravery, tenacity, diplomacy, and audacity, that managed to bind the first links of the Portuguese nation's social and political affirmation", since it is one of the "most vigorous symbols of the national identity and integrity".[5]

The new flag was produced in large numbers at the Cordoaria Nacional (English:

National Rope House) and was officially presented nationwide on December 1, 1910, on occasion of the 270 years of the Restoration of Independence. This day had already been declared by the government as the "Flag Day" (currently not celebrated). In the capital, it was paraded from the city hall to the Restauradores (English: Restorers) Monument, where it was hoisted. This festive presentation did not mask, however, the turmoil caused by a design chosen single-handedly without prior popular consultation, and that represented more of a political regime than a whole nation. To encourage a greater acceptance of the new flag, the government issued all teaching establishments with one exemplar, whose symbols were to be explained to the students; textbooks were changed to intensively display these symbols. Also, December 1 ("Flag Day"), January 31 and October 5 were declared national holidays.[6]

[edit] Symbolism

The Portuguese flag displays three important symbols: the field colours, and the armillary sphere and national shield, which make up the coat of arms.

[edit] Colours

The explanation for the green and red colours that make up the background field arose during the Estado Novo period, the nationalist authoritarian regime that held power from 1933 to 1974. It claims that the green represented the hope of the Portuguese people, while the red represented the blood of those who died serving the nation.[7] Sources believe these noble meanings are far from the truth and are nothing more than propaganda, to provide an honourable justification to their choice.[8]

Despite the fact that these colours never constituted a major part of the national flag until 1910, they were present in several historical banners during important periods. King John I included a green Aviz cross on the red bordure of his banner. The red cross of the Order of Christ was used over a white field as a naval pennon during the Discoveries and frequently on ship sails. A green background version was a popular standard of the rebellious during the 1640 revolution that restored Portugal's independence from Spain.[9] There are no registered sources to confirm that this was the origin of the republican colours. Another explanation gives full credit to the flag that was hoisted on the balcony of Porto's city hall during the 1891 insurrection. It consisted of a red field bearing a green disc and the inscription Centro Democrático Federal Â«15 de NovembroÂ» (English: Federal Democratic Centre Â«15 of NovemberÂ»), representing one of many masonry-inspired republican clubs.[10] Over the following 20 years, the red-and-green was present on every republican item in Portugal.[3] The 1891 flag-inherited red stands for the colour of the republican-inspired masonry-backed revolutionaries, whereas green was the colour Auguste Comte had destined to be present in the flags of positivist nations, an ideal incorporated into the republican political matrix.[3]

[edit] Armillary sphere

The armillary sphere was an important astronomical and navigational instrument for the Portuguese sailors who ventured into unknown seas, during the Age of Discoveries. It was introduced by the Knights Templar, whose knowledge was essential to the Portuguese Discoveries - Henry, the Navigator, the great responsible for the development of Age of Discovery was actually the Grand Master of the Order of Christ. It became, thus, the symbol of the most important period of the nation's the Portuguese discoveries. In light of this, King Manuel I, who ruled during this period, incorporated the armillary sphere into his personal banner.[11] It was simultaneously used as the ensign of ships plying the route between the metropolis and Brazil,[12] thus becoming a colonial symbol and a fulcral element of the flags of the future Brazilian kingdom and empire.

Adding to the sphere's significance was its common use on every Manueline-influenced architectural work, where it is one of the major stylistic elements, as seen on the Jerónimos Monastery and Belém Tower.[13]

[edit] Portuguese shield

The Portuguese shield rests over the armillary sphere. Except during the reign of Afonso I, it is present in every single historical flag, in one form or



another. It is the prime Portuguese symbol as well as one of the oldest, with the first elements of today's shield appearing during the reign of Sancho I.[14] The evolution of the Portuguese flag is inherently associated with the evolution of the shield.

Within the white inescutcheon, the five quinas (small blue shields) with their five white bezants representing the five wounds of Christ (Portuguese: Cinco Chagas) when crucified and are popularly associated with the "Miracle of Ourique".[15] The story associated with this miracle tells that before the Battle of Ourique (July 25, 1139), an old hermit appeared before Count Afonso Henriques (future Afonso I) as a divine messenger. He foretold Afonso's victory and assured him that God was watching over him and his peers. The messenger advised him to walk away from his camp, alone, if he heard a nearby chapel bell tolling, in the following night. In doing so, he witnessed an apparition of Jesus on the cross. Ecstatic, Afonso heard Jesus promising victories for the coming battles, as well as God's wish to act through Afonso, and his descendants, in order to create an empire which would carry His name to unknown lands, thus choosing the Portuguese to perform great tasks.[16]

Boosted by this spiritual experience, Afonso won the battle against an outnumbering enemy. Legend has it that Afonso killed the five Moorish kings of the Seville, Badajoz, Elvas, Évora and Beja taifas, before decimating the enemy troops. Hence, in gratitude to Jesus, he incorporated five shields (the quinas) arranged in a crossâ representing his divine-led victory over the five enemy kingsâ with each one carrying Christ's five wounds in the form of silver bezants. The sum of all bezants (doubling the ones in the central quina) would give thirty, symbolizing Judas Iscariot's thirty pieces of silver.[16]

However, evidence pointing out that the number of bezants on each quina was greater than five during long periods following Afonso I's reign,[15] as well as the fact that only in the 15th century was this legend registered on a chronicle by Fernão Lopes (1419),[17] support this explanation as one of pure myth and highly charged with patriotic feeling in the sense that Portugal was created by divine intervention and was destined for great things.

The seven castles are traditionally considered a symbol of the Portuguese victories over their Moorish enemies, under Afonso III, who supposedly captured seven enemy fortresses in the course of his conquest of the Algarve, concluded in 1249. However, this explanation is weakly founded since this king did not have seven castles on his banner, but an unspecified number. Some reconstructions display about sixteen castles; this number changed to twelve, in 1385, and was only fixed at seven in 1485. An hypothesis about the origin of the castles on a red bordure lies in the family ties of Afonso III with Castile (both his mother and second wife were Castilian), whose arms consisted of a golden castle on a red field.[18]

[edit] Evolution

Since the foundation of Portugal, the national flag was always linked to the royal arms and, up until 1640, there was no official distinction between both.[19] It evolved in a way that gradually incorporated most of the symbols present on the current coat of arms.

[edit] 1095â 1248

The first heraldic symbol that can be associated with what would become the Portuguese nation was on the shield used by Henry of Burgundy, Count of Portugal since 1095, during his battles with the Moors. This shield consisted of a blue cross over a white field.[20] Nevertheless, this design has no reliable sources since it is a reconstruction that became popular and widely accepted thanks to the nationalistic purposes of the Estado Novo regime.[6]

Henry's son Afonso Henriques succeeded him in the county and took on the same shield. In 1139, despite being outnumbered, he defeated an army of Almoravid Moors at the Battle of Ourique and proclaimed himself Afonso I, King of Portugal, in front of his troops. Following the official recognition by the neighbouring León, Afonso changed his shield in order to reflect his new

political status. Sources state he charged the cross with five sets of eleven silver bezants (most likely large-headed silver nails), one set on the centre and one on each arm, symbolizing Afonso's newly-gained right to issue currency.[20][21]

During the time of Afonso I, it was typical not to repair battle damage inflicted on the shield, so changes such as the breaking off of pieces, colour shifting or stains were very common. When Sancho I succeeded his father Afonso I, in 1185, he inherited a very worn off shield: the blue-stained leather that made the cross had been lost except where the bezants (nails) held it in place. This involuntary degradation was the basis for the next step on the evolution of the national coat of arms, where a plain blue cross transformed into a compound cross of five blue bezant-charged escutcheonsâ ~the quinas were thus born.[20][21] Sancho's personal shield (called "Portugal ancien"[14]) consisted of a white field with a compound cross of five quinas (each one charged with eleven silver bezants) with the bottom edges of the lateral ones facing towards the centre. Both Sancho's son Afonso II and grandson Sancho II used these arms,[20] as it was usual with direct succession lines (cadency system). A new modification of the royal arms was made when Sancho II's younger brother became king, in 1248.

[edit] 1248â ~1495

Afonso III of Portugal was not the eldest son, therefore heraldic practices stated he should not take his father's arms without adding a personal variation. Before becoming king, Afonso was married to Matilda II of Boulogne but her inability to provide him with a royal heir led Afonso to divorce her, in 1253. He then married Beatrice of Castile, an illegitimate daughter of Alfonso X of Castile. It is more likely that it was this family connection with Castile (his mother was also Castilian) that justified the new heraldic addition to the royal armsâ ~a red bordure charged with an undetermined number of yellow castlesâ ~rather than the definitive conquest of the Algarve and its Moorish fortresses, considering that the number of castles was only fixed in the late 16th century.

The inner portion contained the arms of Sancho I, although the number of bezants varied between seven, eleven and sixteen (the latter number was used on Afonso's personal standard while he was still Count of Boulogne).[20] This same design was used by the Portuguese kings until the end of the first dynasty, in 1383; a succession crisis put the country at war with Castile and left it without a ruler for two years.

In 1385, in the wake of the Battle of Aljubarrota, a second dynasty was founded when John, Master of the Order of Aviz and illegitimate son of King Peter I, acceded to the throne as John I. To his personal banner, John I added his Order's fleur-de-lys cross, displayed as green flowery points on the red bordure; this inclusion reduced the number of castles to twelve (three around each corner). The number of bezants in each escutcheon was reduced from eleven to seven.[20] This banner lasted a hundred years until John I's great-grandson John II restyled it, in 1485, introducing important changes: the removal of the Aviz cross, a downward arrangement and edge-smoothing of the quinas, and the definitive fixing of five saltire-arranged bezants in each quina and seven castles on the bordure (as it is currently).[22] John II's banner was the last armorial square banner used as the "national" flag or standard.[20] Following his death, in 1495, radical changes were made by his successor.

[edit] 1495â ~1667

John II was succeeded by his first cousin Manuel I, in 1495. This king was the first to convert the traditional square armorial banner into a rectangular (2:3) field with the coat of arms on its centre. Specifically, the flag was now a white rectangle centrally charged with the coat of arms (bearing eleven castles) on an ogival or heater-shaped shield and surmounted by an open royal

crown.[20] This flag was used exclusively as the kingdom's banner since Manuel I possessed a personal standard which included the armillary sphere for the first time.[11]

In 1578, during the reign of Sebastian and on the eve of the fatal Battle of Alc cer Quibir, the flag was again modified. The number of castles was permanently fixed at seven and the royal crown was converted into a closed three-arched crown, which symbolized a stronger royal authority.[20] With Sebasti o's death and the short-lived reign of his great-uncle Cardinal Henry, in 1580, a dynastic crisis was solved with the Spanish king Philip II acceding to the Portuguese throne as Philip I, installing a Spanish dynasty. The accession was made on the condition that Portugal was ruled as a separate, autonomous state, not as a province. This was fulfilled as Portugal and Spain formed a personal union under Philip I and his successors. A consequence of this administrative situation was the maintenance of the flag created under Sebastian's reign as the Portuguese national flag, while Spain had its own.[20] As the ruling house in Portugal, the Habsburg banner also included the Portuguese arms.[23]

The country regained its independence from Spain, in 1640, in a coup d' tat that placed on the throne John, Duke of Bragan a, as King John IV. Under his rule, the national flag was slightly changed as the ogival shield became rounded. It was from this reign forward that the royal arms and the kingdom's arms became separate banners.[20]

[edit] 1667  1830

When Afonso VI's younger brother Peter II replaced him on the throne, in 1667, he adapted the flag's crown to fit the contemporary trends by transforming it into a five-arched crown.[24] The new flag did not remain unchanged for too long, as it was refurbished by Peter's son John V, after he took the throne, in 1707. Heavily influenced by the luxurious and ostentatious court of the French king Louis XIV, and by France's political and cultural impact in Europe, John V wanted to transpose such style into the country's coat of arms. A red beret was added under the crown and the rounded shield was converted to a samnitic ("French type") shield. Instated by an absolute monarch like John V, this flag endured through almost the entire absolutist period in Portugal  John V (1707  1750), Joseph I (1750  1777) and Maria I (1777  1816).[20]

At the time of Queen Maria's death, the royal family was living in Brazil, having fled from Portugal after it was invaded by Napoleon's imperial army, in 1807. The Portuguese colony had been elevated to kingdom, in 1815, and in doing so the ruler began using the title of monarch "of the United Kingdom of Portugal, Brazil and Algarves". Maria I's son, John VI, changed the nation's flag to reflect this new union: the coat of arms, whose shield became rounded again, now rested upon a blue-filled yellow armillary sphere (arms of Brazil) surmounted by the same beret-bearing five-arched crown.[20] Apart from the crown and white background, this design was the closest to the current one.

[edit] 1830  1910

John VI died in Lisbon, in 1826. His elder son Peter, who had declared the independence of Brazil, in 1822, becoming Emperor Peter I, succeeded on the Portuguese throne as Peter IV. Because the new Brazilian constitution did not allow further personal unions of Portugal and Brazil, Peter abdicated the Portuguese crown in favour of his elder daughter Maria da Gl ria, who became Maria II of Portugal. She was only seven years old, so Peter stated she would marry his brother Miguel who would act as regent. However, in 1828, Miguel deposed Maria and proclaimed himself king, abolishing the 1822 liberal constitution and ruling as an absolute monarch. This started the period of the Liberal Wars.[25]

The liberals formed a separate government exiled on the Azorean island of Terceira. It was this government that issued two decrees establishing

modifications to the national flag. While supporters of usurper King Miguel I still upheld the flag established by John VI, the liberal supporters imposed important changes on it. The background was equally divided along its length into blue (hoist) and white (fly); the armillary sphere (associated with Brazil) was removed and the coat of arms was centred over the colour boundary; and the shield reverted to the "French type" shape of John V. This new flag configuration was decreed solely for terrestrial use, but a variation of it was used as the national ensign. This ensign differed in the way the colours occupied the background (blue 1/3, white 2/3) with a consequent positional shift of the arms.[20]

With the defeat and exile of Miguel, in 1834, Queen Maria II was reinstated and the standard of the victorious side was hoisted in Lisbon as the new national flag. It would survive for 80 years, witnessing the last period of the Portuguese monarchy until its abolition, in 1910. Currently this flag is used by monarchists.

[edit] Flag protocol

[edit] Legislation

The constitutional legislation concerning the use of the national flag is rather scarce and incomplete. In some cases, it still dates back to the beginning of the 20th century. The regulations for its military and naval use, however, are more recent and complete.[26]

A revision of the decree no. 150, published on March 30, 1987, states that the flag is to be hoisted from 9:00 a.m. to sunset (during the night, it must be properly lit), on Sundays and national holidays, throughout the entire national territory. It can also be displayed on days where official ceremonies or other solemn public sessions are held; in this case, the flag is hoisted on-site. The flag can be hoisted in other days if it is considered appropriate by the central government, or by other regional or local governing bodies, or by heads of private institutions. It must follow the official design standard and be preserved in good condition.[26]

On the headquarter buildings of sovereign bodies, the flag can stay hoisted on a daily basis. It can also be hoisted on civilian and military national monuments; on public buildings associated with the central, regional or local administration; and on headquarters of public corporations and institutions. Citizens and private institutions can also display it, on the condition that they respect the relevant legal procedures. In the facilities of nationally-based international organizations or in the case of international meetings, the flag is hoisted according to the protocol used on those situations.[26]

If national mourning is declared, the flag will be flown at half-staff during the fixed amount of days; any flag hoisted along with it will be flown in the same manner.[26]

When unfurled in the presence of other flags, the national flag must not have smaller dimensions and must be situated in a prominent, honourable place, according to the relevant protocol:[26]

Two flagpoles ^ right pole viewed by a person facing the exterior;

Three flagpoles ^ central pole;

More than three flagpoles:

Within a building ^ if odd number of poles, central pole; if even number, first pole on the right of the central point;

Outside a building ^ always the rightmost pole;

If flagpoles are not level, the flag must occupy the highest pole. The poles should be placed in honourable locations of the ground, building façades and roofs. On public acts where the flag is not hoisted, it can be suspended from a distinct spot, but never used as decoration, covering or for any purpose that can diminish its dignity.[26]

[edit] Penalties

An early decree, from December 28, 1910, established that "any person who, through speech, published writings or any other public act, shows lack of respect to the national flag, which is the motherland's symbol, will be

sentenced to a three to twelve-month prison term with corresponding fine and, in case of relapse, will be sentenced to exile, as stated in the 62nd article of the Penal Code". In its 332nd article, the current penal code punishes infractions with a prison sentence of up to two years. If the sentence is shorter than 240 days, there is a formula for converting it into a fine.[27] If the offense is directed towards regional symbols, the penalties are halved.[28]

[edit] Folding

During formal occasions, four people are required to properly fold the flag, where each person holds one of the sides. A correctly folded flag must be a square limiting the national shield. However, the order by which the different folding steps are performed to achieve this result is not legislated.[29]

The procedure begins with the flag fully extended and held in a horizontal plane with the obverse facing down. One of the possible folding sequences is demonstrated below:[29]

[edit] Military flags

Besides the state and civil flag, Portugal has a specific war flag which represents the national military forces on land. Note, however, that it is the state flag, and not the war flag, that is flown on military buildings and facilities. The war flag is mostly used on parades.

Other flag variants are used by different high-ranked state offices connected to the government and the armed forces:

[edit] National colours

The national standard (i.e. the national colours) used by the Portuguese Armed Forces (Portuguese: *Forças Armadas Portuguesas*) differs from the design used for the civil flag, state flag and national ensign. The military flag, also adopted in 1911, is a rectangle measuring 1.20 metres (3.94 ft) in width and 1.30 metres (4.26 ft) in length (ratio 12:13). Green and red are positioned at the hoist and fly, respectively, but occupy the field in an equal manner (1:1). Centred over the colour boundary lie the armillary sphere and Portuguese shield, surrounded by two yellow laurel branches intersecting at their stems. These are bound by a white stripe bearing the verse by Luís de Camões "Esta é a ditosa pátria minha amada" (English: "This is my beloved fortunate motherland") as the motto. This differs from the national coat of arms, where the laurel shoots are tied by green and red stripes. The sphere's outer diameter is 1/8 of the width and lies 35 centimetres (14 in) from the upper edge and 45 centimetres (18 in) from the lower edge.[1] Although the 1911 regulation is, theoretically, still in force, the various branches of the Armed Forces made specific changes to it and so, several types of national standards are used by the different military units. For example, the national standards adopted by the Portuguese Army, in 1979, measure just 0.80 m (4.26 ft) by 0.80 m.

[edit] Naval jack

The Portuguese naval jack (*jaco* or *jaque*) is only hoisted at the prow of docked or anchored Navy ships, from sunrise to sunset. The national flag is permanently hoisted at the stern, when sailing, and from sunrise to sunset, when docked.[30] It is a square flag (ratio 1:1) bearing a green-bordered red field with the minor coat of arms on the centre. The width of the green border and the diameter of the armillary sphere are equal to 1/8 and 3/7 of the side's dimension, respectively.[1]

[edit] Government flags

Highly ranked state and governmental offices are also represented by their own flag. The President of the Republic (Portuguese: *Presidente da República*) uses a flag largely similar to the national flag, except for having dark green as the only background colour.[31] It is usually hoisted at the President's official residence, the Palace of Belém, as well as on the presidential car, as small-sized flags. The flag of the Prime-Minister is a white rectangle (ratio 2:3) with a dark green saltire, holding the lesser coat of arms on its centre,

and a red bordure charged with a pattern of yellow laurel leaves. Other ministerial flags do not possess the red bordure.[31] The flag of the Assembly of the Republic (Portuguese: Assembleia da República), the national parliament, is also a white rectangle (ratio 2:3) with the lesser coat of arms in the centre and a dark green bordure.[32]

[edit] See also

^ From the original Portuguese blazon: "De prata, cinco escudetes, de blau, postos em cruz, cada um carregado com cinco besantes, de prata, postos em aspa; bordadura, de gules, carregada com sete castelos, de ouro, dos quais trÃas em chefe".[2]

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[edit] External links

Louis Alexander Slotin (1 December 1910 – 30 May 1946) was a Canadian physicist and chemist who took part in the Manhattan Project, the secret U.S. program during World War II that developed the atomic bomb. As part of the project, Slotin performed experiments with uranium and plutonium cores to determine their critical mass values. During World War II, Slotin continued his research at Los Alamos National Laboratory.

On 21 May 1946, Slotin accidentally began a fission reaction, which released a burst of hard radiation. He was rushed to a hospital, and died of radiation sickness nine days later on 30 May, the second victim of a criticality accident in history. Slotin was hailed as a hero by the United States government for reacting quickly enough to prevent his accident from killing any colleagues. The accident and its aftermath have been dramatized in several fictional and non-fiction accounts.

[edit] Early life

Slotin was the first of three children born to Israel and Sonia Slotin, Yiddish-speaking refugees who had fled the pogroms of Russia to Winnipeg, Manitoba.[1] He grew up in the North End neighborhood of Winnipeg, an area with a large concentration of Eastern European immigrants. From his early days at Machray Elementary School through his teenage years at St. John's High School, Slotin was academically exceptional.[1] His younger brother, Sam, later remarked that his brother "had an extreme intensity that enabled him to study long hours." [1]

At the age of 16, Slotin entered the University of Manitoba to pursue a degree in science. During his undergraduate years, he received a University Gold Medal in both physics and chemistry. Slotin received a B.Sc. degree in geology from the university in 1932 and a M.Sc. degree in 1933. With the assistance of one of his mentors, he obtained a fellowship to study at King's College London under the supervision of Arthur John Allmand,[1] the chair of the chemistry department, who specialized in the field of applied electrochemistry and photochemistry.[2]

[edit] King's College

While at King's College, Slotin distinguished himself as an amateur boxer by winning the college's amateur bantamweight boxing championship. Later, he gave the impression that he had fought for the Spanish Republic and trained to fly a jet fighter with the Royal Air Force.[3] Author Robert Jungk recounted in his book *Brighter than a Thousand Suns: A Personal History of the Atomic Scientists*, the first published account of the Manhattan Project, that Slotin "had volunteered for service in the Spanish Civil War, more for the sake of the thrill of it than on political grounds. He had often been in extreme danger as an anti-aircraft gunner." [4] During an interview years later, Sam stated that his brother had gone "on a walking tour in Spain", and he "did not take part in the war" as previously thought.[1] Slotin earned a Ph.D. degree in physical chemistry from the university in 1936.[3] He won a prize for his thesis entitled "An Investigation into the Intermediate Formation of Unstable Molecules During some Chemical Reactions." Afterwards, he spent six months working as a special investigator for Dublin's Great Southern Railways, testing the Drumm nickel-zinc rechargeable batteries used on the Dublin-Bray line.[1]

[edit] Career

[edit] University of Chicago

In 1937, after he unsuccessfully applied for a job with Canada's National Research Council,[5] the University of Chicago accepted him as a research associate. There, Slotin gained his first experience with nuclear chemistry, helping to build the first cyclotron in the midwestern United States.[6] The job paid poorly and Slotin's father had to support him for two years. From 1939 to 1940, Slotin collaborated with Earl Evans, the head of the university's biochemistry department, to produce radiocarbon (carbon-14 and carbon-11) from the cyclotron.[1] While working together, the two men also used carbon-11 to demonstrate that plant cells had the capacity to use carbon dioxide for carbohydrate synthesis, through carbon fixation.[7]

Slotin may have been present at the start-up of Enrico Fermi's "Chicago



Pile-1", the first nuclear reactor, on 2 December 1942; the accounts of the event do not agree on this point.[8] During this time, Slotin also contributed to a number of papers in the field of radiobiology. His expertise on the subject garnered the attention of the United States government, and as a result he was invited to join the Manhattan Project, the United States' effort to develop a nuclear bomb.[6] Slotin worked on the production of plutonium under future Nobel laureate Eugene Wigner at the university and later at the Oak Ridge National Laboratory in Oak Ridge, Tennessee. He moved to the Los Alamos National Laboratory in New Mexico in December 1944 to work in the bomb physics group of Robert Bacher.[1]

[edit] Los Alamos

At Los Alamos, Slotin's duties consisted of dangerous criticality testing, first with uranium in Otto Robert Frisch's experiments, and later with plutonium cores. Criticality testing involved bringing masses of fissile materials to near-critical levels to establish their critical mass values.[9] Scientists referred to this flirting with the possibility of a nuclear chain reaction as "tickling the dragon's tail," based on a remark by physicist Richard Feynman, who compared the experiments to "tickling the tail of a sleeping dragon".[10][11] On 16 July 1945, Slotin assembled the core for Trinity, the first detonated atomic device, and became known as the "chief armorer of the United States" for his expertise in assembling nuclear weapons.[12]

On 21 August 1945, Harry K. Daghlian, one of Slotin's close colleagues and a laboratory assistant, was performing a critical mass experiment when he accidentally dropped a heavy tungsten carbide brick onto a 6.2 kilograms (14Â lb) plutonium-gallium alloy bomb core.[13] The 24-year old Daghlian was irradiated with a large dose of neutron radiation. Later estimates would suggest that this dose might not have been fatal on its own, but he then received additional delayed gamma radiation and beta burns while disassembling his experiment.[14] He quickly collapsed with acute radiation poisoning and died one month later in the Los Alamos base hospital. Famed nuclear physicist Enrico Fermi reacted with a warning to Slotin: "Keep doing that experiment [tickling the dragon's tail] that way and you'll be dead within a year".[15] Slotin was unmoved; he had done the test some forty times already by then.[15]

After the war, Slotin expressed growing disdain for his personal involvement in the project. He remarked, "I have become involved in the Navy tests, much to my disgust." [1] Unfortunately for Slotin, his participation at Los Alamos was still required because, as he said, "I am one of the few people left here who are experienced bomb putter-togetherers." He looked forward to resuming his research into biophysics and radiobiology at the University of Chicago and began training a replacement, Alvin C. Graves, to take over his work once he resumed his peacetime job.[1]

In the 1945-46 winter, Slotin shocked some of his colleagues with a bold action. He repaired an instrument 6 feet under water inside the Clinton Pile while it was operating, rather than wait an extra day for the reactor to be shut down. He did not wear his dosimetry badge, but his dose was estimated to be at least 100 roentgen.[16] A dose of 1 Gy (~100 roentgen) can cause nausea and vomiting in 10% of cases, but is generally survivable.[17]

[edit] Criticality accident

On 21 May 1946, with seven colleagues watching, Slotin performed an experiment that involved the creation of one of the first steps of a fission reaction by placing two half-spheres of beryllium (a neutron reflector) around a plutonium core. The experiment used the same 6.2-kilogram (13.7Â lb) plutonium core that had irradiated Harry K. Daghlian, Jr., later called the "Demon core" for its role in the two accidents. Slotin grasped the upper 9-inch beryllium hemisphere[18] with his left hand through a thumb hole at the top while he maintained the separation of the half-spheres using the blade of a screwdriver with his right hand, having removed the shims normally used. Using a screwdriver was not a normal part of the experimental protocol.[1]

At 3:20Â p.m., the screwdriver slipped and the upper beryllium hemisphere fell,

causing a "prompt critical" reaction and a burst of hard radiation.[9] At the time, the scientists in the room observed the blue glow of air ionization and felt a heat wave. In addition, Slotin experienced a sour taste in his mouth and an intense burning sensation in his left hand. Slotin jerked his left hand upward, lifting the upper beryllium hemisphere and dropping it to the floor, ending the reaction. However, he had already been exposed to a lethal dose of neutron radiation.[1]

As soon as Slotin left the building, he vomited, a common reaction from exposure to extremely intense ionizing radiation. Slotin's colleagues rushed him to the hospital, but massive and irreversible damage had already been done. Despite intensive medical care and offers from numerous volunteers to donate blood for possible transfusions, Slotin's condition rapidly deteriorated,[1] and Major-General Leslie R. Groves informed Slotin's parents of their son's inevitable death. Over the next nine days Slotin suffered an "agonizing sequence of radiation-induced traumas" including severe diarrhea, reduced urine output, swollen hands, erythema, "massive blisters on his hands and forearms," intestinal paralysis, gangrene and ultimately "a total disintegration of bodily functions." [19] Slotin died on May 30 in the presence of his parents. He was buried in Winnipeg on 2 June 1946.[1]

The core involved was used in the Able detonation, during the Crossroads series of nuclear weapon testing. Slotin's experiment was said to be the last conducted before the core's detonation and was intended to be the final demonstration of its ability to go critical.[20]

Among the seven observers, two suffered from acute radiation syndrome but recovered. Years later, three of the observers eventually died of conditions that are known to be promoted by radiation, as did a security guard who was nearby during Daghlilian's accident. Although some of those deaths were probably latent stochastic (random) effects of the accident, it is not possible to draw any definitive conclusions from such a small sample set.[21]

[edit] Radiation dosage

The radiation doses received in these two accidents are not known with any semblance of accuracy. A large part of the dose was due to neutron radiation, which could not be measured by dosimetry equipment of the day. The available equipment, film badges, were not worn by personnel during the accident, and badges that were supposed to be planted under tables in case of disasters like these were not found. Disaster badges hung on the walls did provide some useful data about gamma radiation.[14]

A "tentative" estimate of the doses involved was made in 1948, based on dozens of assumptions, some of which are now known to be grossly incorrect. In the absence of personal dosimetry badges, the authors relied on measurements of sodium activation in the victim's blood and urine samples as their primary source of data. This activation would have been due to neutron radiation, but all doses were converted to equivalent doses of gamma or x-ray radiation. They concluded that Daghlilian and Slotin had probably received doses equivalent to 290 and 880 roentgen (R) [sic] (respectively) of gamma rays. Minimum and maximum estimates were about 50% and 200% of these values. The same document also calculated doses equivalent to a mix of soft 80 keV X-rays and gamma rays, which the authors believed gave a more realistic picture of the exposure than the gamma equivalent. In this model, the equivalent x-ray doses were much higher, but would be concentrated in the tissues facing the source, while the gamma component penetrated the whole body. Slotin's equivalent dose was estimated to be 1930 R of x-ray with 114 R of gamma, while Daghlilian's equivalent dose was estimated to be 480 R of x-ray with 110 R of gamma.[14]

In modern times, dosimetry is done very differently. Equivalent doses would not be reported in roentgen, they would be calculated with different weighting factors, and they are not considered as relevant to acute radiation syndrome as absorbed doses. Recent documents have made various interpretations of Slotin's dose, ranging from 287 rad[16] to 21 sievert.[22] Based on citations and supporting reasoning, the most reliable estimate may be a 1978 Los Alamos memo which suggested  $10 \text{ Gy(n)} + 1.14 \text{ Gy}(\hat{\text{f}}^3)$  for Slotin and  $2 \text{ Gy(n)} + 1.1 \text{ Gy}(\hat{\text{f}}^3)$  for

Daghlian.[23] These doses are consistent with the symptoms they experienced.[21]

[edit] Legacy

The accident ended all hands-on critical assembly work at Los Alamos. Future criticality testing of fissile cores was done with special remotely controlled machines, such as the "Godiva" series, with the operator located a safe distance away to prevent harm in case of accidents.[24]

On 14 June 1946, the associate editor of the Los Alamos Times, Thomas P. Ashlock, penned a poem entitled "Slotin â ^ A Tribute":

May God receive you, great-souled scientist!  
While you were with us, even strangers knew  
The breadth and lofty stature of your mind  
Twas only in the crucible of death  
We saw at last your noble heart revealed.[1]

The official story released at the time was that Slotin, by quickly removing the upper hemisphere, was a hero for ending the critical reaction and protecting seven other observers in the room: "Dr. Slotin's quick reaction at the immediate risk of his own life prevented a more serious development of the experiment which would certainly have resulted in the death of the seven men working with him, as well as serious injury to others in the general vicinity." [1] This interpretation of events was endorsed at the time by Alvin Graves, who stood closest to Slotin when the accident occurred.[15] Graves, like Slotin, had previously displayed a low concern for nuclear safety, and would later allege that fallout risks were "concocted in the minds of weak malingerers." [15] Another witness to the accident, Raemer E. Schreiber, spoke out publicly decades later, arguing that Slotin was using improper and unsafe procedures, endangering the others in the lab along with himself. Robert B. Brode had reported hearsay to that effect back in 1946.[1]

In 1948, Slotin's colleagues at Los Alamos and the University of Chicago initiated the Louis A. Slotin Memorial Fund for lectures on physics given by distinguished scientists such as Robert Oppenheimer and Nobel laureates Luis Walter Alvarez and Hans Bethe. The memorial fund lasted until 1962.[1]

In 2002, an asteroid discovered in 1995 was named 12423 Slotin in his honor.[25]

[edit] Dollar unit of reactivity

According to Weinberg and Wigner,[26] Slotin was the first to propose the name "dollar" for the interval of reactivity between delayed and prompt criticality. The hundredth part of a dollar is called a "cent".[27]

[edit] Popular culture

The accident has been detailed in at least three films, including the 1989 film *Fat Man and Little Boy*, a dramatization of the Manhattan Project starring Paul Newman. John Cusack plays a fictional character named Michael Merriman who recreates Slotin's criticality accident at the same time the first atomic bomb is being tested. Scenes of Merriman dying of radiation sickness are intercut with scenes of the bomb test as a dramatic technique to show the horrible consequences associated with nuclear bombs.[28] Slotin's accidental death was also the subject of a 1999 documentary by Canwest Global and Great North Productions, *Tickling the Dragon's Tail: The Mystery of Louis Slotin*. The film won for Best Director at the Alberta Film Awards.[29][30]

The event was recounted in Dexter Masters' 1955 novel *The Accident*, a fictional account of the last few days of the life of a nuclear scientist suffering from radiation poisoning.[31][32] Slotin also appears as a character in the 1987 TV mini-series *Race for the Bomb*. [33] Besides the 1955 novel, the accident has been described in more than a dozen fictional and non-fictional accounts related to the U.S. nuclear weapons program, including as a short story in a 1960s children's academic reading program. Among them is *The Dragon's Tail: Americans Face the Atomic Age*. [34]

Additionally, the criticality accident inspired the Louis Slotin Sonata, a

2001 off-Broadway play directed by David P. Moore. Author Paul Mullin wrote the play as a dramatic recreation of the events that unfolded on 21 May 1946.[35][36]  
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[edit] External links

The Bald Eagle (*Haliaeetus leucocephalus* Greek hali = salt/ocean, aeetus = eagle, leuco = white, cephalis = head) is a bird of prey found in North America. A sea eagle, it has two known sub-species and forms a species pair with the White-tailed Eagle (*Haliaeetus albicilla*). Its range includes most of Canada and Alaska, all of the contiguous United States, and northern Mexico. It

is found near large bodies of open water with an abundant food supply and old-growth trees for nesting.

The Bald Eagle is an opportunistic feeder which subsists mainly on fish, which it swoops down and snatches from the water with its talons. It builds the largest nest of any North American bird and the largest tree nests ever recorded for any animal species, up to 4 meters (13 ft) deep, 2.5 meters (8.2 ft) wide, and one metric ton (1.1 tons) in weight,[2] and reaches sexual maturity at four years or five years of age.

Bald Eagles are not actually bald; the name derives from an older meaning of "white headed". The adult is mainly brown with a white head and tail. The sexes are identical in plumage, but females are larger than males. The beak is large and hooked. The plumage of the immature is brown.

The Bald Eagle is the national bird of the United States of America and appears on its Seal. In the late 20th century it was on the brink of extirpation in the continental United States. Populations recovered and the species was removed from the U.S. federal government's list of endangered species on July 12, 1995 and transferred to the list of threatened species. It was removed from the List of Endangered and Threatened Wildlife in the Lower 48 States on June 28, 2007.

#### Description

The plumage of an adult Bald Eagle is evenly dark brown with a white head and tail. The tail is moderately long and slightly wedge-shaped. Males and females are identical in plumage coloration, but sexual dimorphism is evident in the species in that females are 25 percent larger than males.[2] The beak, feet and irides are bright yellow. The legs are feather-free, and the toes are short and powerful with large talons. The highly developed talon of the hind toe is used to pierce the vital areas of prey while it is held immobile by the front toes.[3] The beak is large and hooked, with a yellow cere.[4] The adult Bald Eagle is unmistakable in its native range. The closely related African Fish Eagle (*H. vocifer*) (from far outside of the Bald Eagle's range) also has a brown body, white head and tail, but differs from the Bald in having a white chest and black tip to the bill.[5]

The plumage of the immature is a dark brown overlaid with messy white streaking until the fifth (rarely fourth, very rarely third) year, when it reaches sexual maturity.[2][3] Immature Bald Eagles are distinguishable from the Golden Eagle (*Aquila chrysaetos*), the only other very large, non-vulturine bird in North America, in that the former has a larger, more protruding head with a larger beak, straighter edged wings which are held flat (not slightly raised) and with a stiffer wing beat and feathers which do not completely cover the legs. When seen well, the Golden Eagle is distinctive in plumage with a more solid warm brown color than an immature Bald Eagle, with a reddish-golden patch to its nape and (in immature birds) a highly contrasting set of white squares on the wing.[6]

The Bald Eagle has sometimes been considered the largest true raptor (accipitrid) in North America. The only larger species of raptor-like bird is the California Condor (*Gymnogyps californianus*), a New World vulture which today are not generally considered a taxonomic ally of true accipitrids.[7] However, the Golden Eagle, averaging 4.18 kg (9.2 lb) and 63 cm (25 in) in wing chord length in its American race (*A. c. canadensis*), is merely 455 g (1.00 lb) lighter in mean body mass and exceeds the Bald Eagle in mean wing chord length by around 3 cm (1.2 in).[5][8] Additionally, the Bald Eagle's close cousins, the relatively longer-winged but shorter-tailed White-tailed Eagle and the overall larger Steller's Sea Eagle (*H. pelagicus*), may rarely vagrate to coastal Alaska from Asia.[5]

The Bald Eagle has a body length of 70–102 centimeters (28–40 in). Typical wingspan is between 1.8 and 2.3 m (5.9 and 7.5 ft) and mass is normally between 3 and 6.3 kilograms (6.6 and 14 lb).[5] Females are about 25 percent larger than males, averaging 5.6 kg (12 lb), and against the males' average weight of 4.1 kg (9.0 lb).[2][9][10][11] The size of the bird varies by location and generally corresponds with Bergmann's rule, since the species increases in size

further away from the Equator and the tropics. The smallest specimens are those from Florida, where mature males may weigh as little as 2.3 kg (5.1 lb) and have a wingspan of 1.68 m (5.5 ft). Similarly small, eagles from South Carolina average 3.27 kg (7.2 lb) in mass and 1.88 m (6.2 ft) in wingspan.[12] The largest eagles are from Alaska, where large females may weigh up to 7.5 kg (17 lb) and span 2.44 m (8.0 ft) across the wings.[4][13] Among standard linear measurements, the wing chord is 51.5–69 cm (20.3–27 in), the tail is 23–37 cm (9.1–15 in) long, and the tarsus is 8 to 11 cm (3.1 to 4.3 in).[5][14] The culmen reportedly ranges from 3 to 7.5 cm (1.2 to 3.0 in), while the measurement from the gape to the tip of the bill is 7–9 cm (2.8–3.5 in).[14][15]

The call consists of weak staccato, chirping whistles, kleeek kik ik ik ik, somewhat similar in cadence to a gull's call. The calls of young birds tend to be more harsh and shrill than those of adults.[5][6]

#### Taxonomy

The Bald Eagle placed in the genus *Haliaeetus* (sea eagles) which gets both its common and specific scientific names from the distinctive appearance of the adult's head. Bald in the English name is derived from the word piebald, and refers to the white head and tail feathers and their contrast with the darker body.[16] The scientific name is derived from *Haliaeetus*, New Latin for "sea eagle" (from the Ancient Greek *haliaetos*), and *leucocephalus*, Latinized Ancient Greek for "white head," from *leukos* ("white") and *kephale* ("head").[17][18]

The Bald Eagle was one of the many species originally described by Linnaeus in his 18th century work *Systema Naturae*, under the name *Falco leucocephalus*. [19]

There are two recognized subspecies of Bald Eagle:[2][20]

*H. l. leucocephalus* (Linnaeus, 1766) is the nominate subspecies. It is separated from *H. l. washingtoniensis* at approximately latitude 38° N, or roughly the latitude of San Francisco.[21] It is found in the southern United States and Baja California.[22]

*H. l. washingtoniensis* (Audubon, 1827), synonym *H. l. alascanus* Townsend, 1897, the northern subspecies, is larger than southern nominate *leucocephalus*. It is found in the northern United States, Canada and Alaska.[2][22] This subspecies reaches further south than latitude 38° N on the Atlantic Coast, where they occur in the Cape Hatteras area.[21]

The Bald Eagle forms a species pair with the Eurasian White-tailed Eagle. This species pair consists of a white-headed and a tan-headed species of roughly equal size; the White-tailed Eagle also has overall somewhat paler brown body plumage. The two species fill the same Ecological niche in their respective ranges. The pair diverged from other Sea Eagles at the beginning of the Early Miocene (c. 10 Ma BP) at the latest, but possibly as early as the Early/Middle Oligocene, 28 Ma BP, if the most ancient fossil record is correctly assigned to this genus.[23] The two species probably diverged in the North Pacific, as the White-tailed Eagle spread westwards into Eurasia and the Bald Eagle spread eastwards into North America.[24]

#### Range

The Bald Eagle's natural range covers most of North America, including most of Canada, all of the continental United States, and northern Mexico. It is the only sea eagle endemic to North America. Occupying varied habitats from the bayous of Louisiana to the Sonoran Desert and the eastern deciduous forests of Quebec and New England, northern birds are migratory, while southern birds are resident, remaining on their breeding territory all year. At minimum population, in the 1950s, it was largely restricted to Alaska, the Aleutian Islands, northern and eastern Canada, and Florida.[25] Today, they are much more common, and nest in every continental state and province in the United States and Canada.[26]

Bald Eagles will also congregate in certain locations in winter. From November until February, one to two thousand birds winter in Squamish, British Columbia, about halfway between Vancouver and Whistler. The birds primarily gather along the Squamish and Cheakamus Rivers, attracted by the salmon spawning in the

area.[27]

It has occurred as a vagrant twice in Ireland; a juvenile was shot illegally in Fermanagh on January 11, 1973 (misidentified at first as a White-tailed Eagle), and an exhausted juvenile was captured in Kerry on November 15, 1987.

#### Habitat

The Bald Eagle occurs during its breeding season in virtually any kind of American wetland habitat such as seacoasts, rivers, large lakes or marshes or other large bodies of open water with an abundance of fish. Studies have shown a preference for bodies of water with a circumference greater than 11 km (7 mi), and lakes with an area greater than 10 square kilometers (4 sq mi) are optimal for breeding Bald Eagles.[28]

The Bald Eagle typically requires old-growth and mature stands of coniferous or hardwood trees for perching, roosting, and nesting. Tree species reportedly is less important to the eagle pair than the tree's height, composition and location.[29] Selected trees must have good visibility, be over 20 m (66 ft) tall, an open structure, and proximity to prey. Perhaps of the paramount importance for this species is an abundance of comparatively large trees surrounding the body of water. If nesting trees are in standing water such as in a mangrove swamp, the nest can be located fairly low, at as low 6 m (20 ft) above the ground.[30] In a more typical tree standing on dry ground, nests may be located from 16 to 38 m (52 to 125 ft) in height. In Chesapeake Bay, nesting trees averaged 82 cm (32 in) in diameter and 28 m (92 ft) in total height, while in Florida, the average nesting tree stands 23 m (75 ft) high and is 23 cm (9.1 in) in diameter.[31][32] Trees used for nesting in the Greater Yellowstone area average 27 m (89 ft) high.[33] Trees or forest used for nesting should have a canopy cover of no more than 60 percent, and no less than 20 percent, and be in close proximity to water.[28] Most nests have been found within 200 m (660 ft) of open water. The greatest distance from open water recorded for a Bald Eagle nest was over 3 km (1.9 mi), in Florida.[7]

In Florida, nesting habitats often consist of mangrove swamps, the shorelines of lakes and rivers, pinelands, seasonally flooded flatwoods, hardwood swamps, and open prairies and pastureland with scattered tall trees. Favored nesting trees in Florida are Slash Pines (*Pinus elliotii*), Longleaf Pines (*P. palustris*), Loblolly Pines (*P. taeda*) and cypress trees, but for the southern coastal areas where mangroves are usually used.[30] In Wyoming, groves of mature cottonwoods or tall pines found along streams and rivers are typical bald eagle nesting habitats. Wyoming eagles may inhabit habitat types ranging from large, old-growth stands of Ponderosa Pines (*Pinus ponderosa*) to narrow strips of riparian trees surrounded by rangeland.[7] In Southeast Alaska, Sitka Spruce (*Picea sitchensis*) provided 78% of the nesting trees used by eagles, followed by hemlocks (*Tsuga*) at 20%.[29] Increasingly, eagles nest in man-made reservoirs stocked with fish.[30]

The Bald Eagle is usually quite sensitive to human activity while nesting, and is found most commonly in areas with minimal human disturbance. It chooses sites more than 1.2 km (0.75 mi) from low-density human disturbance and more than 1.8 km (1.1 mi) from medium- to high-density human disturbance.[28] However, Bald Eagles will occasionally venture into large estuaries or secluded groves within major cities, such as Hardtack Island on the Willamette River in Portland, Oregon or John Heinz National Wildlife Refuge at Tinicum in Philadelphia, Pennsylvania, which are surrounded by a great quantity of human activity.[34][35] Even more contrary to the usual sensitivity to disturbance, a family of Bald Eagles moved to the Harlem neighborhood in New York City in 2010.[36]

While wintering, Bald Eagles tend to be less habitat and disturbance sensitive. They will commonly congregate at spots with plentiful perches and waters with plentiful prey and (in Northern climes) partially unfrozen waters. Alternately, non-breeding or wintering Bald Eagles, particularly in areas with a lack of human disturbance, spend their time in various upland, terrestrial habitats sometimes quite far away from waterways. In the Northern half of North America (especially the interior portion), this terrestrial inhabitation by Bald



Eagles tends to be especially prevalent because unfrozen water may not be accessible. Upland wintering habitats often consist of open habitats with concentrations of medium-sized mammals, such as prairies, meadows or tundra, or open forests with regular carrion access.[7][29]

#### Behavior

The Bald Eagle is a powerful flier, and soars on thermal convection currents. It reaches speeds of 56 to 70 kilometers per hour (35 to 43 mph) when gliding and flapping, and about 48 kilometers per hour (30 mph) while carrying fish.[37] Its dive speed is between 120 to 160 kilometers per hour (75 to 99 mph), though it seldom dives vertically.[38] It is partially migratory, depending on location. If its territory has access to open water, it remains there year-round, but if the body of water freezes during the winter, making it impossible to obtain food, it migrates to the south or to the coast. A number of populations are subject to post-breeding dispersal, mainly in juveniles; Florida eagles, for example, will disperse northwards in the summer.[39] The Bald Eagle selects migration routes which take advantage of thermals, updrafts, and food resources. During migration, it may ascend in a thermal and then glide down, or may ascend in updrafts created by the wind against a cliff or other terrain. Migration generally takes place during the daytime, usually between the local hours of 8:00 a.m. and 6:00 p.m., when thermals are produced by the sun.[3]

#### Diet and feeding

The Bald Eagle is an opportunistic carnivore with the capacity to predate a great variety of prey. Throughout their range, fish often compromise the lion's share of the eagle's diet.[40] In 20 food habit studies across the species' range, fish comprised 56% of the diet of nesting eagles, birds 28%, mammals 14% and other prey 2%.[41] In Southeast Alaska, fish comprise approximately 66% of the year-around diet of Bald Eagles and 78% of the prey brought to the nest by the parents.[42] Eagles living in the Columbia River Estuary in Oregon were found to rely on fish for 90% of their dietary intake.[8] In the Pacific Northwest, spawning trout and salmon provide most of the Bald Eagles' diet from late summer throughout fall.[43] Southeast Alaskan eagles largely predate Pink salmon (*Oncorhynchus gorbuscha*), Coho salmon (*O. kisutch*) and, more locally, Sockeye salmon (*O. nerka*), with Chinook salmon (*O. tshawytscha*), due to their large size (12 to 18 kg (26 to 40 lb) average adult size) probably being taken only as carrion.[42] Also important in the estuaries and shallow coastlines of southern Alaska are Pacific herring (*Clupea pallasii*), Pacific sand lance (*Ammodytes hexapterus*) and Eulachon (*Thaleichthys pacificus*).[42] In Oregon's Columbia River Estuary, the most significant prey species were Largescale suckers (*Catostomus macrocheilus*) (17.3% of the prey selected there), American shad (*Alosa sapidissima*; 13%) and Common Carp (*Cyprinus carpio*; 10.8%).[8] Eagles living in the Chesapeake Bay in Maryland were found to subsist largely on American gizzard shad (*Dorosoma cepedianum*), Threadfin shad (*D. petenense*) and White bass (*Morone chrysops*).[44] Floridian eagles have been reported to predate catfish, mostly prevalently the Brown bullhead (*Ameiurus nebulosus*) and any species in the *Ictalurus* genus as well as mullet, trout, needlefish, and eels.[7][30][45] Wintering eagles on the Platte River in Nebraska preyed mainly on American gizzard shads and Common Carp.[46] From observation in the Columbia River, 58% of the fish were caught directly by the predating eagle, 24% were scavenged as carcasses and 18% were pirated away from other animals.[8]

Even eagles living in relatively arid regions still typically rely primarily on fish as prey. In Sonora, Mexico and Arizona, 77% and over 73%, respectively, of prey remains at the nests were from fish, largely various catfish and Rainbow trout (*Oncorhynchus mykiss*). Prey fish targeted by Bald Eagles are often quite large. When experimenters offered fish of different sizes in the breeding season around Lake Britton in California, fish measuring 34 to 38 cm (13 to 15 in) were taken 71.8% of the time by parent eagles while fish measuring 23 to 27.5 cm (9.1 to 10.8 in) were chosen only 25% of the time.[47] At nests around Lake Superior, the remains of fish (mostly suckers) were found to average 35.4 cm (13.9 in) in total length.[48] In the Columbia River estuary, most preyed by eagles were estimated to measure between 30 and 60 cm

(12 and 24 in) in length, and carp flown with (laboriously) were up to 86 cm (34 in) in length.[8]

Benthic fishes such as catfish are usually consumed after they die and float to the surface, though while temporarily swimming in the open may be more vulnerable to predation than most fish since their eyes focus downwards.[44] Bald Eagles also regularly exploit water turbines which produce battered, stunned or dead fish easily consumed.[49] Predators who leave behind scraps of dead fish that they kill, such as Brown Bears (*Ursus arctos*), Gray Wolves (*Canis lupus*) and Red Foxes (*Vulpes vulpes*), may be habitually followed in order to scavenge the kills secondarily.[42] Once North Pacific salmon die off after spawning, usually local Bald Eagles eat salmon carcasses almost exclusively. Eagles in Washington need to consume 489 g (1.08 lb) of fish each day for survival, with adults generally consuming more than juveniles and thus improving energy deficient during winter.[50]

Behind fish, the next most significant prey base for Bald Eagles are other waterbirds. The contribution of such birds to the eagle's diet is variable, depending on the quantity and availability of fish near the water's surface. Waterbirds can seasonally comprise from 7% to 80% of the prey selection for eagles in certain localities.[8][51] Exceptionally, in the Greater Yellowstone area, birds were eaten as regularly as fish year-around, with both prey groups comprising 43% of the studied dietary intake.[33] Preferred avian prey includes grebes, alcids, ducks, gulls, coots, herons, egrets, and geese.[52] Bird species most preferred as prey by eagles tend to be medium-sized, such as Western Grebes (*Aechmophorus occidentalis*), Mallards (*Anas platyrhynchos*) and American coots (*Fulica americana*) as such prey is relatively easy for the much larger eagles to catch and fly with.[7][8] American Herring Gull (*Larus smithsonianus*) are the favored avian prey species for eagles living around Lake Superior.[48] Larger waterbirds are occasionally preyed as well, with wintering Emperor Geese (*Chen canagica*) and Snow Geese (*C. caerulescens*), which gather in large groups, sometimes becoming regular prey.[14][53] Other large waterbirds hunted at least occasionally by Bald Eagles have included Common Loons (*Gavis immer*),[54] Great Black-backed Gulls (*Larus marinus*),[55] Sandhill Cranes (*Grus canadensis*),[56] Great Blue Herons (*Ardea herodias*),[41] Canada Geese (*Branta canadensis*),[44] Brown Pelicans (*Pelecanus occidentalis*),[30] and fledging American White Pelicans (*P. erythrorhynchos*),[57] Colony nesting seabirds, such as alcids, storm petrels, cormorants, Northern Gannets (*Morus bassanus*), terns and gulls, may be especially vulnerable to predation. Due to easy accessibility and lack of formidable nest defense by such species, Bald Eagles are capable of preying such seabirds at all ages, from eggs to mature adults, and can effectively cull large portions of a colony.[58]

Along some portions of the North Pacific coastline, Bald Eagles which had historically preyed mainly kelp-dwelling fish and supplementally Sea Otter (*Enhydra lutris*) pups are now preying mainly on seabird colonies since both the fish (possibly due to overfishing) and otters (cause unknown) have had precipitous population declines, causing concern for seabird conservation.[59] Due to this more extensive predation, some biologist have expressed concern that murrelets are heading for a "conservation collision" due to heavy eagle predation.[58] Eagles have been confirmed to attack nocturnally-active, burrow-nesting seabird species such as storm petrels and shearwaters by digging out their burrows and feeding on all animals they find inside.[60] If a Bald Eagle flies close by, waterbirds will often fly away en masse, though in other cases they may seemingly ignore a perched eagle. If the said birds are on a colony, this exposed their unprotected eggs and nestlings to scavengers such as gulls.[58] Bird prey may occasionally be attacked in flight, with prey up to the size of Canada Geese attacked and killed in mid-air.[52] Unprecedented photographs of a Bald Eagle unsuccessfully attempting to predate a much larger adult Trumpeter Swan (*Cygnus buccinator*) in mid-flight were taken recently.[61] While adults often actively predate waterbirds, congregated wintering waterfowl are frequently exploited for carcasses to scavenge by immature eagles in harsh winter weather.[62] Bald Eagles have been recorded as killing other raptors on

occasion. In some cases, these may be attacks of competition or kleptoparasitism on rival species but ended with the consumption of the victim. Raptorial birds reported to have been hunted by these eagles have included large adults of species such as Great Horned Owls (*Bubo virginianus*), [63] Red-tailed Hawks (*Buteo jamaicensis*), [64] Ospreys (*Pandion haliaetus*) [64] and Black (*Coragyps atratus*) and Turkey Vultures (*Cathartes aura*). [58]

Mammalian prey includes rabbits, hares, ground squirrels, Raccoons (*Procyon lotor*), Muskrats (*Ondatra zibethicus*), beavers (*Castor canadensis*), and deer fawns. Newborn, dead, sickly or already injured mammals are often targeted. However, more formidable prey such as adult raccoons and sub-adult beavers are sometimes attacked. In the Chesapeake Bay area, Bald Eagles are reportedly the main natural predators of raccoons. [65][66] Where available, seal colonies can provide much food. On Protection Island, Washington, commonly feed on Harbor seal (*Phoca vitulina*) afterbirths, still-borns and sickly seal pups. [67] On San Juan Island in Washington, introduced European rabbits (*Oryctolagus cuniculus*), mainly those killed by auto accidents, comprise nearly 60% of the dietary intake of eagles. [68] In landlocked areas of North America, wintering Bald Eagles may become habitual predators of medium-sized mammals that occur in colonies or local concentrations, such as prairie dogs (*Cynomys*) and jackrabbits (*Lepus*). [7][69] Together with the Golden Eagle, Bald Eagles are occasionally accused of predating livestock, especially sheep (*Ovis aries*). There are a handful of proven cases of lamb predation, some of specimens weighing up to 11 kg (24 lb), by Bald Eagles but they are much less likely to attack a healthy lamb than a Golden Eagle and both species prefer native, wild prey and are unlikely to cause any extensive detriment to human livelihoods. [70] There is one case of a Bald Eagle killing and feeding on an adult, pregnant ewe (then joined in eating the kill by at least 3 other eagles), which weighed on average over 60 kg (130 lb), is much larger than any other known prey taken by this species. [71]

Supplemental prey are readily taken given the opportunity. In some areas reptiles may become regular prey, especially warm areas such as Florida where reptile diversity is high. Turtles are perhaps the most regularly hunted type of reptile. [7] In coastal New Jersey, 14 of 20 studied eagle nests included remains of turtles. The main species found were common musk turtles (*Sternotherus odoratus*), Diamondback terrapin (*Malaclemys terrapin*) and juvenile common snapping turtles (*Chelydra serpentina*). In these New Jersey nests, mainly subadult and small adults were taken, ranging in carapace length from 9.2 to 17.1 cm (3.6 to 6.7 in). [72] Snakes are also taken occasionally, especially partially aquatic ones, as are amphibians and crustaceans (largely crayfish and crabs). [8][30]

To hunt fish, the eagle swoops down over the water and snatches the fish out of the water with its talons. They eat by holding the fish in one claw and tearing the flesh with the other. Eagles have structures on their toes called spicules that allow them to grasp fish. Osprey also have this adaptation. [37] Bald Eagles have powerful talons and have been recorded flying with a 6.8 kg (15 lb) Mule Deer (*Odocoileus hemionus*) fawn. [73] This feat is the record for the heaviest load carrying ever verified for a flying bird. [74] It has been estimated that the gripping power (pounds by square inch) of the bald eagle is ten times greater than that of a human. [75] Bald eagles can fly with fish at least equal to their own weight, but if the fish is too heavy to lift, the eagle may be dragged into the water. It may swim to safety, but some eagles drown or succumb to hypothermia. Many sources claim that Bald Eagles, like all large eagles, cannot normally take flight prey more than half of their own weight unless aided by favorable wind conditions. [30][53] On numerous occasions, when large prey such as mature salmon or geese are attacked, eagles have been seen to make contact and then drag the prey in a strenuously labored, low flight over the water to a bank, where they then finish off and dismember the prey. [14] When food is abundant, an eagle can gorge itself by storing up to 1 kg (2.2 lb) of food in a pouch in the throat called a crop. Gorging allows the bird to fast for several days if food becomes unavailable. [30]

Occasionally, Bald Eagles may hunt cooperatively when confronting prey, especially relatively large prey such as jackrabbits or herons, with one bird distracting potential prey, while the other comes behind it in order to ambush it.[4][76][77] While hunting waterfowl, Bald Eagles repeatedly fly at a target and cause it to dive repeatedly, hoping to exhaust the victim so it can be caught (White-tailed Eagles have been recorded hunting waterfowl in the same way). When hunting concentrated prey, a successful catch which often results in the hunting eagle being pursued by other eagles and needing to find an isolated perch for consumption if it is able to carry it away successfully.[14]

Unlike some other eagle species, Bald Eagles rarely take on evasive or dangerous prey on their own. The species mainly target prey which is much smaller than themselves, with most live fish caught weighing 1 to 3 kg (2.2 to 6.6 lb) and most waterbirds predated weighing 0.2 to 2.7 kg (0.44 to 6.0 lb).[42][53]"[71] They attain much their food as carrion or via a practice known as kleptoparasitism, where they steal prey away from other predators. Due to their dietary habits, Bald Eagles are frequently viewed in a negative light by humans.[7] Thanks to their superior foraging ability and experience, adults are generally more likely to hunt live prey than immature eagles, which are often attain their food from scavenging.[78][79] They are unpicky about the condition or the reasoning, whether provided by humans, other animals, auto accidents or natural causes, for a carcass's presence but will avoid eating carrion where disturbances from humans are a regular occurrence. They will scavenge carcasses up to the size of whales, though carcasses of ungulates and large fish are seemingly preferred.[14] Bald Eagles also may sometimes feed on subsistence scavenged or stolen from campsites and picnics, as well as garbage dumps (dump usage is habitual mainly in Alaska).[80]

When competing for food, eagles will usually dominate other fish-eaters and scavengers, aggressively displacing mammals such as Coyotes (*Canis latrans*) and foxes, and birds such as corvids, gulls, vultures and other raptors.[80] Occasionally, coyotes, Bobcats (*Lynx rufus*) and domestic dogs (*Canis lupus familiaris*) can displace eagles from carrion, usually less confident immature birds, as has been recorded in Maine.[81] Bald Eagles are less active, bold predators than Golden Eagles and get relatively more of their food as carrion and from kleptoparasitism (although it is now generally thought that Golden Eagles eat more carrion than was previously assumed).[8] However, the two species are roughly equal in size, aggressiveness and physical strength and so competitions can go either way. Neither species is known to be dominant, and the outcome depends on the size and disposition of the individual eagles involved.[14] The Bald Eagle is thought to be much more numerous in North America than the Golden Eagle, with the Bald species estimated to number well over 100,000 individuals, about twice as many Golden Eagles there are estimated to live in North America.[8][26] Due to this, Bald Eagles often outnumber Golden Eagles at attractive food sources.[8] Despite the potential for contention between these animals, in New Jersey during winter, a Golden Eagle and numerous Bald Eagles were observed to hunt Snow Geese alongside each other without conflict.[82] Similarly, both eagle species have been recorded, via video-monitoring, to feed on gut pills and carcasses of White-tailed Deer (*Odocoileus virginianus*) in remote forest clearings in the eastern Appalachian Mountains without apparent conflict.[8] Many Bald Eagles are habitual kleptoparasites, especially in winters when fish are harder to come by. They have been recorded stealing fish from other predators such as Ospreys, herons and even otters.[14][83] They have also been recorded opportunistically pirating birds from Peregrine Falcons (*Falco peregrinus*), prairie dogs from Ferruginous Hawks (*Buteo regalis*) and even jackrabbits from Golden Eagles.[84][85] When they approach scavengers like dogs, gulls or vultures at carrion sites, they often aggressively attack them and try to force them to disgorge their food.[30] Healthy adult Bald Eagles are not preyed on in the wild and are thus considered apex predators.[86]

#### Reproduction

Bald Eagles are sexually mature at four or five years of age. When they are

old enough to breed, they often return to the area where they were born. It is thought that Bald Eagles mate for life. However, if one member of a pair dies or disappears, the other will choose a new mate. A pair which has repeatedly failed in breeding attempts may split and look for new mates.[87] Spectacular courtship rituals, involving vocalizations and acrobatic flight displays. Bald Eagle courtship involves elaborate, spectacular calls and flight displays. The flight includes swoops, chases, and cartwheels, in which they fly high, lock talons, and free fall, separating just before hitting the ground.[41][88] Usually, a territory defended by a mature pair will be 1 to 2 km (0.62 to 1.2 mi) of waterside habitat.[7]

Compared to most other raptors which mostly nest in April or May, bald eagles are early breeders: nest building or reinforcing is often by mid-February, egg laying is often late February (sometimes during deep snow in the North), and incubation is usually mid-March and early May. Eggs hatch from mid April to early May, and the young fledge late June to early July.[7] The nest is the largest of any bird in North America; it is used repeatedly over many years and with new material added each year may eventually be as large as 4 meters (13 ft) deep, 2.5 meters (8.2 ft) across and weigh 1 metric ton (1.1 short tons);[2] one nest in Florida was found to be 6.1 meters (20 ft) deep, 2.9 meters (9.5 ft) across, and to weigh 3 short tons (2.7 t).[89] This nest is on record as the largest tree nest ever recorded for any animal.[90] Usually nests are used for under five years or so, as they either collapse in storms or break the branches supporting them by their sheer weight. However, one nest in the Midwest was occupied continuously for at least 34 years without interruption.[30] The nest is built out of branches, usually in large trees found near water. When breeding where there are no trees, the Bald Eagle will nest on the ground, as has been recorded largely in areas largely isolated from terrestrial predators, such as Amchitka Island in Alaska.[80] In Sonora, Mexico, eagles have been observed nesting on top of Hecho cactuses (*Pachycereus pectinaboriginum*).[91] Nests located on cliffs and rock pinnacles have been reported historically in California, Kansas, Nevada, New Mexico and Utah, but currently are only verified to occur only in Alaska and Arizona.[7] The eggs average about 73 millimeters (2.9 in) long, ranging from 58 to 85 mm (2.3 to 3.3 in), and have a breadth of 54 millimeters (2.1 in), ranging from 47 to 63 mm (1.9 to 2.5 in).[37][41] Eggs in Alaska averaged 130 g (4.6 oz) in mass, while in Saskatchewan they averaged 114.4 g (4.04 oz).[92][93] As with their ultimate body size, egg size tends to increase further away from the Equator.[41] Eagles produce between one and three eggs per year, rarely four eggs but this may be in exceptional cases of polygyny.[94] Eagles in captivity have been capable of producing up to seven eggs.[95] it is rare for all three chicks to successfully reach the fledging stage. The oldest chick often bear the advantage of larger size and louder voice, which tends to draw the parents attention towards them.[7] Occasionally, as is recorded in many large raptorial birds, the oldest sibling sometimes attacks and kills their younger sibling(s), especially early in the nesting period when their sizes are most different.[7] Both the male and female take turns incubating the eggs, but the female does most of the incubation. The parent not incubating will hunt for food or look for nesting material during this stage. For the first two to three weeks of the nestling period at least one adult is at the nest almost 100% of the time. After five to six weeks, the attendance of parents usually drops off considerably (with the parents often perching in trees nearby).[7] A young eaglet can gain up to 170 g (6.0 oz) a day, the fastest growth rate of any North American bird.[30] The young eaglets pick up and manipulate sticks, play tug of war with each other, practice holding things in their talons, and stretch and flap their wings. By eight weeks, the eaglets are strong enough to flap their wings, lift their feet off the nest platform, and rise up in the air.[30] The young fledge at anywhere from 8 to 14 weeks of age, though will remain close to the nest and attained to by their parents for a further 6 weeks. Juvenile eagles first start dispersing away from their parents about 8 weeks after they fledge. Variability in departure date related to effects of sex and hatching order on growth and

development.[93] For the next four years, immature eagles wander widely in search of food until they attain adult plumage and are eligible to reproduce.[96]

#### Longevity and mortality

The average lifespan of Bald Eagles in the wild is around 20 years, with the oldest confirmed one having been 28 years of age.[4] In captivity, they often live somewhat longer. In one instance, a captive individual in New York lived for nearly 50 years. As with size, the average lifespan of an eagle population appears to be influenced by its location and access to prey.[97] As they are no longer heavily persecuted, adult mortality is quite low. In one study of Florida eagles, adult Bald Eagles reportedly had 100% annual survival rate.[8] In Prince William Sound in Alaska, adults had an annual survival rate of 88% even after the Exxon Valdez oil spill adversely effected eagles in the area.[98] Of 1,428 individuals from across the wrong necropsied by National Wildlife Health Center from 1963 to 1984, 329 (23%) eagles died from trauma, primarily impact with wires and vehicles; 309 (22%) died from gunshot; 158 (11%) died from poisoning; 130 (9%) died from electrocution; 68 (5%) died from trapping; 110 (8%) from emaciation; and 31 (2%) from disease; cause of death was undetermined in 293 (20%) of cases.[99] In this study, 68% of mortality was human-caused.[100] Today eagle-shooting is believed to be considerably reduced to the species protected status.[101] In one case, an adult eagle investigating a Peregrine Falcon nest for prey items sustained a concussion from a swooping parent Peregrine, and ultimately died days later from it.[102]

Most non-human-related mortality involves nestlings. Around 50% of eagles survive their first year.[96] However, in the Chesapeake Bay area, 100% of 39 radio-tagged nestlings survived to their first year.[103] Occasionally, this is due to nest collapses, starvation, sibling aggression or inclement weather. Another significant cause of nestling mortality is predation. These have been verified to be preyed on by large gulls, corvids (including ravens, crows and magpies), Wolverines (*Gulo gulo*), hawks, owls, eagles, Bobcats (*Lynx rufus*), American black bears (*Ursus americanus*) and raccoons.[92][104][105][106][107][108][109][110] Nestlings are usually exempt from predation by terrestrial carnivores that are poor tree-climbers, but Arctic Foxes (*Vulpes lagopus*) occasionally snatched nestlings from ground nests on Amchitka Island in Alaska before they were extirpated from the island.[80] The Bald Eagle will defend its nest fiercely from all comers and has even repelled attacks from bears, having been recorded knocking a black bear out of a tree when the latter tried to climb a tree holding nestlings.[111]

#### Relationship with humans

##### Population decline and recovery

Once a common sight in much of the continent, the Bald Eagle was severely affected in the mid-20th century by a variety of factors, among them the thinning of egg shells attributed to use of the pesticide DDT.[112] Bald Eagles, like many birds of prey, were especially affected by DDT due to biomagnification. DDT itself was not lethal to the adult bird, but it interfered with the bird's calcium metabolism, making the bird either sterile or unable to lay healthy eggs. Female eagles laid eggs that were too brittle to withstand the weight of a brooding adult, making it nearly impossible for the eggs to hatch.[25] It is estimated that in the early 18th century, the Bald Eagle population was 300,000â ^500,000,[113] but by the 1950s there were only 412 nesting pairs in the 48 contiguous states of the US. Other factors in Bald Eagle population reductions were a widespread loss of suitable habitat, as well as both legal and illegal shooting. In 1930 a New York City ornithologist wrote that in the state of Alaska in the previous 12 years approximately 70,000 Bald Eagles had been shot. Many of the hunters killed the Bald Eagles under the long-held beliefs that Bald Eagles grabbed young lambs and even children with their talons, yet the birds were innocent of most of these alleged acts of predation (lamb predation is rare, human predation is thought to be non-existent).[114] Later illegal shooting was described as "the leading cause of direct mortality in both adult and immature bald eagles," according to a

1978 report in the Endangered Species Technical Bulletin. In 1984, the National Wildlife Federation listed hunting, power-line electrocution, and collisions in flight as the leading causes of eagle deaths. Bald Eagles have also been killed by oil, lead, and mercury pollution, and by human and predator intrusion at nests.[115]

The species was first protected in the U.S. and Canada by the 1918 Migratory Bird Treaty, later extended to all of North America. The 1940 Bald Eagle Protection Act in the U.S., which protected the Bald Eagle and the Golden Eagle, prohibited commercial trapping and killing of the birds. The Bald Eagle was declared an endangered species in the U.S. in 1967, and amendments to the 1940 act between 1962 and 1972 further restricted commercial uses and increased penalties for violators. Perhaps most significant in the species' recovery, in 1972, DDT was banned from usage in the United States.[116] DDT was completely banned in Canada in 1989, though its use had been highly restricted since the late 1970s.[117]

With regulations in place and DDT banned, the eagle population rebounded. The Bald Eagle can be found in growing concentrations throughout the United States and Canada, particularly near large bodies of water. In the early 1980s, the estimated total population was 100,000 individuals, with 110,000 to 115,000 by 1992;[2] the U.S. state with the largest resident population is Alaska, with about 40,000 to 50,000, with the next highest population the Canadian province of British Columbia with 20,000 to 30,000 in 1992.[2] For some time, the stronghold breeding population of Bald Eagles in the lower 48 states was in Florida, where over a thousand pairs have held on while populations in other states were significantly reduced by DDT use. Today, the contiguous state with the largest number of breeding pairs of eagles is Minnesota with an estimated 1,312 pairs, surpassing Florida's most recent count of 1,166 pairs. 23, or nearly half, of the 48 contiguous states now have at least 100 breeding pairs of Bald Eagles.[26]

The Bald Eagle was officially removed from the U.S. federal government's list of endangered species on July 12, 1995, by the U.S. Fish & Wildlife Service, when it was reclassified from "Endangered" to "Threatened." On July 6, 1999, a proposal was initiated "To Remove the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife." It was de-listed on June 28, 2007.[118] It has also been assigned a risk level of Least Concern category on the IUCN Red List.[1] In the Exxon Valdez Oil Spill of 1989 an estimated 247 were killed in Prince William Sound, though the local population returned to its pre-spill level by 1995.[4]

#### In captivity

Permits are required to keep Bald Eagles in captivity in the United States. Permits are primarily issued to public educational institutions, and the eagles which they show are permanently injured individuals which cannot be released to the wild. The facilities where eagles are kept must be equipped with adequate caging and facilities, as well as workers experienced in the handling and care of eagles. Bald Eagles cannot legally be kept for falconry in the United States. As a rule, the Bald Eagle is a poor choice for public shows, being timid, prone to becoming highly stressed, and unpredictable in nature. Native American Tribes can obtain a "Native American Religious Use" permit to keep non-releasable eagles as well. They use their naturally molted feathers for religious and cultural ceremonies. The Bald Eagle can be long-lived in captivity if well cared for, but does not breed well even under the best conditions.[119] In Canada, a license is required to keep Bald Eagles for falconry.[120]

#### Cultural significance

The Bald Eagle is important in various Native American cultures and, as the national bird of the United States, is prominent in seals and logos, coinage, postage stamps, and other items relating to the U.S. federal government.

#### Role in Native American culture

The Bald Eagle is a sacred bird in some North American cultures, and its feathers, like those of the Golden Eagle, are central to many religious and

spiritual customs among Native Americans. Eagles are considered spiritual messengers between gods and humans by some cultures.[121] Many pow wow dancers use the eagle claw as part of their regalia as well. Eagle feathers are often used in traditional ceremonies, particularly in the construction of regalia worn and as a part of fans, bustles and head dresses. The Lakota, for instance, give an eagle feather as a symbol of honor to person who achieves a task. In modern times, it may be given on an event such as a graduation from college.[122] The Pawnee considered eagles as symbols of fertility because their nests are built high off the ground and because they fiercely protect their young. The Kwakwaka'wakw scattered eagle down to welcome important guests.[123] The Choctaw explained that the Bald Eagle, who has direct contact with the upper world of the sun, is a symbol of peace.[124]

During the Sun Dance, which is practiced by many Plains Indian tribes, the eagle is represented in several ways. The eagle nest is represented by the fork of the lodge where the dance is held. A whistle made from the wing bone of an eagle is used during the course of the dance. Also during the dance, a medicine man may direct his fan, which is made of eagle feathers, to people who seek to be healed. The medicine man touches the fan to the center pole and then to the patient, in order to transmit power from the pole to the patient. The fan is then held up toward the sky, so that the eagle may carry the prayers for the sick to the Creator.[125]

Current eagle feather law stipulates that only individuals of certifiable Native American ancestry enrolled in a federally recognized tribe are legally authorized to obtain or possess Bald or Golden Eagle feathers for religious or spiritual use. The constitutionality of these laws has been questioned by Native American groups on the basis that it violates the First Amendment by affecting ability to practice their religion freely.[126][127]

National bird of the United States

The Bald Eagle is the national bird of the United States of America.[128] The founders of the United States were fond of comparing their new republic with the Roman Republic, in which eagle imagery (usually involving the Golden Eagle) was prominent. On June 20, 1782, the Continental Congress adopted the still-current design for the Great Seal of the United States including a Bald Eagle grasping 13 arrows and a 13-leaf olive branch with its talons.[129][130][131]

The Bald Eagle appears on most official seals of the U.S. government, including the Seal of the President of the United States and the Presidential Flag, and in many U.S. federal agency logos. Between 1916 and 1945, the Presidential Flag showed an eagle facing to its left (the viewer's right), which gave rise to the urban legend that the seal is changed to have the eagle face towards the olive branch in peace, and towards the arrows in wartime.[132] Contrary to popular legend, there is no evidence that American "founding-father" Benjamin Franklin ever publicly supported the Wild Turkey (*Meleagris gallopavo*), rather than the Bald Eagle, as a symbol of the United States. The origin of this claim is a letter Franklin wrote to his daughter in 1784 from Paris. However, this letter was a criticism of the Society of the Cincinnati in which he stated his personal distaste for the Bald Eagle's behavior but he does not mention publicly disputing the choice of the Bald Eagle for the Great Seal of the United States. In the letter Franklin states:[4]

For my own part. I wish the Bald Eagle had not been chosen the Representative of our Country. He is a Bird of bad moral Character. He does not get his Living honestly...Besides he is a rank Coward: The little King Bird not bigger than a Sparrow attacks him boldly and drives him out of the District.

Franklin opposed the creation of the Society because he viewed it, with its hereditary membership, as a noble order unwelcome in the newly independent Republic, contrary to the ideals of Lucius Quinctius Cincinnatus, for whom the Society was named; his reference to the two kinds of birds is interpreted as a



satirical comparison between the Society of the Cincinnati and Cincinnatus.[133]

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#### Identification

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#### External links

#### Video links

"Baby Boy"

Single by Beyoncé featuring Sean Paul  
from the album *Dangerously in Love*

#### Released

August 3, 2003

#### Format

CD, 12"

#### Recorded

2003; South Beach Studios, Miami, Florida[1]

#### Genre

R&B, dancehall

#### Length

4:04

#### Label

Columbia

#### Writer(s)

Beyoncé Knowles, Scott Storch, Sean Paul Henriques, Robert Waller, Shawn Carter  
Producer

Scott Storch, Beyoncé Knowles

Beyoncé Knowles singles chronology

"Baby Boy" is a song recorded by American R&B singer Beyoncé Knowles, featuring Jamaican reggae singer Sean Paul. It was composed by Knowles, Paul, Scott Storch, Robert Waller and Jay-Z for her 2003 debut studio album *Dangerously in Love*. Containing a lyrical interpolation of "No Fear" by hip hop group O.G.C., "Baby Boy" is an R&B and dancehall song with Arabic music influences; its lyrics detail a woman's fantasies. The song was considered to be a sequel to Knowles' 2002 collaboration with Jay-Z on "'03 Bonnie & Clyde".

Columbia Records released "Baby Boy", the second single from *Dangerously in Love*, to United States radios on August 3, 2003. It was well received by music critics, who complimented the Indian, Middle Eastern music and dancehall styles in the song, as well as Knowles' collaboration with Paul. "Baby Boy" topped the US Billboard Hot 100 chart for nine consecutive weeks, and was Knowles' longest-running solo number-one single until 2007. It reached the top ten in many countries, and was certified platinum in Australia and the US.

The song's music video was directed by Jake Nava and mostly shows Knowles dancing in various locations. "Baby Boy" has remained a staple of Knowles' concert set list. The American Society of Composers, Authors, and Publishers (ASCAP) recognized it as one of the most performed songs of 2005. During the same year, US singer-songwriter Jennifer Armour filed a copyright infringement lawsuit claiming that Knowles had used the primary musical hook from her song "Got a Little Bit of Love for You". The suit was dismissed.

#### [edit] Background and writing

In 2002, Knowles went to Miami, Florida, in the United States, to work with American record producer Scott Storch for her debut solo album, *Dangerously in Love*. [1] She and Storch wrote "Baby Boy", with contributions from American songwriter Robert Waller and Knowles' then-boyfriend, hip hop artist Jay-Z. [1] The song also contains a lyrical interpolation of "No Fear" by hip hop group O.G.C. used towards the ending of the song: "We steppin' in hotter this year". [2]



Once the track was supposedly done, Knowles had the idea that it would be "perfect" if Jamaican reggae artist Sean Paul contributed a vocal track.[2] Knowles contacted Paul about a possible collaboration for "Baby Boy".[3][4] Sean Paul agreed, and flew in from Jamaica to join the recording sessions of the song.[2] He contributed a toast verse, and they finished recording "Baby Boy" in March 2003, during the later stages of the album's recording.[3]

[edit] Music and theme

"Baby Boy" is a midtempo contemporary R&B and dancehall song[5][6] with reggae and Arabian music influences.[7][8][9] It was composed using common time in the key of C minor, and set in moderate groove of 92 beats per minute.[5] Storch's knowledge on Indian and Middle Eastern music contributes to its Eastern influences.[10] Neil Drumming of Entertainment Weekly noted that "'Baby Boy' goes full-tilt Bollywood 'n da hood, with Sean Paul ripping a pulsing tabla raga".[11] Knowles' vocals are accompanied by clicky and castanet-sounding beats,[12]synthesized handclaps and slaps.[13] According to Roger Friedman of Fox News Channel, "Baby Boy" is based on the 1995 reggae song "Here Comes the Hotstepper", performed by Jamaican singer Ini Kamoze.[14]

"Baby Boy" is considered to be a sequel in ways to "'03 Bonnie & Clyde"; a 2002 Jay-Z song featuring Knowles.[3] The lyrics detail a woman's fantasies, and in keeping with the album's overall theme, Knowles' deemed them as personal to her.[4] Paul remarked, "She's telling me about her fantasies and picturing me and her going here and there, all over the worldÂ ... I'm answering back, like, 'I'm wit it'".[3] The lyrics are constructed in the toastâ ^chorusâ ^verse form; Sean Paul performs the toasting while Knowles sings all other verses and choruses. The pattern is repeated twice; a further chorus and verse follow, resolving at the toasting and final verse.[2]

[edit] Release and reception

"Baby Boy" was released as the second single from the debut studio album, *Dangerously in Love*. It was added to United States contemporary hit radios and rhythmic contemporary radios playlists on August 3, 2003.[15][16] The song was released in maxi single in Canada on October 7, 2003,[17] and as a CD single in Germany[18] and in the US on on October 13, and October 14, 2003 respectively.[19] "Baby Boy" was included in the revamped version of Paul's second album, *Dutty Rock* (2003).[20]

"Baby Boy" was generally well received by critics. Rolling Stone magazine reviewer Anthony DeCurtis wrote that Knowles sounded as if she was "having fun" on the song,[21] while Stephen Thomas Erlewine of the online music guide service Allmusic described Knowles' vocals as "assured and sexy".[22]Mark Anthony Neal of the international webzine PopMatters, regarded "Baby Boy" as one of the "high-profile collaborations" on *Dangerously in Love*.[23] Lisa Verrico of the daily British newspaper The Times described the song a "Latino-tinged collaboration ... Paul does a reggae rap in the middle, but it's when he chats while BeyoncÃ© half raps that the pair have real chemistry".[12] Yancey Strickler of the Flak magazine wrote that "'Baby Boy''s diwali stutter is enhanced by Sean Paul's dancehall monotone".[24]

James Anthony of the British newspaper The Guardian commented that the track "bridges the gap between the genres of R&B and dancehall".[25]Los Angeles Times writer Natalie Nichols wrote that "the ... house-spiced 'Baby Boy' successfully meld[s] [Knowles'] breathy cooing with hip, interesting production." [6] British record label EMI was honored by the American Society of Composers, Authors and Publishers (ASCAP) during the 2005 Pop Music Awards as Publisher of the Year for publishing "Baby Boy", among other songs.[26] Scott Storch earned Songwriter of the Year at the same event.[26]

[edit] Chart performance

"Baby Boy" attained a positioning on the commercial charts before its physical release in the US. The track led to a higher Billboard 200 chart placing for *Dangerously in Love*, and helped the album to attain multi-platinum certification in the US.[27] The single debuted on the Billboard Hot 100, the official singles chart of America, at number fifty-seven, while "Crazy in Love" was still in the top spot.[28] "Baby Boy" dominated the US airplays, and

ultimately reaching the top of the Hot 100.[29][30][31] It reached the chart's top spot eight weeks after its debut, and stayed there for nine consecutive weeks.[31][32] The single stayed number one for a week longer than "Crazy in Love" had, becoming Knowles' longest-charting number-one single. The feat was not broken until Knowles' 2006 single "Irreplaceable", from her second album *B'Day* (2006), which spent ten weeks at the top spot in late 2006 to early 2007 due to heavy radio play.[33] "Baby Boy" stayed on the Hot 100 for twenty-nine weeks,[34] and was certified platinum on June 6, 2006, by the Recording Industry Association of America (RIAA).[35] "Baby Boy" achieved success on Billboard crossover and mainstream radio charts, appearing on the Top 40 Tracks, Rhythmic Top 40 and Top 40 Mainstream, as well as on the Hot 100 Airplay, Hot Dance Airplay and Hot Dance Music/Club Play.[36][37][38][30] As at October 6, 2010, "Baby Boy" had sold 6,000 physical units in the US.[39]

Internationally, "Baby Boy" performed just as well, peaking inside the top ten on most charts. The single debuted at number two in the United Kingdom, becoming the chart's highest debut and "Baby Boy"'s highest entry internationally.[40] Though it spent eleven weeks on the chart, it failed to top it (being held off by "Where Is the Love?" by The Black Eyed Peas).[40] In most European countries, the single entered the top ten. In Australia and New Zealand, "Baby Boy" peaked at number three and two, respectively.[41][42] It was certified platinum by the Australian Recording Industry Association for shipment in excess of 70,000 units.[43]

[edit] Music video

The music video for "Baby Boy" was filmed by English director Jake Nava, who also shot Knowles' "Crazy in Love" video. It was recorded in Miami, Florida on August 7–8, 2003. Parts of the video were captured in a house with different style rooms: one in a Japanese style and one in an old English style.[44]

Scenes featuring Knowles and Paul are shown separately. The video begins with Paul sitting on a throne while toasting; Knowles is leaning against a wall and dancing. In the following scene, Knowles is seen on a bed tossing herself. Paul is shown with several women who are lying on the floor caressing each other. Knowles walks towards the beach; she spots a man, and the two touch and flirt. At a party, Knowles dances with a man. Water floods the floor as she sings "the dance floor becomes the sea". The original track is interrupted towards the end with an Arabic instrumental, designed for the music video. This section showcases Knowles vigorously dancing on the sand.

Sal Cinquemani of the online publication *Slant Magazine*, described the video as a "baby-oil-logged follow-up" to "Crazy in Love"'s "bootylicious video".[45] "Baby Boy" premiered on MTV's program *Total Request Live* on August 25, 2003 at number ten and reached the top spot.[46][47] It stayed on the show for forty-one days, the same chart run "Me, Myself and I" earned.[46]

[edit] Live performances

Knowles first performed "Baby Boy" live at the 2003 MTV Video Music Awards;[48] she sang it in a medley with the pre-recorded vocals of Paul.[49] Knowles later sang "Baby Boy" with Paul at the 2003 MTV Europe Music Awards.[50] "Baby Boy" has been included on the set list for most of Knowles' concert tours. It served as opening song of her *Dangerously in Love World Tour* that began in late 2003. During her performance of the song on the tour, she was initially suspended from the ceiling of the arena that was gradually lowered to a red lounge chair a prop she also used during the 2003 MTV VMAs.[51] The footage taken in London's Wembley Arena in the UK was included on the *Live at Wembley* concert DVD. Knowles also performed "Baby Boy" with her former group *Destiny's Child's* farewell tour *Destiny Fulfilled ... And Lovin' It*, and it was included on the *Destiny's Child: Live in Atlanta* concert DVD.[52]

"Baby Boy" was a part of Knowles set list on *The Beyoncé Experience* in Los Angeles and *I Am... Tour*. [53] On August 5, 2007, Knowles performed the song at the Madison Square Garden in Manhattan; [54][55] wearing a belly-dancer-type outfit, she descended the staircase holding an umbrella and was met by three guys wearing fatigues.[55] A short section of the reggae classic "Murder She Wrote" was incorporated into "Baby Boy".[55] Jon Pareles of *The New York Times*

praised the performance, writing that Knowles "needs no distractions from her singing, which can be airy or brassy, tearful or vicious, rapid-fire with staccato syllables or sustained in curlicued melismas. But she was in constant motion, strutting in costumes".[54] She performed in a similar arrangement at the Los Angeles' Staples Center on September 2, 2007. She was dressed in a belly dancing outfit, and the performance was executed with several female and male backup dancers, and live instrumentation.[56] Knowles re-produced the dance she executed in the song's music video.[52]

When Knowles performed "Baby Boy" in Sunrise, Florida on June 29, 2009, she was wearing a glittery gold leotard. When her performance began, she was suspended in the air, and then lowered to the B-Stage to where she sang "Baby Boy" with an excerpt from Dawn Penn's "You Don't Love Me (No, No, No)". Animated graphics of turntables, faders and other club equipment were projected behind the dancers and musicians.[57] Knowles was accompanied by two drummers, two keyboardists, a percussionist, a horn section, three imposing backup vocalists called the Mamas and a lead guitarist, Bibi McGill.[58] "Baby Boy" was included as on her live albums *The Beyoncé Experience Live* (2007),[59] and the deluxe edition of *I Am... World Tour* (2010).[60] At the 2005 ASCAP Pop Music Awards, "Baby Boy" alongside with Knowles' two other songs - "Me, Myself and I" and "Naughty Girl" - were recognized as three of the most performed songs of 2004.[61]

"Baby Boy" was last performed by Knowles in a pink fringe dress at a concert at Palais Nikaïa in Nice, France, on June 20, 2011,[62] and at the Glastonbury Festival on June 26, 2011, where she brought out British trip-hop singer Tricky to guest on the song.[63] In May, 2012, Knowles performed the song during her *Revel Presents: Beyoncé Live* revue in Atlantic City, New Jersey, United States' entertainment resort, hotel, casino and spa, Revel.[64][65][66] Jim Farber of the *Daily News* wrote, "The first, and last parts of the show stressed the steeliest Beyoncé, told in bold songs... [like] dancehall-inflected 'Baby Boy.'"[67]

[edit] Copyright infringement lawsuit

In 2005, US singer-songwriter Jennifer Armour filed a copyright infringement lawsuit, claiming that Knowles had used some lyrics and the musical hook from her song "Got a Little Bit of Love for You".[68][69][70] In 2003, Armour's former label manager had submitted a demo recordings to record labels, including Knowles' Columbia Records and Sean Paul's Atlantic Records.[71][72] According to the district court, an Expert witness (Chair, Dept. of Music Theory & Composition, Shepherd School of Music, Rice University) determined the songs to be "substantially similar" (a requirement for an infringement finding). With regard to the musical hook, the Expert stated in his report, "When the aural comparisons of the two songs are presented in the key of C Minor (for easy comparison) and presented back-to-back, in Aâ ^Bâ ^Aâ ^B fashion, even the least musically inclined listener should immediately determine that the two songs are strikingly similar; I daresay that many listeners may even perceive them as being the same song! And again, transposing a song for this purpose does not alter any fundamental qualities or characteristics of the song but merely assists the ability of those unfamiliar with the technicalities of music in making a comparison." The district court judge nonetheless ruled that she, herself, could not hear the similarities between the two songs and dismissed the case, denying the motion for the songs or case to be heard by a jury.[70]

On appeal, the United States Court of Appeals for the Fifth Circuit affirmed the district court's ruling, but ruled with different reasoning. It held that there was no infringement based on Knowles' claim that Armour's demo tape was received shortly after the writing of Knowles' song had been substantially completed. However, the court did not address the issue of substantial similarity.[72][73]

[edit] Formats and track listing

"Baby Boy" (Album version) â ^ 4:04

"Baby Boy" (Junior Vasquez Club Anthem Remix) â ^ 8:50

"Baby Boy" (Maurice's Nu Soul Mix) â ^ 6:14  
 "Baby Boy" (Maurice's Nu Dub Baby!) â ^ 6:30  
 "Baby Boy" (Album Version) â ^ 4:04  
 "Baby Boy" (Junior's Padapella) â ^ 3:58  
 "Baby Boy" (Album Version) â ^ 4:04  
 "Baby Boy" (Maurice's Nu Soul Mix) â ^ 6:14  
 "Baby Boy" (Junior's Padapella) â ^ 3:58  
 "Krazy In Luv" (Adam 12 So Crazy Remix) â ^ 4:30  
 [edit] Charts and certifications  
 [edit] Weekly charts  
 [edit] Year-end charts  
 [edit] Decade-end charts  
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 |}  
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Coordinates: 34°57′S 138°40′E﻿ / ﻿34.960°S 138.676°E﻿ / -34.960; 138.676

Waterfall Gully is an eastern suburb of the South Australian capital city of Adelaide. It is located in the foothills of the Mount Lofty Ranges around 5 km (3.1 mi) east-south-east of the Adelaide city centre. For the most part, the suburb encompasses one long gully with First Creek at its centre and Waterfall Gully Road running adjacent to the creek. At the southern end of the gully is First Falls, the waterfall for which the suburb was named. Part of the City of Burnside, Waterfall Gully is bounded to the north by the suburb of Burnside, from the north-east to south-east by Cleland Conservation Park (part of the suburb of Greenhill), to the south by Crafrers West, and to the west by Leawood Gardens and Mount Osmond.

Historically, Waterfall Gully was first explored by European settlers in the early-to-mid-19th century, and quickly became a popular location for tourists and picnickers. The government chose to retain control over portions of Waterfall Gully until 1884, when they agreed to place the land under the auspices of the City of Burnside. 28 years later the government took back the management of the southern part of Waterfall Gully, designating it as South Australia's first National Pleasure Resort. Today this area remains under State Government control, and in 1972 the Waterfall Gully Reserve, as it was then known, became part of the larger Cleland Conservation Park.

Over the years Waterfall Gully has been extensively logged, and early agricultural interests saw the cultivation of a variety of introduced species as crops, along with the development of local market gardens and nurseries. Attempts to mine the area were largely unsuccessful, but the region housed one of the state's earliest water-powered mills, and a weir erected in the early 1880s provided for part of the City of Burnside's water supply. Today the suburb consists primarily of private residences and parks.

[edit] History

The Mount Lofty Ranges, which encompass Waterfall Gully, was first sighted by Captain Matthew Flinders in 1802.[1] The gully itself was discovered soon after the establishment of Adelaide, and Colonel William Light, the first Surveyor General of South Australia, was said to have "decided on the site for Adelaide when viewing the plains from the hills near Waterfall Gully".[1] Nevertheless, the gully had seen human visitors long before the arrival of the Europeans, as the native population had lived in the area for up to 40,000 years prior to Flinders' appearance off the South Australian coast.[2]

[edit] Ethnohistory

In Australian Aboriginal mythology, Waterfall Gully and the surrounding Mount Lofty Ranges are part of the story of the ancestor-creator Nganno.[3] Travelling across the land of the native Kurna people, Nganno was wounded in a battle and laid down to die, forming the Mount Lofty Ranges.[4] The ears of Nganno formed the peaks of Mount Lofty and Mount Bonython, and the region was referred to as Yur-e-billa, or "the place of the ears".[5] The name of the Greater Mount Lofty Parklands, Yurrebilla, was derived from this term,[4] while the nearby town of Uraidla employs a more corrupted form.[1]

Although Hardy states that the Kurna people did not live in the ranges themselves, they did live on the lower slopes.[6] An early settler of the neighbouring suburb of Beaumont, James Milne Young, described the local Kurnas: "At every creek and gully you would see their wurlies [simple Aboriginal homes made out of twigs and grass] and their fires at night ... often as many as 500 to 600 would be camped in various places ... some behind the Botanic Gardens on the banks of the river; some toward the Ranges; some on the Waterfall Gully." [7] Their main presence, demarcated by the use of fire against purchasers of land,[5] was on the River Torrens and the creeks that flowed into it, including Waterfall Gully's First Creek.[8]

The land around Waterfall Gully provided the original inhabitants with a number of resources. The bark from the local stringybark trees (*Eucalyptus obliqua*)[5] was used in the construction of winter huts, and stones and native timbers were used to form tools.[2] Food was also present, and cossid moth

larvae along with other species of plants and animals were collected.[5] Nevertheless, there were only a few resources that could only be found on the slopes, and "both hunting and food gathering would in general have been easier on the rich plains".[1]

[edit] Early colonial exploration

One of the earliest accounts of Waterfall Gully comes from a "Mr Kent" who, along with Captain Collet Barker and Barker's servant, Miles, climbed Mount Lofty in 1831. In making their ascent the party skirted a ravineâ ~described by Mr Kent as possessing "smooth and grassy sides"â ~which is believed by Anne Hardy to have been Waterfall Gully.[1] Subsequent to Barker's ascent, the first settlers who were recorded as having climbed Mount Lofty were Bingham Hutchinson and his servant, William Burt. The pair made three attempts to scale the mount before succeeding, and for their first attempt they attempted to traverse Waterfall Gully.[9] The attempt was unsuccessful, but in July 1837, Hutchinson wrote about the gully though which they had travelled. Waterfall Gully he wrote, had proven difficult, as the plants were so thickly grown as to provide a significant barrier to their progress. Near the point of surrender, Hutchinson described how they were "agreeably surprised by seeing a wall of rock about fifty or sixty feet [fifteen to eighteen meters] high, which stretched across the ravine, and from the top of it leapt the brook which had so long been [their] companion".[10] The brook was First Creek, and the waterfall they sighted is today known as First Falls.[11]

Nevertheless, Hutchinson was not the first to see First Falls. The first known recorded sighting of the waterfall by a colonial was that of John William Adams, an emigrant of H.M.S. Buffalo in early January 1837, who named it "Adams' Waterfall". He was traveling with his wife, Susanna and a party consisting of Nicholson's and Breaker's who had the use of a dray to go into the hills. Adams states "we were opposite the spot where the Eagle on the Hill now is, and the question was put, who would volunteer to go down the hillside to try for water".[12]

[edit] Development

The area soon became a tourist attraction for the early South Australian colonists, and was a popular destination for picnickers. In 1851 Francis Clark wrote that "Waterfall Gully is the most picturesque place for a picnic that I have ever visited",[13] and by the 1860s the area had become known throughout Adelaide.[11] The use of Waterfall Gully as picnic spot was facilitated by the decision of the government of the day not to subdivide the area containing the waterfalls. Section 920, as it was designated, did not enter into private hands, and thus members of the public were able to access the area from the nearby suburb of Eagle on the Hill on Mount Barker road.[14] The position of the Eagle on the Hill hotel proved advantageous for this, as it permitted visitors to stop by for lunch before walking down the hill in the afternoon.[15]

Other parts of the Waterfall Gully area were subdivided, though, and much of the area was owned by Samuel Davenport. Davenport used the land for timber, grazing, and the cultivation of various crops, including olives and grapes for wine production.[16] Other local residents ran market gardens and nurseries. For example, local residents Wilhelm MÃgge and his wife Auguste Schmidt operated "one of the best nurseries and market gardens near Adelaide", and gained a reputation for the cheeses produced from their local dairy farm.[17] Along with farming, the hills and creek were prized areas for the sawyers and splitters,[8] and a number of mines were established in the region from the mid-to-late 19th century. In 1844 the first silver-lead, manganese and iron mines were established in the area, while the 1890s saw a minor gold rushâ ~although "only small quantities were extracted".[18] Of greater success was stone quarrying in Chambers' Gully, which began in 1863 and increased in scale in 1912.[18]

Waterfall Gully was also the site of Burnside's "first secondary industry".[19] In the late 1830s, Thomas Cain built a watermill on First Creek for John Cannan, which was then employed to power a sawmill on Cannan's

property. Cannan operated the mill as the "Traversbrook Mill" for approximately two years before selling the venture to a Mr. Finniss. Finniss opted to run the mill as a flour mill instead, and the mill was rebuilt and renamed "Finnissbrook Mill". The mill continued to operate under a variety of owners until the late 1850s, but it was dismantled during the 1880s, and today only traces of the earthworks remain.[20]

During this period the population of the nearby village of Burnside was expanding and required a new water supply. First Creekâ ~which runs down Waterfall Gully and enters the River Torrens near today's Botanic Gardensâ ~was seen as the perfect solution to the water shortage. A weir was built during 1881 and 1882, and was made to hold approximately two megalitres (530,000Â USÂ gallons) of water. A pipeline was constructed to the reservoir at Burnside South,[21] and from there the water was used throughout the surrounding area.[22] As a side effect, the weir also reduced the volume of water available to the local market gardeners, and over many years that aspect of the region disappeared.[23]

While the route to the falls from Eagle on the Hill was on public land, the alternative route along the gully was through private properties. Nevertheless, many visitors chose this route, and a combination of public demand and a desire from some of the landowners for improved access to and from their propertiesâ ~especially from the MÃ¼gge familyâ ~led to pressure to build a road through the gully. Although there was opposition from some of the locals, the Waterfall Gully road was built in the late 1880s.[24]

The completion of the road led to an increase in visitor numbers.[23] Rather than a bumpy horse ride,[25] visitors could now catch the horse tram to the start of the gully, and walk, cycle or ride to the falls.[26] To provide for tourists, the area gained a number of road-side kiosks and produce stalls, and the MÃ¼gge family erected the two story Waterfall Hotel along the path. Furthermore, in 1912 the government opened a kiosk at the base of First Falls,[23] designed in the "style of a Swiss chalet".[27] The hotel is a private residence today, but the kiosk continues to operate.[23]

[edit] Protection

Although some parts of Waterfall Gully were transferred from the District Council of East Torrens (now the Adelaide Hills Council) to the City of Burnside in 1856 when the suburb's current boundaries were established,[28] the government of the day chose to retain control of a significant portion of Waterfall Gully.[29] Thus it was not until 1884 that the remaining land was transferred to the control of the Burnside Council, eventuating largely through the efforts of Samuel Davenport and G. F. Cleland.[29]

The land remained under the Burnside Council's control until 1912, when the Waterfall Gully Reserve was reclaimed by the government as the first National Pleasure Resort in the state. Initially the reserve was placed under the jurisdiction of the National Parks Advisory Board, but later it was moved to the Tourist Bureau, before finally becoming part of the National Park Commission's portfolio.[30]

In 1945, much of the area that is today's Cleland Conservation Park was purchased by the State Government, largely thanks to the efforts of Professor Sir John Cleland. Most of this land was combined in 1963 to create the park that extends eastwards up the gully to the summit of Mount Lofty and northwards to Greenhill Road. Waterfall Gully Reserve was added to the park in 1972.[27]

[edit] Natural disasters

Over the years since European settlement Waterfall Gully has suffered from both bushfires and flooding. The gully was severely hit by a number of bushfires in 1939 that threatened the area, and further bushfires in the early 1940s caused considerable damage because of the war effort diverting supplies and personnel from the Country Fire Service (CFS).[31] Significant floods occurred in 1889 and 1931,[32] and, on the night of 7 November 2005, Waterfall Gully was one of several areas in Adelaide to experience severe flooding. Waterfall Gully was one of the hardest hit suburbs: Bob Stevenson, Duty Officer of the State Emergency Service (SES), commented that "There's an area called

Waterfall Gully Road, in the foothills, where one of the creeks comes down, and there's quite a few houses affected there ... there was 40 or so houses affected on that one road alone." [33] Properties were flooded, two bridges nearly collapsed, and 100 m (330 ft) of road was washed away. Burnside council workers, the CFS and the SES repaired the initial damage on the night while reconstruction of infrastructure commenced in late November. Much of the road had been inaccessible, and the suburb was closed except to residents and emergency workers for the remainder of the month. [34]

#### [edit] Geography

Waterfall Gully is situated at an average elevation of 234 m (768 ft) above sea level, in an area of 6.08 km<sup>2</sup> (2.35 sq mi). Its most notable geographical features are its gully and waterfall. Langman Reserve, a large local park, is 300 m (980 ft) from the start of Waterfall Gully Road while much of the north-eastern side of the gully is part of Cleland Conservation Park. Adjoining Waterfall Gully, 2 km (1.2 mi) away, is Chambers Gully, which used to function as a land-fill, but has in the past decade been reclaimed as a park through volunteer work. [35] It contains a number of old ruins, walking trails, and springs and is home to a significant number of native species.

Since European Settlement the native plant life has been considerably affected, with the native Manna Gum and Blue Gum woodlands being largely cleared for agricultural uses. [36] The large amount of non-native vegetation in the gully is predominantly the result of the early agriculture, although some species were introduced by accident. Introduced species include olive trees, hawthorn, fennel and blackberry. [37] With the reduction of native flora, exotic fauna have flourished around the Waterfall Gully region. These include rabbits, blackbirds and starlings. However, not all of the native wildlife has been lost - bats (in particular, Gould's Wattled Bat), can be found in the area, as can Superb Fairy-wrens and Adelaide Rosellas, and a large number of unique Australian animals such as kangaroos, koalas and possums can be spotted on some of the walking trails. [38]

#### [edit] Transport

Waterfall Gully is connected to the major Adelaide thoroughfare Greenhill Road by Waterfall Terrace and Glynburn Road, and cars are the preferred mode of transport in the suburb. According to the Australian Bureau of Statistics 71.9% of residents in the census area employed private vehicles for their commute to work. Only a small proportion (1.3%) walked to work and but 1.2% cycled, while only 3.6% of Waterfall Gully residents travel to work by bus. [39] The closest bus route for Waterfall Gully is the 142 bus, provided by the multi-service Adelaide Metro.

Waterfall Gully Road is meandering and in some parts quite narrow. This has led to concerns regarding safety, as the road is frequented by both pedestrians and cyclists. [40] After the death of a cyclist in 2007, calls for the repair and resurfacing of the road intensified, with two petitions being tabled in parliament. The accident also led to a safety audit being conducted by TransportSA, and although the results were not released to the public at the time, it called for an investigation of the entire length of the road. [41] As of mid-2008, there has been no clear plan released for the future of the road, with the road missing out on funding in the 2008 state budget. [42]

#### [edit] Residents

In the 2001 Census, the population of the Waterfall Gully census area (which includes the suburbs of Glen Osmond, Leawood Gardens and Mount Osmond) was 2,497 people, in an area of 6.08 square kilometers. Females outnumbered males 54.2% to 45.8%, and some 21.4% of the population was born overseas (see chart for a breakdown). There was only a slight change in the 2006 census, with the population increasing by 25 to 2,522. [39]

The eight strongest religious affiliations in the area (based on the 2006 census figures) were (in descending order): Anglican, Catholic, Uniting, Lutheran, Orthodox Christian, Buddhist, Presbyterian, Church of Christ and Baptist (a combination of other Christian faiths came in somewhere between Presbyterians and the Church of Christ, with 31 adherents). Also of note is the

high occurrence of religious affiliation (67.3%) in the region in comparison to the Adelaide (and national) average. Christian belief (64.4%) is most prominent, with little growth in other religions.[39]

Residents in these four suburbs are more affluent than the Adelaide average, with a high occurrence of incomes over A\$1000 per week, which is also above the average for the City of Burnside. A majority of workers are employed in professional or white collar fields.[39]

The census area that incorporates Waterfall Gully has a larger proportion of those in both the younger (0-17) and older (60+) age ranges than in the City of Burnside as a whole, and there have been no "numerically significant" changes in the age distribution between the 2001 and 2006 censuses. Similarly, family numbers are also stable, with almost no change between 2001 and 2006.[39]

#### [edit] Attractions

The main attraction of Waterfall Gully is the waterfall, First Falls. It is at the south-eastern end of the road, in land owned by Cleland Conservation Park. The weir at the bottom of the Waterfall was constructed in the late 19th century and was part of Adelaide's early water supply.[22] Development in the area has continued since the construction of a restaurant in 1912.[43] Developments over recent decades have included improving access to the site, upgrading the bridges, and the addition of new signage.[44]

The Waterfall Gully Restaurant was constructed between 1911 and 1912 by South Australian architects Albert Selmar Conrad and his brother Frank,[45] and was formally opened by Sir Day Bosanquet on 9 November 1912.[43] Built in the style of a Swiss chalet, the building has been heritage listed since 1987,[45] and is reputedly haunted by the ghost of a firefighter who died from burns suffered in 1926.[46]

Other fire tracks and walking trails wind around the hills that surround Waterfall Gully, branching off from Chambers Gully, Woolshed Gully or the area around First Creek. Destinations include Crafers, Eagle On The Hill, Mount Lofty, Mount Osmond and the Cleland Wildlife Park, located in the Cleland Conservation Park. The tracks have been completely rebuilt and resurfaced in the past ten years, and a number of older and more perilous routes have been sealed because of the difficult terrain. Many offer views of the city of Adelaide as well as the Gully itself. One of these is notable for connecting to the 1,200 km (750 mi) Heysen Trail, and the trails are highly frequented.

#### [edit] Politics

Waterfall Gully is part of the state electoral district of Bragg, which has been held since 2002 by Liberal MP Vickie Chapman.[49] In federal politics, the suburb is part of the division of Sturt, and has been represented by Christopher Pyne since 1993.[50] The results shown are from the closest polling station to Waterfall Gully—which is located outside of the suburb—at St David's Church Hall on nearby Glynburn Road (Burnside). Both electorates have traditionally gone to the Liberal Party,[49][50] and Bragg in particular is regarded as a very safe Liberal seat.[49] However, in the 2007 federal election, a strong swing towards the Labor Party and their candidate, Mia Handshin, resulted in the electorate transforming from a "safe [federal] Liberal seat into a marginal one".[51]

In local government, Waterfall Gully is part of the ward of Beaumont within the City of Burnside, and the current Mayor for the district is David Parkin. Beaumont is currently represented by councilors Mark Osterstock and Anne Monceaux.[52]

<sup>a b c d e</sup> Hardy (1989), p. 5.

<sup>a b</sup> Hardy (1989), p. 4.

<sup>a</sup> While the Department of Environment and Heritage (2001) refers to Nganno, Hardy (1989, p. 5) employs Yurebilla, and Kleinig names the figure as Jureidla.

<sup>a b</sup> Department for Environment and Heritage (2001)

<sup>a b c d</sup> Smith, Pate & Piddock (2005), p. 3.

<sup>a</sup> Hardy (1989), pp. 4-5.

<sup>a</sup> Stringer (1986)

^ a b Kleinig, "Mt Lofty: A View Down Through the Early Years"  
 ^ Hardy (1989), p. 6.  
 ^ Hutchinson, in Warburton (1981), pp. 187-188. Hutchinson reported that they continued the climb, but surrendered after being faced with another steep ravine separating them from their goal.  
 ^ a b Warburton (1977), p. 28.  
 ^ Stringer (1980)  
 ^ Clark, Francis in Warburton (1981), p. 188.  
 ^ Warburton (1981), p. 188.  
 ^ Warburton (1981), p. 102.  
 ^ Warburton (1977), pp. 28â ^31.  
 ^ Warburton (1981), pp. 188â ^189.  
 ^ a b Warburton (1981), p. 193.  
 ^ Ifould (1956), p. 43.  
 ^ Jones (1981), pp. 106â ^107.  
 ^ Dridan (1956), p. 87.  
 ^ a b Warburton (1981), p. 190.  
 ^ a b c d Warburton (1981), p. 192.  
 ^ Warburton (1981), pp. 189â ^190.  
 ^ Warburton (1981), p. 189.  
 ^ Warburton (1981), pp. 191â ^192.  
 ^ a b Hardy (1989), p. 11.  
 ^ Melbourne (1956a), p. 11.  
 ^ a b Hardy (1989), p. 7.  
 ^ Hardy (1989), pp. 8â ^11.  
 ^ Lovett (2005)  
 ^ Warburton (1981), p. 329.  
 ^ "Flash flooding hits Adelaide" (8 November 2005)  
 ^ "Media Release: Hundreds of Homes Affected by Floods"(8 November 2005)  
 ^ "Winning the war on weeds" (10 May 1999), p. 66.  
 ^ "Native Vegetation" (11 November 2007)  
 ^ Hardy (1989), pp. 17â ^18.  
 ^ Walking Trails (11 November 2007)  
 ^ a b c d e f "Glen Osmond â ~ Mount Osmond â ~ Waterfall Gully â ~ Leawood Gardens"  
 ^ Garvis (3 October 2007), p. 3.  
 ^ Williams (1 April 2008), p. 16.  
 ^ Charrison (11 June 2008), p. 5.  
 ^ a b Melbourne (1956b), p. 156.  
 ^ "Waterfall Gully facelift" (4 June 1998), p. 14.  
 ^ a b "Place Details: Dr Helen Mayos House, 176â ^180 Mackinnon Pde, North Adelaide, SA, Australia"  
 ^ Hardy (1989), p. 12.  
 ^ "State Election 2006 â ^ Polling Booth Results (Burnside, Bragg)" (4 April 2006)  
 ^ "Federal Election 2007 - Polling Booth Results (Burnside, Sturt)" (12 December 2007).  
 ^ a b c Green, Antony (20 April 2006)  
 ^ a b Green, Antony (29 December 2007)  
 ^ Vaughan, Joanna (28 December 2007)  
 ^ "The Burnside Council" (26 November 2007)

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[edit] External links

Jupiter

A composite Cassini image of Jupiter. The dark spot is the shadow of Europa.

Designations

Pronunciation

<sup>i</sup>/ˈdʒuːpɪtər/[1]

Adjective

Jovian

Orbital characteristics[5][6]

Epoch J2000

Aphelion

816,520,800 km (5.458104â AU)

Perihelion

740,573,600 km (4.950429â AU)

Semi-major axis

778,547,200 km (5.204267â AU)

Eccentricity

0.048775

Orbital period

Synodic period

398.88â days[3]

Average orbital speed

13.07â km/s[3]

Mean anomaly

18.818â°

Inclination

Longitude of ascending node

100.492°  
Argument of perihelion  
275.066°  
Satellites  
67  
Physical characteristics  
Mean radius  
69,911 ± 6 km[7][8]  
Equatorial radius  
Polar radius  
66,854 ± 10 km[7][8]  
10.517 Earths  
Flattening  
0.06487 ± 0.00015  
Surface area  
6.1419 × 10<sup>10</sup> km<sup>2</sup>[8][9]  
121.9 Earths  
Volume  
1.4313 × 10<sup>15</sup> km<sup>3</sup>[3][8]  
1321.3 Earths  
Mass  
1.8986 × 10<sup>27</sup> kg[3]  
317.8 Earths  
1/1047 Sun[10]  
Mean density  
1.326 g/cm<sup>3</sup>[3][8]  
Equatorial surface gravity  
24.79 m/s<sup>2</sup>[3][8]  
2.528 g  
Escape velocity  
59.5 km/s[3][8]  
Sidereal rotation period  
9.925 h[11] (9 h 55 m 30 s)  
Equatorial rotation velocity  
12.6 km/s  
45,300 km/h  
Axial tilt  
3.13°[3]  
North pole right ascension  
268.057°  
17 h 52 min 14 s[7]  
North pole declination  
64.496°[7]  
Albedo  
0.343 (Bond)  
0.52 (geom.)[3]  
Surface temp.  
min  
mean  
max  
1 bar level  
165 K[3]  
0.1 bar  
112 K[3]  
Apparent magnitude  
-1.6 to -2.94[3]  
Angular diameter  
29.8" ~ 50.1"[3]  
Atmosphere[3]  
Surface pressure

200 kPa (cloud layer)

Scale height

27 km

Composition

Jupiter is the fifth planet from the Sun and the largest planet in the Solar System.[13] It is a gas giant with mass one-thousandth that of the Sun but is two and a half times the mass of all the other planets in the Solar System combined. Jupiter is classified as a gas giant along with Saturn, Uranus and Neptune. Together, these four planets are sometimes referred to as the Jovian or outer planets. The planet was known by astronomers of ancient times,[14] and was associated with the mythology and religious beliefs of many cultures. The Romans named the planet after the Roman god Jupiter.[15] When viewed from Earth, Jupiter can reach an apparent magnitude of  $-2.94$ , making it on average the third-brightest object in the night sky after the Moon and Venus. (Mars can briefly match Jupiter's brightness at certain points in its orbit.)

Jupiter is primarily composed of hydrogen with a quarter of its mass being helium, although helium only comprises about a tenth of the number of molecules. It may also have a rocky core of heavier elements,[16] but like the other gas giants, Jupiter lacks a well-defined solid surface. Because of its rapid rotation, the planet's shape is that of an oblate spheroid (it possesses a slight but noticeable bulge around the equator). The outer atmosphere is visibly segregated into several bands at different latitudes, resulting in turbulence and storms along their interacting boundaries. A prominent result is the Great Red Spot, a giant storm that is known to have existed since at least the 17th century when it was first seen by telescope. Surrounding Jupiter is a faint planetary ring system and a powerful magnetosphere. There are also at least 67 moons, including the four large moons called the Galilean moons that were first discovered by Galileo Galilei in 1610. Ganymede, the largest of these moons, has a diameter greater than that of the planet Mercury.

Jupiter has been explored on several occasions by robotic spacecraft, most notably during the early Pioneer and Voyager flyby missions and later by the Galileo orbiter. The most recent probe to visit Jupiter was the Pluto-bound New Horizons spacecraft in late February 2007. The probe used the gravity from Jupiter to increase its speed. Future targets for exploration in the Jovian system include the possible ice-covered liquid ocean on the moon Europa.

Structure

Jupiter is composed primarily of gaseous and liquid matter. It is the largest of four gas giants as well as the largest planet in the Solar System with a diameter of 142,984 km at its equator. The density of Jupiter, 1.326 g/cm<sup>3</sup>, is the second highest of the gas giant planets. The density is lower than any of the four terrestrial planets.

Composition

Jupiter's upper atmosphere is composed of about 88% hydrogen and 8% helium by percent volume or fraction of gas molecules. Since a helium atom has about four times as much mass as a hydrogen atom, the composition changes when described as the proportion of mass contributed by different atoms. Thus, the atmosphere is approximately 75% hydrogen and 24% helium by mass, with the remaining one percent of the mass consisting of other elements. The interior contains denser materials such that the distribution is roughly 71% hydrogen, 24% helium and 5% other elements by mass. The atmosphere contains trace amounts of methane, water vapor, ammonia, and silicon-based compounds. There are also traces of carbon, ethane, hydrogen sulfide, neon, oxygen, phosphine, and sulfur. The outermost layer of the atmosphere contains crystals of frozen ammonia.[17][18] Through infrared and ultraviolet measurements, trace amounts of benzene and other hydrocarbons have also been found.[19]

The atmospheric proportions of hydrogen and helium are very close to the theoretical composition of the primordial solar nebula. Neon in the upper atmosphere only consists of 20 parts per million by mass, which is about a tenth as abundant as in the Sun.[20] Helium is also depleted, although only to about 80% of the Sun's helium composition. This depletion may be a result of

precipitation of these elements into the interior of the planet.[21] Abundances of heavier inert gases in Jupiter's atmosphere are about two to three times that of the Sun.

Based on spectroscopy, Saturn is thought to be similar in composition to Jupiter, but the other gas giants Uranus and Neptune have relatively much less hydrogen and helium.[22] Because of the lack of atmospheric entry probes, high quality abundance numbers of the heavier elements are lacking for the outer planets beyond Jupiter.

#### Mass

Jupiter's mass is 2.5 times that of all the other planets in the Solar System combined—this is so massive that its barycenter with the Sun lies above the Sun's surface at 1.068 $\times$  solar radii from the Sun's center. Although this planet dwarfs the Earth with a diameter 11 times as great, it is considerably less dense. Jupiter's volume is that of about 1,321 Earths, yet the planet is only 318 times as massive.[3][23] Jupiter's radius is about 1/10 the radius of the Sun,[24] and its mass is 0.001 times the mass of the Sun, so the density of the two bodies is similar.[25] A "Jupiter mass" (MJ or MJup) is often used as a unit to describe masses of other objects, particularly extrasolar planets and brown dwarfs. So, for example, the extrasolar planet HD 209458 b has a mass of 0.69 MJ, while Kappa Andromedae b has a mass of 12.8 MJ.[26]

Theoretical models indicate that if Jupiter had much more mass than it does at present, the planet would shrink.[27] For small changes in mass, the radius would not change appreciably, and above about 500 $\times$  M $\oplus$  (1.6 Jupiter masses)[27] the interior would become so much more compressed under the increased gravitation force that the planet's volume would decrease despite the increasing amount of matter. As a result, Jupiter is thought to have about as large a diameter as a planet of its composition and evolutionary history can achieve. The process of further shrinkage with increasing mass would continue until appreciable stellar ignition is achieved as in high-mass brown dwarfs around 50 Jupiter masses.[28]

Although Jupiter would need to be about 75 times as massive to fuse hydrogen and become a star, the smallest red dwarf is only about 30 percent larger in radius than Jupiter.[29][30] Despite this, Jupiter still radiates more heat than it receives from the Sun; the amount of heat produced inside the planet is similar to the total solar radiation it receives.[31] This additional heat radiation is generated by the Kelvin–Helmholtz mechanism through adiabatic contraction. This process results in the planet shrinking by about 2 $\times$  cm each year.[32] When it was first formed, Jupiter was much hotter and was about twice its current diameter.[33]

#### Internal structure

Jupiter is thought to consist of a dense core with a mixture of elements, a surrounding layer of liquid metallic hydrogen with some helium, and an outer layer predominantly of molecular hydrogen.[32] Beyond this basic outline, there is still considerable uncertainty. The core is often described as rocky, but its detailed composition is unknown, as are the properties of materials at the temperatures and pressures of those depths (see below). In 1997, the existence of the core was suggested by gravitational measurements,[32] indicating a mass of from 12 to 45 times the Earth's mass or roughly 3%–15% of the total mass of Jupiter.[31][34] The presence of a core during at least part of Jupiter's history is suggested by models of planetary formation involving initial formation of a rocky or icy core that is massive enough to collect its bulk of hydrogen and helium from the protosolar nebula. Assuming it did exist, it may have shrunk as convection currents of hot liquid metallic hydrogen mixed with the molten core and carried its contents to higher levels in the planetary interior. A core may now be entirely absent, as gravitational measurements are not yet precise enough to rule that possibility out entirely.[32][35]

The uncertainty of the models is tied to the error margin in hitherto measured parameters: one of the rotational coefficients (J<sub>6</sub>) used to describe the planet's gravitational moment, Jupiter's equatorial radius, and its temperature at 1 bar pressure. The Juno mission, which launched in August 2011, is expected

to narrow down the value of these parameters, and thereby make progress on the problem of the core.[36]

The core region is surrounded by dense metallic hydrogen, which extends outward to about 78 percent of the radius of the planet.[31] Rain-like droplets of helium and neon precipitate downward through this layer, depleting the abundance of these elements in the upper atmosphere.[21][37]

Above the layer of metallic hydrogen lies a transparent interior atmosphere of hydrogen. At this depth, the temperature is above the critical temperature, which for hydrogen is only 33 K[38] (see hydrogen). In this state, there are no distinct liquid and gas phases—hydrogen is said to be in a supercritical fluid state. It is convenient to treat hydrogen as gas in the upper layer extending downward from the cloud layer to a depth of about 1,000 km,[31] and as liquid in deeper layers. Physically, there is no clear boundary—gas smoothly becomes hotter and denser as one descends.[39][40]

The temperature and pressure inside Jupiter increase steadily toward the core. At the phase transition region where hydrogen is heated beyond its critical point—becomes metallic, it is believed the temperature is 10,000 K and the pressure is 200 GPa. The temperature at the core boundary is estimated to be 36,000 K and the interior pressure is roughly 3,000–4,500 GPa.[31]

#### Atmosphere

Jupiter has the largest planetary atmosphere in the Solar System, spanning over 5000 km in altitude.[41][42] As Jupiter has no surface, the base of its atmosphere is usually considered to be the point at which atmospheric pressure is equal to 10 bars, or ten times surface pressure on Earth.[41]

#### Cloud layers

Jupiter is perpetually covered with clouds composed of ammonia crystals and possibly ammonium hydrosulfide. The clouds are located in the tropopause and are arranged into bands of different latitudes, known as tropical regions. These are sub-divided into lighter-hued zones and darker belts. The interactions of these conflicting circulation patterns cause storms and turbulence. Wind speeds of 100 m/s (360 km/h) are common in zonal jets.[43] The zones have been observed to vary in width, color and intensity from year to year, but they have remained sufficiently stable for astronomers to give them identifying designations.[23]

The cloud layer is only about 50 km deep, and consists of at least two decks of clouds: a thick lower deck and a thin clearer region. There may also be a thin layer of water clouds underlying the ammonia layer, as evidenced by flashes of lightning detected in the atmosphere of Jupiter. This is caused by water's polarity, which makes it capable of creating the charge separation needed to produce lightning.[31] These electrical discharges can be up to a thousand times as powerful as lightning on the Earth.[44] The water clouds can form thunderstorms driven by the heat rising from the interior.[45]

The orange and brown coloration in the clouds of Jupiter are caused by upwelling compounds that change color when they are exposed to ultraviolet light from the Sun. The exact makeup remains uncertain, but the substances are believed to be phosphorus, sulfur or possibly hydrocarbons.[31][46] These colorful compounds, known as chromophores, mix with the warmer, lower deck of clouds. The zones are formed when rising convection cells form crystallizing ammonia that masks out these lower clouds from view.[47]

Jupiter's low axial tilt means that the poles constantly receive less solar radiation than at the planet's equatorial region. Convection within the interior of the planet transports more energy to the poles, balancing out the temperatures at the cloud layer.[23]

#### Great Red Spot and other vortices

The best known feature of Jupiter is the Great Red Spot, a persistent anticyclonic storm that is larger than Earth, located 22° south of the equator. It is known to have been in existence since at least 1831,[48] and possibly since 1665.[49][50] Mathematical models suggest that the storm is stable and may be a permanent feature of the planet.[51] The storm is large enough to be visible through Earth-based telescopes with an aperture of 12 cm or larger.[52]

The oval object rotates counterclockwise, with a period of about six days.[53] The Great Red Spot's dimensions are  $24 \times 10^4$  km  $\times$   $12 \times 10^4$  km. It is large enough to contain two or three planets of Earth's diameter.[54] The maximum altitude of this storm is about 8 km above the surrounding cloudtops.[55]

Storms such as this are common within the turbulent atmospheres of gas giants. Jupiter also has white ovals and brown ovals, which are lesser unnamed storms. White ovals tend to consist of relatively cool clouds within the upper atmosphere. Brown ovals are warmer and located within the "normal cloud layer". Such storms can last as little as a few hours or stretch on for centuries.

Even before Voyager proved that the feature was a storm, there was strong evidence that the spot could not be associated with any deeper feature on the planet's surface, as the Spot rotates differentially with respect to the rest of the atmosphere, sometimes faster and sometimes more slowly. During its recorded history it has traveled several times around the planet relative to any possible fixed rotational marker below it.

In 2000, an atmospheric feature formed in the southern hemisphere that is similar in appearance to the Great Red Spot, but smaller. This was created when several smaller, white oval-shaped storms merged to form a single feature—these three smaller white ovals were first observed in 1938. The merged feature was named Oval BA, and has been nicknamed Red Spot Junior. It has since increased in intensity and changed color from white to red.[56][57][58]

#### Planetary rings

Jupiter has a faint planetary ring system composed of three main segments: an inner torus of particles known as the halo, a relatively bright main ring, and an outer gossamer ring.[59] These rings appear to be made of dust, rather than ice as with Saturn's rings.[31] The main ring is probably made of material ejected from the satellites Adrastea and Metis. Material that would normally fall back to the moon is pulled into Jupiter because of its strong gravitational influence. The orbit of the material veers towards Jupiter and new material is added by additional impacts.[60] In a similar way, the moons Thebe and Amalthea probably produce the two distinct components of the dusty gossamer ring.[60] There is also evidence of a rocky ring strung along Amalthea's orbit which may consist of collisional debris from that moon.[61]

#### Magnetosphere

Jupiter's broad magnetic field is 14 times as strong as the Earth's, ranging from 4.2 gauss (0.42 mT) at the equator to  $10 \times 10^4$  gauss (1.0  $\times$  1.4 mT) at the poles, making it the strongest in the Solar System (except for sunspots).[47] This field is believed to be generated by eddy currents—swirling movements of conducting materials—within the liquid metallic hydrogen core. The volcanoes on the moon Io emit large amounts of sulfur dioxide forming a gas torus along the moon's orbit. The gas is ionized in the magnetosphere producing sulfur and oxygen ions. They, together with hydrogen ions originating from the atmosphere of Jupiter, form a plasma sheet in Jupiter's equatorial plane. The plasma in the sheet co-rotates with the planet causing deformation of the dipole magnetic field into that of magnetodisk. Electrons within the plasma sheet generate a strong radio signature that produces bursts in the range of 0.6  $\times$  30 MHz.[62]

At about 75 Jupiter radii from the planet, the interaction of the magnetosphere with the solar wind generates a bow shock. Surrounding Jupiter's magnetosphere is a magnetopause, located at the inner edge of a magnetosheath—a region between it and the bow shock. The solar wind interacts with these regions, elongating the magnetosphere on Jupiter's lee side and extending it outward until it nearly reaches the orbit of Saturn. The four largest moons of Jupiter all orbit within the magnetosphere, which protects them from the solar wind.[31]

The magnetosphere of Jupiter is responsible for intense episodes of radio emission from the planet's polar regions. Volcanic activity on the Jovian moon Io (see below) injects gas into Jupiter's magnetosphere, producing a torus of particles about the planet. As Io moves through this torus, the interaction generates Alfvén waves that carry ionized matter into the polar regions of Jupiter. As a result, radio waves are generated through a cyclotron maser

mechanism, and the energy is transmitted out along a cone-shaped surface. When the Earth intersects this cone, the radio emissions from Jupiter can exceed the solar radio output.[63]

#### Orbit and rotation

Jupiter is the only planet that has a center of mass with the Sun that lies outside the volume of the Sun, though by only 7% of the Sun's radius.[64] The average distance between Jupiter and the Sun is 778 million km (about 5.2 times the average distance from the Earth to the Sun, or 5.2 AU) and it completes an orbit every 11.86 years. This is two-fifths the orbital period of Saturn, forming a 5:2 orbital resonance between the two largest planets in the Solar System.[65] The elliptical orbit of Jupiter is inclined  $1.31^\circ$  compared to the Earth. Because of an eccentricity of 0.048, the distance from Jupiter and the Sun varies by 75 million km between perihelion and aphelion, or the nearest and most distant points of the planet along the orbital path respectively.

The axial tilt of Jupiter is relatively small: only  $3.13^\circ$ . As a result this planet does not experience significant seasonal changes, in contrast to Earth and Mars for example.[66]

Jupiter's rotation is the fastest of all the Solar System's planets, completing a rotation on its axis in slightly less than ten hours; this creates an equatorial bulge easily seen through an Earth-based amateur telescope. The planet is shaped as an oblate spheroid, meaning that the diameter across its equator is longer than the diameter measured between its poles. On Jupiter, the equatorial diameter is 9275 km longer than the diameter measured through the poles.[40]

Because Jupiter is not a solid body, its upper atmosphere undergoes differential rotation. The rotation of Jupiter's polar atmosphere is about 5 minutes longer than that of the equatorial atmosphere; three systems are used as frames of reference, particularly when graphing the motion of atmospheric features. System I applies from the latitudes  $10^\circ$  N to  $10^\circ$  S; its period is the planet's shortest, at 9h 50m 30.0s. System II applies at all latitudes north and south of these; its period is 9h 55m 40.6s. System III was first defined by radio astronomers, and corresponds to the rotation of the planet's magnetosphere; its period is Jupiter's official rotation.[67]

#### Observation

Jupiter is usually the fourth brightest object in the sky (after the Sun, the Moon and Venus);[47] at times Mars appears brighter than Jupiter. Depending on Jupiter's position with respect to the Earth, it can vary in visual magnitude from as bright as  $-2.9$  at opposition down to  $-1.6$  during conjunction with the Sun. The angular diameter of Jupiter likewise varies from 50.1 to 29.8 arc seconds.[3] Favorable oppositions occur when Jupiter is passing through perihelion, an event that occurs once per orbit. As Jupiter approached perihelion in March 2011, there was a favorable opposition in September 2010.[68]

Earth overtakes Jupiter every 398.9 days as it orbits the Sun, a duration called the synodic period. As it does so, Jupiter appears to undergo retrograde motion with respect to the background stars. That is, for a period Jupiter seems to move backward in the night sky, performing a looping motion.

Jupiter's 12-year orbital period corresponds to the dozen astrological signs of the zodiac, and may have been the historical origin of the signs.[23] That is, each time Jupiter reaches opposition it has advanced eastward by about  $30^\circ$ , the width of a zodiac sign.

Because the orbit of Jupiter is outside the Earth's, the phase angle of Jupiter as viewed from the Earth never exceeds  $11.5^\circ$ . That is, the planet always appears nearly fully illuminated when viewed through Earth-based telescopes. It was only during spacecraft missions to Jupiter that crescent views of the planet were obtained.[69]

#### Research and exploration

##### Pre-telescopic research

The observation of Jupiter dates back to the Babylonian astronomers of the 7th or 8th century BC.[70] The Chinese historian of astronomy, Xi Zezong, has



claimed that Gan De, a Chinese astronomer, made the discovery of one of Jupiter's moons in 362 BC with the unaided eye. If accurate, this would predate Galileo's discovery by nearly two millennia.[71][72] In his 2nd century work the *Almagest*, the Hellenistic astronomer Claudius Ptolemaeus constructed a geocentric planetary model based on deferents and epicycles to explain Jupiter's motion relative to the Earth, giving its orbital period around the Earth as 4332.38 days, or 11.86 years.[73] In 499, Aryabhata, a mathematician-astronomer from the classical age of Indian mathematics and astronomy, also used a geocentric model to estimate Jupiter's period as 4332.2722 days, or 11.86 years.[74]

#### Ground-based telescope research

In 1610, Galileo Galilei discovered the four largest moons of Jupiter—Io, Europa, Ganymede and Callisto (now known as the Galilean moons)—using a telescope; thought to be the first telescopic observation of moons other than Earth's. Galileo's was also the first discovery of a celestial motion not apparently centered on the Earth. It was a major point in favor of Copernicus' heliocentric theory of the motions of the planets; Galileo's outspoken support of the Copernican theory placed him under the threat of the Inquisition.[75]

During the 1660s, Cassini used a new telescope to discover spots and colorful bands on Jupiter and observed that the planet appeared oblate; that is, flattened at the poles. He was also able to estimate the rotation period of the planet.[18] In 1690 Cassini noticed that the atmosphere undergoes differential rotation.[31]

The Great Red Spot, a prominent oval-shaped feature in the southern hemisphere of Jupiter, may have been observed as early as 1664 by Robert Hooke and in 1665 by Giovanni Cassini, although this is disputed. The pharmacist Heinrich Schwabe produced the earliest known drawing to show details of the Great Red Spot in 1831.[76]

The Red Spot was reportedly lost from sight on several occasions between 1665 and 1708 before becoming quite conspicuous in 1878. It was recorded as fading again in 1883 and at the start of the 20th century.[77]

Both Giovanni Borelli and Cassini made careful tables of the motions of the Jovian moons, allowing predictions of the times when the moons would pass before or behind the planet. By the 1670s, it was observed that when Jupiter was on the opposite side of the Sun from the Earth, these events would occur about 17 minutes later than expected. Ole Rømer deduced that light is not instantaneous (a conclusion that Cassini had earlier rejected[18]), and this timing discrepancy was used to estimate the speed of light.[78]

In 1892, E. E. Barnard observed a fifth satellite of Jupiter with the 36-inch (910 mm) refractor at Lick Observatory in California. The discovery of this relatively small object, a testament to his keen eyesight, quickly made him famous. The moon was later named Amalthea.[79] It was the last planetary moon to be discovered directly by visual observation.[80] An additional eight satellites were subsequently discovered before the flyby of the Voyager 1 probe in 1979.

In 1932, Rupert Wildt identified absorption bands of ammonia and methane in the spectra of Jupiter.[81]

Three long-lived anticyclonic features termed white ovals were observed in 1938. For several decades they remained as separate features in the atmosphere, sometimes approaching each other but never merging. Finally, two of the ovals merged in 1998, then absorbed the third in 2000, becoming Oval BA.[82]

#### Radiotelescope research

In 1955, Bernard Burke and Kenneth Franklin detected bursts of radio signals coming from Jupiter at 22.2 MHz.[31] The period of these bursts matched the rotation of the planet, and they were also able to use this information to refine the rotation rate. Radio bursts from Jupiter were found to come in two forms: long bursts (or L-bursts) lasting up to several seconds, and short bursts (or S-bursts) that had a duration of less than a hundredth of a second.[83]

Scientists discovered that there were three forms of radio signals transmitted

from Jupiter.

Decametric radio bursts (with a wavelength of tens of meters) vary with the rotation of Jupiter, and are influenced by interaction of Io with Jupiter's magnetic field.[84]

Decimetric radio emission (with wavelengths measured in centimeters) was first observed by Frank Drake and Hein Hvatum in 1959.[31] The origin of this signal was from a torus-shaped belt around Jupiter's equator. This signal is caused by cyclotron radiation from electrons that are accelerated in Jupiter's magnetic field.[85]

Thermal radiation is produced by heat in the atmosphere of Jupiter.[31]

Exploration with space probes

Since 1973 a number of automated spacecraft have visited Jupiter, most notably the Pioneer 10 space probe, the first spacecraft to get close enough to Jupiter to send back revelations about the properties and phenomena of the Solar System's largest planet.[86][87] Flights to other planets within the Solar System are accomplished at a cost in energy, which is described by the net change in velocity of the spacecraft, or delta-v. Entering a Hohmann transfer orbit from Earth to Jupiter from low Earth orbit requires a delta-v of 6.3 km/s[88] which is comparable to the 9.7 km/s delta-v needed to reach low Earth orbit.[89] Fortunately, gravity assists through planetary flybys can be used to reduce the energy required to reach Jupiter, albeit at the cost of a significantly longer flight duration.[90]

Flyby missions

Flyby missions

Spacecraft

Closest

approach

Distance

Pioneer 10

December 3, 1973

130,000 km

Pioneer 11

December 4, 1974

34,000 km

Voyager 1

March 5, 1979

349,000 km

Voyager 2

July 9, 1979

570,000 km

Ulysses

February 8, 1992[91]

408,894 km

February 4, 2004[91]

120,000,000 km

Cassini

December 30, 2000

10,000,000 km

New Horizons

February 28, 2007

2,304,535 km

Beginning in 1973, several spacecraft have performed planetary flyby maneuvers that brought them within observation range of Jupiter. The Pioneer missions obtained the first close-up images of Jupiter's atmosphere and several of its moons. They discovered that the radiation fields near the planet were much stronger than expected, but both spacecraft managed to survive in that environment. The trajectories of these spacecraft were used to refine the mass estimates of the Jovian system. Occultations of the radio signals by the planet resulted in better measurements of Jupiter's diameter and the amount of polar flattening.[23][92]

Six years later, the Voyager missions vastly improved the understanding of the Galilean moons and discovered Jupiter's rings. They also confirmed that the Great Red Spot was anticyclonic. Comparison of images showed that the Red Spot had changed hue since the Pioneer missions, turning from orange to dark brown. A torus of ionized atoms was discovered along Io's orbital path, and volcanoes were found on the moon's surface, some in the process of erupting. As the spacecraft passed behind the planet, it observed flashes of lightning in the night side atmosphere.[17][23]

The next mission to encounter Jupiter, the Ulysses solar probe, performed a flyby maneuver to attain a polar orbit around the Sun. During this pass the spacecraft conducted studies on Jupiter's magnetosphere. Since Ulysses has no cameras, no images were taken. A second flyby six years later was at a much greater distance.[91]

In 2000, the Cassini probe, en route to Saturn, flew by Jupiter and provided some of the highest-resolution images ever made of the planet. On December 19, 2000, the spacecraft captured an image of the moon Himalia, but the resolution was too low to show surface details.[93]

The New Horizons probe, en route to Pluto, flew by Jupiter for gravity assist. Its closest approach was on February 28, 2007.[94] The probe's cameras measured plasma output from volcanoes on Io and studied all four Galilean moons in detail, as well as making long-distance observations of the outer moons Himalia and Elara.[95] Imaging of the Jovian system began September 4, 2006.[96][97]

#### Galileo mission

So far the only spacecraft to orbit Jupiter is the Galileo orbiter, which went into orbit around Jupiter on December 7, 1995. It orbited the planet for over seven years, conducting multiple flybys of all the Galilean moons and Amalthea. The spacecraft also witnessed the impact of Comet Shoemaker-Levy 9 as it approached Jupiter in 1994, giving a unique vantage point for the event. While the information gained about the Jovian system from Galileo was extensive, its originally designed capacity was limited by the failed deployment of its high-gain radio transmitting antenna.[98]

An atmospheric probe was released from the spacecraft in July 1995, entering the planet's atmosphere on December 7. It parachuted through 150 km of the atmosphere, collected data for 57.6 minutes, and was crushed by the pressure to which it was subjected by that time (about 22 times Earth normal, at a temperature of 153 °C).[99] It would have melted thereafter, and possibly vaporized. The Galileo orbiter itself experienced a more rapid version of the same fate when it was deliberately steered into the planet on September 21, 2003, at a speed of over 50 km/s, to avoid any possibility of it crashing into and possibly contaminating Europa—a moon which has been hypothesized to have the possibility of harboring life.[98]

#### Future probes

NASA currently has a mission underway to study Jupiter in detail from a polar orbit. Named Juno, the spacecraft launched in August 2011, and will arrive in late 2016.[100] The next planned mission to the Jovian system will be the European Space Agency's Jupiter Icy Moon Explorer (JUICE), due to launch in 2022.[101]

#### Canceled missions

Because of the possibility of subsurface liquid oceans on Jupiter's moons Europa, Ganymede and Callisto, there has been great interest in studying the icy moons in detail. Funding difficulties have delayed progress. NASA's JIMO (Jupiter Icy Moons Orbiter) was cancelled in 2005.[102] A subsequent proposal for a joint NASA/ESA mission, called EJSM/Laplace, was developed with a provisional launch date around 2020. EJSM/Laplace would have consisted of the NASA-led Jupiter Europa Orbiter, and the ESA-led Jupiter Ganymede Orbiter.[103] However by April 2011, ESA had formally ended the partnership citing budget issues at NASA and the consequences on the mission timetable. Instead ESA planned to go ahead with a European-only mission to compete in its L1 Cosmic Vision selection.[104]

#### Moons

Jupiter has 67 natural satellites.[105] Of these, 51 are less than 10<sup>4</sup> kilometres in diameter and have only been discovered since 1975. The four largest moons, known as the "Galilean moons", are Io, Europa, Ganymede and Callisto.

Galilean moons

Main article: Galilean moons

The orbits of Io, Europa, and Ganymede, some of the largest satellites in the Solar System, form a pattern known as a Laplace resonance; for every four orbits that Io makes around Jupiter, Europa makes exactly two orbits and Ganymede makes exactly one. This resonance causes the gravitational effects of the three large moons to distort their orbits into elliptical shapes, since each moon receives an extra tug from its neighbors at the same point in every orbit it makes. The tidal force from Jupiter, on the other hand, works to circularize their orbits.[106]

The eccentricity of their orbits causes regular flexing of the three moons' shapes, with Jupiter's gravity stretching them out as they approach it and allowing them to spring back to more spherical shapes as they swing away. This tidal flexing heats the moons' interiors by friction. This is seen most dramatically in the extraordinary volcanic activity of innermost Io (which is subject to the strongest tidal forces), and to a lesser degree in the geological youth of Europa's surface (indicating recent resurfacing of the moon's exterior).

The Galilean moons, compared to Earth's Moon

Name

IPA

Diameter

Mass

Orbital radius

Orbital period

km

Å %

kg

Å %

km

Å %

days

Å %

Io

Ë aÉª.oÊ

3643

105

8.9Ã·1022

120

421,700

110

1.77

7

Europa

jÊ Ë roÊ pÉ

3122

90

4.8Ã·1022

65

671,034

175

3.55

13

Ganymede

Ë É;Ã|nimiÊ¼d

5262

150  
14.8° 1022  
200  
1,070,412  
280  
7.15  
26  
Callisto  
kÉ Ě lÉ<sup>a</sup>stoÊ  
4821  
140  
10.8° 1022  
150  
1,882,709  
490  
16.69  
61

#### Classification of moons

Before the discoveries of the Voyager missions, Jupiter's moons were arranged neatly into four groups of four, based on commonality of their orbital elements. Since then, the large number of new small outer moons has complicated this picture. There are now thought to be six main groups, although some are more distinct than others.

A basic sub-division is a grouping of the eight inner regular moons, which have nearly circular orbits near the plane of Jupiter's equator and are believed to have formed with Jupiter. The remainder of the moons consist of an unknown number of small irregular moons with elliptical and inclined orbits, which are believed to be captured asteroids or fragments of captured asteroids. Irregular moons that belong to a group share similar orbital elements and thus may have a common origin, perhaps as a larger moon or captured body that broke up.[107][108]

#### Regular moons

##### Inner group

The inner group of four small moons all have diameters of less than 200 km, orbit at radii less than 200,000 km, and have orbital inclinations of less than half a degree.

##### Galilean moons[109]

These four moons, discovered by Galileo Galilei and by Simon Marius in parallel, orbit between 400,000 and 2,000,000 km, and include some of the largest moons in the Solar System.

##### Irregular moons

##### Themisto

This is a single moon belonging to a group of its own, orbiting halfway between the Galilean moons and the Himalia group.

##### Himalia group

A tightly clustered group of moons with orbits around 11,000,000 to 12,000,000 km from Jupiter.

##### Carpo

Another isolated case; at the inner edge of the Ananke group, it orbits Jupiter in prograde direction.

##### Ananke group

This retrograde orbit group has rather indistinct borders, averaging 21,276,000 km from Jupiter with an average inclination of 149 degrees.

##### Carme group

A fairly distinct retrograde group that averages 23,404,000 km from Jupiter with an average inclination of 165 degrees.

##### Pasipha group

A dispersed and only vaguely distinct retrograde group that covers all the outermost moons.

#### Interaction with the Solar System

Along with the Sun, the gravitational influence of Jupiter has helped shape the Solar System. The orbits of most of the system's planets lie closer to Jupiter's orbital plane than the Sun's equatorial plane (Mercury is the only planet that is closer to the Sun's equator in orbital tilt), the Kirkwood gaps in the asteroid belt are mostly caused by Jupiter, and the planet may have been responsible for the Late Heavy Bombardment of the inner Solar System's history.[110]

Along with its moons, Jupiter's gravitational field controls numerous asteroids that have settled into the regions of the Lagrangian points preceding and following Jupiter in its orbit around the sun. These are known as the Trojan asteroids, and are divided into Greek and Trojan "camps" to commemorate the Iliad. The first of these, 588 Achilles, was discovered by Max Wolf in 1906; since then more than two thousand have been discovered.[111] The largest is 624 Hektor.

Most short-period comets belong to the Jupiter family—defined as comets with semi-major axes smaller than Jupiter's. Jupiter family comets are believed to form in the Kuiper belt outside the orbit of Neptune. During close encounters with Jupiter their orbits are perturbed into a smaller period and then circularized by regular gravitational interaction with the Sun and Jupiter.[112]

#### Impacts

Jupiter has been called the Solar System's vacuum cleaner,[114] because of its immense gravity well and location near the inner Solar System. It receives the most frequent comet impacts of the Solar System's planets.[115] It was thought that the planet served to partially shield the inner system from cometary bombardment. Recent computer simulations suggest that Jupiter does not cause a net decrease in the number of comets that pass through the inner Solar System, as its gravity perturbs their orbits inward in roughly the same numbers that it accretes or ejects them.[116] This topic remains controversial among astronomers, as some believe it draws comets towards Earth from the Kuiper belt while others believe that Jupiter protects Earth from the alleged Oort cloud.[117]

A 1997 survey of historical astronomical drawings suggested that the astronomer Cassini may have recorded an impact scar in 1690. The survey determined eight other candidate observations had low or no possibilities of an impact.[118] A fireball was photographed by Voyager 1 during its Jupiter encounter in March 1979.[119] During the period July 16, 1994, to July 22, 1994, over 20 fragments from the comet Shoemaker–Levy 9 (SL9, formally designated D/1993 F2) collided with Jupiter's southern hemisphere, providing the first direct observation of a collision between two Solar System objects. This impact provided useful data on the composition of Jupiter's atmosphere.[120][121]

On July 19, 2009, an impact site was discovered at approximately 216 degrees longitude in System 2.[122][123] This impact left behind a black spot in Jupiter's atmosphere, similar in size to Oval BA. Infrared observation showed a bright spot where the impact took place, meaning the impact warmed up the lower atmosphere in the area near Jupiter's south pole.[124]

A fireball, smaller than the previous observed impacts, was detected on June 3, 2010, by Anthony Wesley, an amateur astronomer in Australia, and was later discovered to have been captured on video by another amateur astronomer in the Philippines.[125] Yet another fireball was seen on August 20, 2010.[126]

On September 10, 2012, another fireball was detected.[119][127]

#### Possibility of life

In 1953, the Miller–Urey experiment demonstrated that a combination of lightning and the chemical compounds that existed in the atmosphere of a primordial Earth could form organic compounds (including amino acids) that could serve as the building blocks of life. The simulated atmosphere included water, methane, ammonia and molecular hydrogen; all molecules still found in the atmosphere of Jupiter. The atmosphere of Jupiter has a strong vertical air circulation, which would carry these compounds down into the lower regions. The

higher temperatures within the interior of the atmosphere breaks down these chemicals, which would hinder the formation of Earth-like life.[128]

It is considered highly unlikely that there is any Earth-like life on Jupiter, as there is only a small amount of water in the atmosphere and any possible solid surface deep within Jupiter would be under extraordinary pressures. In 1976, before the Voyager missions, it was hypothesized that ammonia or water-based life could evolve in Jupiter's upper atmosphere. This hypothesis is based on the ecology of terrestrial seas which have simple photosynthetic plankton at the top level, fish at lower levels feeding on these creatures, and marine predators which hunt the fish.[129][130]

The possible presence of underground oceans on some of Jupiter's moons has led to speculation that the presence of life is more likely there.

#### Mythology

The planet Jupiter has been known since ancient times. It is visible to the naked eye in the night sky and can occasionally be seen in the daytime when the sun is low.[131] To the Babylonians, this object represented their god Marduk. They used the roughly 12-year orbit of this planet along the ecliptic to define the constellations of their zodiac.[23][132]

The Romans named it after Jupiter (Latin: Iuppiter, Iā«piter) (also called Jove), the principal god of Roman mythology, whose name comes from the Proto-Indo-European vocative compound \*Dyǵʰu-péh₂ter (nominative: \*Dyǵʰus-péh₂tēr, meaning "O Father Sky-God", or "O Father Day-God").[133] In turn, Jupiter was the counterpart to the mythical Greek Zeus (Ζεύς), also referred to as Dias (Δίας), the planetary name of which is retained in modern Greek.[134]

The astronomical symbol for the planet, ♃, is a stylized representation of the god's lightning bolt. The original Greek deity Zeus supplies the root zeno-, used to form some Jupiter-related words, such as zenographic.[135]

Jovian is the adjectival form of Jupiter. The older adjectival form jovial, employed by astrologers in the Middle Ages, has come to mean "happy" or "merry," moods ascribed to Jupiter's astrological influence.[136]

The Chinese, Korean and Japanese referred to the planet as the wood star, Chinese: 木星; pinyin: mùxīng, based on the Chinese Five Elements.[137] Chinese Taoism personified it as the Fu star. The Greeks called it Φαέθων, Phaethon, "blazing." In Vedic Astrology, Hindu astrologers named the planet after Brihaspati, the religious teacher of the gods, and often called it "Guru", which literally means the "Heavy One." [138] In the English language, Thursday is derived from "Thor's day", with Thor associated with the planet Jupiter in Germanic mythology.[139]

In the Central Asian-Turkic myths, Jupiter called as a "Erendiz/Erentāz", which means "eren(?) + yultuz(star)". There are many theories about meaning of "eren". Also, these peoples calculated the orbit of Jupiter as 11 years and 300 days. They believed that some social and natural events connected to Erentāz's movements on the sky.[140]

See also

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 ^ Orbital elements refer to the barycenter of the Jupiter system, and are the  
 instantaneous osculating values at the precise J2000 epoch. Barycenter  
 quantities are given because, in contrast to the planetary centre, they do not  
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 moons.

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#### External links

This article is about the Western board game. For other chess games or other uses, see Chess (disambiguation).

Chess is a two-player strategy board game played on a chessboard, a square checkered gameboard with 64 squares arranged in an eight-by-eight grid. It is one of the world's most popular games, played by millions of people worldwide at home, in clubs, online, by correspondence, and in tournaments.

Each player begins the game with 16 pieces: one king, one queen, two rooks, two knights, two bishops, and eight pawns. Each of the six piece types moves differently. Pieces are used to attack and capture the opponent's pieces, with the objective to 'checkmate' the opponent's king by placing it under an inescapable threat of capture. In addition to checkmate, the game can be won by the voluntary resignation of the opponent, which typically occurs when too much material is lost, or if checkmate appears unavoidable. A game may also result in a draw in several ways, where neither player wins. The course of the game is divided into three phases: opening, middlegame, and endgame.

The first official World Chess Champion, Wilhelm Steinitz, claimed his title in 1886; the current World Champion is Viswanathan Anand. In addition to the World Championship, there are the Women's World Championship, the Junior World Championship, the World Senior Championship, the Correspondence Chess World Championship, the World Computer Chess Championship, and Blitz and Rapid World Championships. The Chess Olympiad is a popular competition among teams from different nations. Online chess has opened amateur and professional competition to a wide and varied group of players. Chess is a recognized sport of the International Olympic Committee and international chess competition is sanctioned by the World Chess Federation (FIDE), which adopted the now-standard Staunton chess set in 1924 for use in all official games. There are also many

chess variants, with different rules, different pieces, and different boards.

Since the second half of the 20th century, computers have been programmed to play chess with increasing success, to the point where home computers can play chess at a very high level. In the past two decades computer analysis has contributed significantly to chess theory, particularly in the endgame. The computer Deep Blue was the first machine to overcome a reigning World Chess Champion in a match, when it defeated Garry Kasparov in 1997.

#### Rules

Main article: Rules of chess

The official rules of chess are maintained by the World Chess Federation. Along with information on official chess tournaments, the rules are described in the FIDE Handbook, Laws of Chess section.[1]

#### Setup

Initial position: first row: rook, knight, bishop, queen, king, bishop, knight, and rook; second row: pawns

Chess is played on a square board of eight rows (called ranks and denoted with numbers 1 to 8) and eight columns (called files and denoted with letters a to h) of squares. The colors of the 64 squares alternate and are referred to as "light squares" and "dark squares". The chessboard is placed with a light square at the right-hand end of the rank nearest to each player, and the pieces are set out as shown in the diagram, with each queen on its own color.

The pieces are divided, by convention, into white and black sets. The players are referred to as "White" and "Black", and each begins the game with 16 pieces of the specified color. These consist of one king, one queen, two rooks, two bishops, two knights, and eight pawns.

#### Movement

White always moves first. After the initial move, the players alternately move one piece at a time (with the exception of castling, when two pieces are moved). Pieces are moved to either an unoccupied square or one occupied by an opponent's piece, which is captured and removed from play. With the sole exception of en passant, all pieces capture opponent's pieces by moving to the square that the opponent's piece occupies. A player may not make any move that would put or leave his king under attack. If the player to move has no legal moves, the game is over; it is either a checkmate (a loss for the player with no legal moves)â ~if the king is under attackâ ~or a stalemate (a draw)â ~if the king is not.

Each chess piece has its own style of moving. In the diagrams, the dots mark the squares where the piece can move if no other pieces (including one's own piece) are on the squares between the piece's initial position and its destination.

The king moves one square in any direction. The king has also a special move which is called castling and involves also moving a rook.

The rook can move any number of squares along any rank or file, but may not leap over other pieces. Along with the king, the rook is involved during the king's castling move.

The bishop can move any number of squares diagonally, but may not leap over other pieces.

The queen combines the power of the rook and bishop and can move any number of squares along rank, file, or diagonal, but it may not leap over other pieces. The knight moves to any of the closest squares that are not on the same rank, file, or diagonal, thus the move forms an "L"-shape: two squares vertically and one square horizontally, or two squares horizontally and one square vertically. The knight is the only piece that can leap over other pieces.

The pawn may move forward to the unoccupied square immediately in front of it on the same file; or on its first move it may advance two squares along the same file provided both squares are unoccupied; or it may move to a square



occupied by an opponent's piece which is diagonally in front of it on an adjacent file, capturing that piece. The pawn has two special moves: the en passant capture and pawn promotion.

\* Pawns can optionally move two squares forward instead of one on their first move only. They capture diagonally (black "x"s); they cannot capture with their normal move (black "â" "s). Pawns also are involved in the special capture called en passant.

#### Castling

Once in every game, each king is allowed to make a special move, known as castling. Castling consists of moving the king two squares along the first rank toward a rook (which is on the player's first rank[[note 1](#)]) and then placing the rook on the last square the king has just crossed. Castling is permissible only if all of the following conditions hold:[[2](#)]

Neither of the pieces involved in castling may have been previously moved during the game.

There must be no pieces between the king and the rook.

The king may not be in check, nor may the king pass through squares that are under attack by enemy pieces, nor move to a square where it is in check.

#### En passant

When a pawn advances two squares from its starting position and there is an opponent's pawn on an adjacent file next to its destination square, then the opponent's pawn can capture it en passant (in passing), and move to the square the pawn passed over. However, this can only be done on the very next move, otherwise the right to do so is forfeit. For example, if the black pawn has just advanced two squares from g7 (initial starting position) to g5, then the white pawn on f5 may take it via en passant on g6 (but only on white's next move).

#### Promotion

When a pawn advances to the eighth rank, as a part of the move it is promoted and must be exchanged for the player's choice of queen, rook, bishop, or knight of the same color. Usually, the pawn is chosen to be promoted to a queen, but in some cases another piece is chosen; this is called underpromotion. In the diagram on the right, the pawn on c7 can be advanced to the eighth rank and be promoted to an allowed piece. There is no restriction placed on the piece that is chosen on promotion, so it is possible to have more pieces of the same type than at the start of the game (for example, two queens).

#### Check

Black's king is in check from the rook.

Main article: [Check \(chess\)](#)

When a king is under immediate attack by one or two of the opponent's pieces, it is said to be in check. A response to a check is a legal move if it results in a position where the king is no longer under direct attack (that is, not in check). This can involve capturing the checking piece; interposing a piece between the checking piece and the king (which is possible only if the attacking piece is a queen, rook, or bishop and there is a square between it and the king); or moving the king to a square where it is not under attack. Castling is not a permissible response to a check. The object of the game is to checkmate the opponent; this occurs when the opponent's king is in check, and there is no legal way to remove it from attack. It is illegal for a player to make a move that would put or leave his own king in check.

#### End of the game

Although the objective of the game is to checkmate the opponent, chess games do not have to end in checkmate—either player may resign which is a win for the other player. It is considered bad etiquette to continue playing when in a truly hopeless position.[[3](#)] If it is a game with time control, a player may run

out of time and lose, even with a much superior position. Games also may end in a draw (tie). A draw can occur in several situations, including draw by agreement, stalemate, threefold repetition of a position, the fifty-move rule, or a draw by impossibility of checkmate (usually because of insufficient material to checkmate). As checkmate from some positions cannot be forced in fewer than 50 moves (such as in the pawnless chess endgame and two knights endgame), the fifty-move rule is not applied everywhere,[note 2] particularly in correspondence chess.

#### Time control

Chess matches may also be played with a time control, mostly by club and professional players. If a player's time runs out before the game is completed, the game is automatically lost (provided his opponent has enough pieces left to deliver checkmate). The duration of a game ranges from long games played up to seven hours to shorter rapid chess games, usually lasting 30 minutes or one hour per game. Even shorter is blitz chess, with a time control of three to 15 minutes for each player, and bullet chess (under three minutes). In tournament play, time is controlled using a game clock that has two displays, one for each player's remaining time.

#### Notation for recording moves

### Naming the squares in algebraic chess notation

#### Main article: Chess notation

Chess games and positions are recorded using a special notation, most often algebraic chess notation.[5] Abbreviated (or short) algebraic notation generally records moves in the format "abbreviation of the piece moved ^ file where it moved ^ rank where it moved". For example, Qg5 means "queen moves to the g-file and 5th rank" (that is, to the square g5). If there are two pieces of the same type that can move to the same square, one more letter or number is added to indicate the file or rank from which the piece moved, e.g. Ngf3 means "knight from the g-file moves to the square f3". The letter P indicating a pawn is not used, so that e4 means "pawn moves to the square e4".

If the piece makes a capture, "x" is inserted before the destination square. Thus Bxf3 means "bishop captures on f3". When a pawn makes a capture, the file from which the pawn departed is used in place of a piece initial, and ranks may be omitted if unambiguous. For example, exd5 (pawn on the e-file captures the piece on d5) or exd (pawn on the e-file captures a piece somewhere on the d-file).

If a pawn moves to its last rank, achieving promotion, the piece chosen is indicated after the move, for example e1Q or e1=Q. Castling is indicated by the special notations 0-0 for kingside castling and 0-0-0 for queenside castling. An en passant capture is sometimes marked with the notation "e.p." A move that places the opponent's king in check usually has the notation "+" added. Checkmate can be indicated by "#" (occasionally "++", although this is sometimes used for a double check instead). At the end of the game, "1^0" means "White won", "0^1" means "Black won", and "½^½" indicates a draw.[6]

Chess moves can be annotated with punctuation marks and other symbols. For example "!" indicates a good move, "!!" an excellent move, "?" a mistake, "??" a blunder, "!?" an interesting move that may not be best, or "?!" a dubious move, but not easily refuted.[7]

For example, one variant of a simple trap known as the Scholar's mate, animated in the diagram to the left, can be recorded:

1. e4 e5
2. Qh5?! Nc6
3. Bc4 Nf6??
4. Qxf7# 1^0

#### Strategy and tactics

Chess strategy consists of setting and achieving long-term positioning advantages during the game â ^ for example, where to place different pieces â ^ while tactics concentrate on immediate maneuver. These two parts of the chess-playing process cannot be completely separated, because strategic goals are mostly achieved by the means of tactics, while the tactical opportunities are based on the previous strategy of play. A game of chess is normally divided into three phases: opening, typically the first 10 moves, when players move their pieces to useful positions for the coming battle; then middlegame; and last the endgame, when most of the pieces are gone, kings typically take a more active part in the struggle, and pawn promotion is often decisive.

Fundamentals of tactics

Botvinnik vs. Yudovich[8]

After sacrificing a piece to expose Black's king, Botvinnik played 1.Bh5+ and Yudovich resigned, as mate is inevitable: 1...Kxh5 2.Ng3+ Kh4 3.Qe4+ Rf4 4.Qxf4#, 1...Kf5 2.g4#, or 1...Kh7 2.Nf6++ Kh8 3.Qh7#

Main article: Chess tactics

In chess, tactics in general concentrate on short-term actions â ^ so short-term that they can be calculated in advance by a human player or by a computer. The possible depth of calculation depends on the player's ability. In quiet positions with many possibilities on both sides, a deep calculation is more difficult and may not be practical, while in "tactical" positions with a limited number of forced variations, strong players can calculate long sequences of moves.

Simple one-move or two-move tactical actions â ^ threats, exchanges of material, and double attacks â ^ can be combined into more complicated combinations, sequences of tactical maneuvers that are often forced from the point of view of one or both players.[9] Theoreticians describe many elementary tactical methods and typical maneuvers; for example, pins, forks, skewers, batteries, discovered attacks (especially discovered checks), zwischenzugs, deflections, decoys, sacrifices, underminings, overloadings, and interferences.[10]

A forced variation that involves a sacrifice and usually results in a tangible gain is called a combination.[9] Brilliant combinations â ^ such as those in the Immortal Game â ^ are considered beautiful and are admired by chess lovers. A common type of chess exercise, aimed at developing players' skills, is showing players a position where a decisive combination is available and challenging them to find it.[11]

Fundamentals of strategy

Main article: Chess strategy

Chess strategy is concerned with evaluation of chess positions and with setting up goals and long-term plans for the future play. During the evaluation, players must take into account numerous factors such as the value of the pieces on the board, control of the center and centralization, the pawn structure, king safety, and the control of key squares or groups of squares (for example, diagonals, open files, and dark or light squares).

The most basic step in evaluating a position is to count the total value of pieces of both sides.[13] The point values used for this purpose are based on experience; usually pawns are considered worth one point, knights and bishops about three points each, rooks about five points (the value difference between a rook and a bishop or knight being known as the exchange), and queens about nine points. The king is more valuable than all of the other pieces combined, since its checkmate loses the game. But in practical terms, in the endgame the king as a fighting piece is generally more powerful than a bishop or knight but less powerful than a rook.[14] These basic values are then modified by other factors like position of the piece (for example, advanced pawns are usually more valuable than those on their initial squares), coordination between pieces (for example, a pair of bishops usually coordinate better than a bishop and a knight), or the type of position (knights are generally better in closed positions with many pawns while bishops are more powerful in open

positions).[15]

Another important factor in the evaluation of chess positions is the pawn structure (sometimes known as the pawn skeleton), or the configuration of pawns on the chessboard.[16] Since pawns are the least mobile of the chess pieces, the pawn structure is relatively static and largely determines the strategic nature of the position. Weaknesses in the pawn structure, such as isolated, doubled, or backward pawns and holes, once created, are often permanent. Care must therefore be taken to avoid these weaknesses unless they are compensated by another valuable asset (for example, by the possibility of developing an attack).[17]

Phases

Opening

Main article: Chess opening

A chess opening is the group of initial moves of a game (the "opening moves"). Recognized sequences of opening moves are referred to as openings and have been given names such as the Ruy Lopez or Sicilian Defence. They are catalogued in reference works such as the Encyclopaedia of Chess Openings. There are dozens of different openings, varying widely in character from quiet positional play (for example, the R ti Opening) to very aggressive (the Latvian Gambit). In some opening lines, the exact sequence considered best for both sides has been worked out to more than 30 moves.[18] Professional players spend years studying openings and continue doing so throughout their careers, as opening theory continues to evolve.

The fundamental strategic aims of most openings are similar:[19]

Development: This is the technique of placing the pieces (particularly bishops and knights) on useful squares where they will have an optimal impact on the game.

Control of the center: Control of the central squares allows pieces to be moved to any part of the board relatively easily, and can also have a cramping effect on the opponent.

King safety: It is critical to keep the king safe from dangerous possibilities. A correctly timed castling can often enhance this.

Pawn structure: Players strive to avoid the creation of pawn weaknesses such as isolated, doubled, or backward pawns, and pawn islands â ^ and to force such weaknesses in the opponent's position.

Most players and theoreticians consider that White, by virtue of the first move, begins the game with a small advantage. This initially gives White the initiative.[20] Black usually strives to neutralize White's advantage and achieve equality, or to develop dynamic counterplay in an unbalanced position.

Middlegame

The middlegame is the part of the game which starts after the opening. There is no clear line between the opening and the middlegame, but typically the middlegame will start when most pieces have been developed. (Similarly, there is no clear transition from the middlegame to the endgame; see start of the endgame.) Because the opening theory has ended, players have to form plans based on the features of the position, and at the same time take into account the tactical possibilities of the position.[21] The middlegame is the phase in which most combinations occur. Combinations are a series of tactical moves executed to achieve some gain. Middlegame combinations are often connected with an attack against the opponent's king; some typical patterns have their own names; for example, the Boden's Mate or the Laskerâ ^Bauer combination.[22]

Specific plans or strategic themes will often arise from particular groups of openings which result in a specific type of pawn structure. An example is the minority attack, which is the attack of queenside pawns against an opponent who has more pawns on the queenside. The study of openings is therefore connected to the preparation of plans that are typical of the resulting middlegames.[23]

Another important strategic question in the middlegame is whether and how to reduce material and transition into an endgame (i.e. simplify). Minor material advantages can generally be transformed into victory only in an endgame, and therefore the stronger side must choose an appropriate way to achieve an

ending. Not every reduction of material is good for this purpose; for example, if one side keeps a light-squared bishop and the opponent has a dark-squared one, the transformation into a bishops and pawns ending is usually advantageous for the weaker side only, because an endgame with bishops on opposite colors is likely to be a draw, even with an advantage of a pawn, or sometimes even with a two-pawn advantage.[24]

Endgame

Main article: Chess endgame

An example of zugzwang: the side having to move is at a disadvantage.

The endgame (or end game or ending) is the stage of the game when there are few pieces left on the board. There are three main strategic differences between earlier stages of the game and endgame:[25]

During the endgame, pawns become more important; endgames often revolve around attempting to promote a pawn by advancing it to the eighth rank.

The king, which has to be protected in the middlegame owing to the threat of checkmate, becomes a strong piece in the endgame. It is often brought to the center of the board where it can protect its own pawns, attack the pawns of opposite color, and hinder movement of the opponent's king.

Zugzwang, a disadvantage because the player has to make a move, is often a factor in endgames but rarely in other stages of the game. For example, the diagram on the right is zugzwang for both sides, as with Black to move he must play 1...Kb7 and let White promote a pawn after 2.Kd7; and with White to move he must allow a draw by 1.Kc6 stalemate or lose his last pawn by any other legal move.

Endgames can be classified according to the type of pieces that remain on board. Basic checkmates are positions in which one side has only a king and the other side has one or two pieces and can checkmate the opposing king, with the pieces working together with their king. For example, king and pawn endgames involve only kings and pawns on one or both sides and the task of the stronger side is to promote one of the pawns. Other more complicated endings are classified according to the pieces on board other than kings, such as the "rook and pawn versus rook endgame".

History

Predecessors

Ashtā pada, the unchecked 8x8 board, sometimes with special marks, on which chaturanga was played

Chess is believed to have originated in northwest India during the Gupta empire,[26][27][28][29] where its early form in the 6th century was known as chaturaśī ga (Sanskrit: four divisions [of the military]—infantry, cavalry, elephants, and chariotry, represented by the pieces that would evolve into the modern pawn, knight, bishop, and rook, respectively). According to both Chess historians Gerhard Josten and Isaak Linder "the early beginnings" of chess can be traced back to the Kushan Empire in Ancient Afghanistan (G. Josten, Chess - a living fossil).[30][31] The earliest evidence of chess is found in the neighboring Sassanid Persia around 600, where the game came to be known by the name chatrang. Chatrang is evoked in three epic romances written in Pahlavi (Middle Persian). Chatrang was taken up by the Muslim world after the Islamic conquest of Persia (633–644), where it was then named shatranj, with the pieces largely retaining their Persian names. In Spanish "shatranj" was rendered as ajedrez ("al-shatranj"), in Portuguese as xadrez, and in Greek as ζατρίκιον (zatrikion, which comes directly from the Persian chatrang),[32] but in the rest of Europe it was replaced by versions of the Persian shāh ("king"), which

was familiar as an exclamation and became the English words "check" and "chess".[note 3] Murray theorized that Muslim traders came to European seaports with ornamental chess kings as curios before they brought the game of chess.[28]

The game reached Western Europe and Russia by at least three routes, the earliest being in the 9th century. By the year 1000 it had spread throughout Europe.[33] Introduced into the Iberian Peninsula by the Moors in the 10th century, it was described in a famous 13th-century manuscript covering shatranj, backgammon, and dice named the Libro de los juegos. Another theory contends that chess arose from the game xiangqi (Chinese Chess) or one of its predecessors,[34] although this has been contested.[35]

Origins of the modern game (1000â ~1850)

Around 1200, the rules of shatranj started to be modified in southern Europe, and around 1475, several major changes made the game essentially as it is known today.[33] These modern rules for the basic moves had been adopted in Italy and Spain.[36][37] Pawns gained the option of advancing two squares on their first move, while bishops and queens acquired their modern abilities. The queen replaced the earlier vizier chess piece towards the end of the 10th century and by the 15th century had become the most powerful piece;[38] consequently modern chess was referred to as "Queen's Chess" or "Mad Queen Chess".[39] These new rules quickly spread throughout western Europe. The rules about stalemate were finalized in the early 19th century. To distinguish it from its predecessors, this version of the rules is sometimes referred to as western chess[40] or international chess.[41]

Writings about the theory of how to play chess began to appear in the 15th century. The RepeticiÃ³n de Amores y Arte de Ajedrez (Repetition of Love and the Art of Playing Chess) by Spanish churchman Luis Ramirez de Lucena was published in Salamanca in 1497.[37] Lucena and later masters like Portuguese Pedro Damiano, Italians Giovanni Leonardo Di Bona, Giulio Cesare Polerio and Gioachino Greco, and Spanish bishop Ruy LÃ³pez de Segura developed elements of openings and started to analyze simple endgames.

In the 18th century, the center of European chess life moved from the Southern European countries to France. The two most important French masters were FranÃ§ois-AndrÃ© Danican Philidor, a musician by profession, who discovered the importance of pawns for chess strategy, and later Louis-Charles MahÃ© de La Bourdonnais, who won a famous series of matches with the Irish master Alexander McDonnell in 1834.[42] Centers of chess activity in this period were coffee houses in big European cities like CafÃ© de la RÃ©gence in Paris and Simpson's Divan in London.[43][44]

As the 19th century progressed, chess organization developed quickly. Many chess clubs, chess books, and chess journals appeared. There were correspondence matches between cities; for example, the London Chess Club played against the Edinburgh Chess Club in 1824.[45] Chess problems became a regular part of 19th-century newspapers; Bernhard Horwitz, Josef Kling, and Samuel Loyd composed some of the most influential problems. In 1843, von der Lasa published his and Bilguer's Handbuch des Schachspiels (Handbook of Chess), the first comprehensive manual of chess theory.

Birth of a sport (1850â ~1945)

The first modern chess tournament was organized by Howard Staunton, a leading English chess player, and was held in London in 1851. It was won by the relatively unknown German Adolf Anderssen, who was hailed as the leading chess master, and his brilliant, energetic attacking style became typical for the time, although it was later regarded as strategically shallow.[46][47] Sparkling games like Anderssen's Immortal game and Evergreen game or Morphy's Opera game were regarded as the highest possible summit of the chess art.[48]

Deeper insight into the nature of chess came with two younger players. American Paul Morphy, an extraordinary chess prodigy, won against all important competitors (except Howard Staunton, who refused to play), including Anderssen, during his short chess career between 1857 and 1863. Morphy's success stemmed from a combination of brilliant attacks and sound strategy; he intuitively knew

how to prepare attacks.[49] Prague-born Wilhelm Steinitz later described how to avoid weaknesses in one's own position and how to create and exploit such weaknesses in the opponent's position.[50] The scientific approach and positional understanding of Steinitz revolutionized the game. Steinitz was the first to break a position down into its components.[51] Before Steinitz, players brought their queen out early, did not completely develop their other pieces, and mounted a quick attack on the opposing king, which either succeeded or failed. The level of defense was poor and players did not form any deep plan.[52] In addition to his theoretical achievements, Steinitz founded an important tradition: his triumph over the leading German master Johannes Zukertort in 1886 is regarded as the first official World Chess Championship. Steinitz lost his crown in 1894 to a much younger player, the German mathematician Emanuel Lasker, who maintained this title for 27 years, the longest tenure of all World Champions.[53]

After the end of the 19th century, the number of master tournaments and matches held annually quickly grew. Some sources state that in 1914 the title of chess Grandmaster was first formally conferred by Tsar Nicholas II of Russia to Lasker, Capablanca, Alekhine, Tarrasch, and Marshall, but this is a disputed claim.[note 4] The tradition of awarding such titles was continued by the World Chess Federation (FIDE), founded in 1924 in Paris. In 1927, the Women's World Chess Championship was established; the first to hold the title was Czech-English master Vera Menchik.[54] It took a prodigy from Cuba, Jos   Ra  l Capablanca (World Champion 1921  27), who loved simple positions and endgames, to end the German-speaking dominance in chess; he was undefeated in tournament play for eight years, until 1924. His successor was Russian-French Alexander Alekhine, a strong attacking player who died as the World champion in 1946. He briefly lost the title to Dutch player Max Euwe in 1935 and regained it two years later.[55]

Between the world wars, chess was revolutionized by the new theoretical school of so-called hypermodernists like Aron Nimzowitsch and Richard R  ti. They advocated controlling the center of the board with distant pieces rather than with pawns, which invited opponents to occupy the center with pawns, which become objects of attack.[56]

Post-war era (1945 and later)

After the death of Alekhine, a new World Champion was sought. FIDE, who have controlled the title since then (except for one interruption), ran a tournament of elite players. The winner of the 1948 tournament, Russian Mikhail Botvinnik, started an era of Soviet dominance in the chess world. Until the end of the Soviet Union, there was only one non-Soviet champion, American Bobby Fischer (champion 1972  75).[57] Botvinnik revolutionized opening theory. Previously Black strove for equality, to neutralize White's first-move advantage. As Black, Botvinnik strove for the initiative from the beginning.[58] In the previous informal system of World Championships, the current champion decided which challenger he would play for the title and the challenger was forced to seek sponsors for the match. FIDE set up a new system of qualifying tournaments and matches. The world's strongest players were seeded into Interzonal tournaments, where they were joined by players who had qualified from Zonal tournaments. The leading finishers in these Interzonals would go on the "Candidates" stage, which was initially a tournament, and later a series of knockout matches. The winner of the Candidates would then play the reigning champion for the title. A champion defeated in a match had a right to play a rematch a year later. This system operated on a three-year cycle. Botvinnik participated in championship matches over a period of fifteen years. He won the world championship tournament in 1948 and retained the title in tied matches in 1951 and 1954. In 1957, he lost to Vasily Smyslov, but regained the title in a rematch in 1958. In 1960, he lost the title to the 23-year-old Latvian prodigy Mikhail Tal, an accomplished tactician and attacking player. Botvinnik again regained the title in a rematch in 1961.

Following the 1961 event, FIDE abolished the automatic right of a deposed champion to a rematch, and the next champion, Armenian Tigran Petrosian, a

player renowned for his defensive and positional skills, held the title for two cycles, 1963â ^69. His successor, Boris Spassky from Russia (champion 1969â ^72), won games in both positional and sharp tactical style.[59] The next championship, the so-called Match of the Century, saw the first non-Soviet challenger since World War II, American Bobby Fischer, who defeated his Candidates opponents by unheard-of margins and clearly won the world championship match. In 1975, however, Fischer refused to defend his title against Soviet Anatoly Karpov when FIDE did not meet his demands, and Karpov obtained the title by default.[60] Fischer modernized many aspects of chess, especially by extensively preparing openings.[61]

Karpov defended his title twice against Viktor Korchnoi and dominated the 1970s and early 1980s with a string of tournament successes.[62] Karpov's reign finally ended in 1985 at the hands of Garry Kasparov, another Soviet player from Baku, Azerbaijan. Kasparov and Karpov contested five world title matches between 1984 and 1990; Karpov never won his title back.[63] In 1993, Garry Kasparov and Nigel Short broke with FIDE to organize their own match for the title and formed a competing Professional Chess Association (PCA). From then until 2006, there were two simultaneous World Champions and World Championships: the PCA or Classical champion extending the Steinitzian tradition in which the current champion plays a challenger in a series of many games, and the other following FIDE's new format of many players competing in a tournament to determine the champion. Kasparov lost his Classical title in 2000 to Vladimir Kramnik of Russia.[64] The World Chess Championship 2006 reunified the titles. Kramnik beat the FIDE World Champion Veselin Topalov and became the undisputed World Chess Champion.[65] In September 2007, he lost the title to Viswanathan Anand of India, who won the championship tournament in Mexico City. Anand defended his title in the revenge match of 2008.[66]

Place in culture

Pre-modern

In the Middle Ages and during the Renaissance, chess was a part of noble culture; it was used to teach war strategy and was dubbed the "King's Game".[67] Gentlemen are "to be meanly seene in the play at Chestes", says the overview at the beginning of Baldassare Castiglione's *The Book of the Courtier* (1528, English 1561 by Sir Thomas Hoby), but chess should not be a gentleman's main passion. Castiglione explains it further:

And what say you to the game at chestes? It is truely an honest kynde of enterteynmente and wittie, quoth Syr Friderick. But me think it hath a fault, whiche is, that a man may be to couning at it, for who ever will be excellent in the playe of chestes, I beleave he must beestowe much tyme about it, and applie it with so much study, that a man may assoone learne some noble scyence, or compase any other matter of importaunce, and yet in the ende in beestowing all that laboure, he knoweth no more but a game. Therefore in this I beleave there happeneth a very rare thing, namely, that the meane is more commendable, then the excellency.[68]

Many of the elaborate chess sets used by the aristocracy have been lost, but others partially survive, such as the Lewis chessmen.

Chess was often used as a basis of sermons on morality. An example is *Liber de moribus hominum et officiis nobilium sive super ludo scacchorum* ('Book of the customs of men and the duties of nobles or the Book of Chess'), written by an Italian Dominican monk Jacobus de Cessolis c. 1300. This book was one of the most popular of the Middle Ages.[69] The work was translated into many other languages (the first printed edition was published at Utrecht in 1473) and was the basis for William Caxton's *The Game and Playe of the Chesse* (1474), one of the first books printed in English.[70] Different chess pieces were used as metaphors for different classes of people, and human duties were derived from the rules of the game or from visual properties of the chess pieces:[71]

The knyght ought to be made alle armed upon an hors in suche wyse that he haue



an helme on his heed and a spere in his rygth hande/ and coueryd wyth his sheld/ a swerde and a mace on his lyft syde/ Cladd wyth an hawberk and plates to fore his breste/ legge harnoyes on his legges/ Spores on his heelis on his handes his gauntelettes/ his hors well broken and taught and apte to bataylle and couerid with his armes/ whan the knyghtes ben maad they ben bayned or bathed/ that is the signe that they shold lede a newe lyf and newe maners/ also they wake alle the nyght in prayers and orysones vnto god that he wylle gyue hem grace that they may gete that thynge that they may not gete by nature/ The kynge or prynce gyrdeth a boute them a swerde in signe/ that they shold abyde and kepe hym of whom they take theyr dispenses and dignyte.[72]

Known in the circles of clerics, students, and merchants, chess entered into the popular culture of Middle Ages. An example is the 209th song of Carmina Burana from the 13th century, which starts with the names of chess pieces, Roch, pedites, regina...[73]

#### Modern

During the Age of Enlightenment, chess was viewed as a means of self-improvement. Benjamin Franklin, in his article "The Morals of Chess" (1750), wrote:

"The Game of Chess is not merely an idle amusement; several very valuable qualities of the mind, useful in the course of human life, are to be acquired and strengthened by it, so as to become habits ready on all occasions; for life is a kind of Chess, in which we have often points to gain, and competitors or adversaries to contend with, and in which there is a vast variety of good and ill events, that are, in some degree, the effect of prudence, or the want of it. By playing at Chess then, we may learn: I. Foresight, which looks a little into futurity, and considers the consequences that may attend an action [...] II. Circumspection, which surveys the whole Chess-board, or scene of action: â ^ the relation of the several Pieces, and their situations [...] III. Caution, not to make our moves too hastily [...]"[74]

With these or similar hopes, chess is taught to children in schools around the world today. Many schools host chess clubs, and there are many scholastic tournaments specifically for children. Tournaments are held regularly in many countries, hosted by organizations such as the United States Chess Federation and the National Scholastic Chess Foundation.[75]

Chess is often depicted in the arts; significant works where chess plays a key role range from Thomas Middleton's A Game at Chess to Through the Looking-Glass by Lewis Carroll to The Royal Game by Stefan Zweig and Vladimir Nabokov's The Defense. The thriller film Knight Moves is about a chess grandmaster who is accused of being a serial killer. Chess is featured in films like Ingmar Bergman's The Seventh Seal and Satyajit Ray's The Chess Players. Chess is also present in the contemporary popular culture. For example, J. K. Rowling's Harry Potter plays "Wizard's Chess", while the characters of Star Trek prefer "Tri-Dimensional Chess". The hero of Searching for Bobby Fischer struggles against adopting the aggressive and misanthropic views of a real chess grandmaster.[76] Chess has been used as the core theme of a musical, Chess, by Tim Rice, Björn Ulvæus, and Benny Andersson.

#### Composition

Main article: Chess problem

Chess composition is the art of creating chess problems (the problems themselves are sometimes also called chess compositions). A person who creates such problems is known as a chess composer.[77] There are many types of chess problems. The two most important are:

Directmates: white to move first and checkmate black within a specified number of moves against any defense. These are often referred to as "mate in n" â ^ for example "mate in three" (a three-mover).[78]

Studies: orthodox problems in which the stipulation is that white to play must win or draw. Almost all studies are endgame positions.[79]

Chess composition is a distinct branch of chess sport, and tournaments (or tourneys) exist for both the composition and solving of chess problems.[80]

#### Example

This is one of the most famous chess studies; it was published by Richard Rã@ti in 1921. It seems impossible to catch the advanced black pawn, while the black king can easily stop the white pawn. The solution is a diagonal advance, which brings the king to both pawns simultaneously:

1. Kg7! h4 2. Kf6! Kb6

Or 2...h3 3.Ke7 and the white king can support its pawn.

3. Ke5!!

Now the white king comes just in time to support his pawn, or catch the black one.

3... h3 4. Kd6 draw[81]

#### Competitive play

##### Organization of competitions

Contemporary chess is an organized sport with structured international and national leagues, tournaments, and congresses. Chess's international governing body is FIDE (Fã@ðÃ©ration Internationale des Ã checs). Most countries have a national chess organization as well (such as the US Chess Federation and English Chess Federation) which in turn is a member of FIDE. FIDE is a member of the International Olympic Committee,[82] but the game of chess has never been part of the Olympic Games; chess does have its own Olympiad, held every two years as a team event.

The current World Chess Champion is Viswanathan Anand of India.[83] The reigning Women's World Champion is Anna Ushenina from Ukraine.[84] The world's highest rated female player, Judit Polgã|r, has never participated in the Women's World Chess Championship, instead preferring to compete with the leading men and maintaining a ranking among the top male players.[85]

Other competitions for individuals include the World Junior Chess Championship, the European Individual Chess Championship, and the National Chess Championships. Invitation-only tournaments regularly attract the world's strongest players. Examples include Spain's Linares event, Monte Carlo's Melody Amber tournament, the Dortmund Sparkassen meeting, Sofia's M-tel Masters, and Wijk aan Zee's Tata Steel tournament.

Regular team chess events include the Chess Olympiad and the European Team Chess Championship. The 38th Chess Olympiad was held 2008 in Dresden, Germany; Armenia won the gold in the unrestricted event for the second time in a row after Turin 2006, and Georgia took the top medal for the women. The World Chess Solving Championship and World Correspondence Chess Championships include both team and individual events.

Besides these prestigious competitions, there are thousands of other chess tournaments, matches, and festivals held around the world every year catering to players of all levels. Chess is promoted as a "mind sport" by the Mind Sports Organisation, alongside other mental-skill games such as Contract Bridge, Go, and Scrabble.

#### Titles and rankings

##### Main article: Chess titles

The best players can be awarded specific lifetime titles by the world chess organization FIDE:[86]

Grandmaster (shortened as GM; sometimes International Grandmaster or IGM is used) is awarded to world-class chess masters. Apart from World Champion, Grandmaster is the highest title a chess player can attain. Before FIDE will confer the title on a player, the player must have an Elo chess rating (see below) of at least 2500 at one time and three favorable results (called norms) in tournaments involving other grandmasters, including some from countries other than the applicant's. There are other milestones a player can achieve to attain the title, such as winning the World Junior Championship.

International Master (shortened as IM). The conditions are similar to GM, but less demanding. The minimum rating for the IM title is 2400.

FIDE Master (shortened as FM). The usual way for a player to qualify for the

FIDE Master title is by achieving a FIDE rating of 2300 or more.

Candidate Master (shortened as CM). Similar to FM, but with a FIDE rating of at least 2200.

All the titles are open to men and women. Separate women-only titles, such as Woman Grandmaster (WGM), are available. Beginning with Nona Gaprindashvili in 1978, a number of women have earned the GM title, and most of the top ten women in 2006 hold the unrestricted GM title.[note 5]

As of August 2011, there are 1363 active grandmasters and 3153 international masters in the world. Top three countries with the largest numbers of grandmasters are Russia, Ukraine, and Germany, with 208, 78, and 76. The country with most grandmasters per capita is Iceland, with 11 GMs and 13 IMs among the population of 310,000.[87]

International titles are awarded to composers and solvers of chess problems and to correspondence chess players (by the International Correspondence Chess Federation). National chess organizations may also award titles, usually to the advanced players still under the level needed for international titles; an example is the Chess expert title used in the United States.

In order to rank players, FIDE, ICCF, and national chess organizations use the Elo rating system developed by Arpad Elo. Elo is a statistical system based on the assumption that the chess performance of each player in their games is a random variable. Arpad Elo thought of a player's true skill as the average of that player's performance random variable, and showed how to estimate the average from results of player's games. The US Chess Federation implemented Elo's suggestions in 1960, and the system quickly gained recognition as being both fairer and more accurate than older systems; it was adopted by FIDE in 1970.[note 6] The highest FIDE rating of all time, 2861, was achieved by Magnus Carlsen on the January 2013 FIDE rating list.[88]

#### Publications

Chess has a very extensive literature. In 1913, the chess historian H.J.R. Murray estimated the total number of books, magazines, and chess columns in newspapers to be about 5,000.[89][90] B.H. Wood estimated the number, as of 1949, to be about 20,000.[90] David Hooper and Kenneth Whyld write that, "Since then there has been a steady increase year by year of the number of new chess publications. No one knows how many have been printed." [90] There are two significant public chess libraries: the John G. White Chess and Checkers Collection at Cleveland Public Library, with over 32,000 chess books and over 6,000 bound volumes of chess periodicals; [91] and the Chess & Draughts collection at the National Library of the Netherlands, with about 30,000 books. [92] Grandmaster Lothar Schmid owns the world's largest private collection of chess books and memorabilia. [93] David DeLucia's chess library contains 7,000 to 8,000 chess books, a similar number of autographs (letters, score sheets, manuscripts), and about 1,000 items of "ephemera". [94] Ten Geuzendam opines that DeLucia's collection "is arguably the finest chess collection in the world". [95]

#### Mathematics and computers

The game structure and nature of chess is related to several branches of mathematics. Many combinatorial and topological problems connected to chess were known of for hundreds of years. In 1913, Ernst Zermelo used chess as a basis for his theory of game strategies, which is considered as one of the predecessors of game theory. [96]

The number of legal positions in chess is estimated to be between 1043 and 1047 (a provable upper bound [97][98]), with a game-tree complexity of approximately 10<sup>123</sup>. The game-tree complexity of chess was first calculated by Claude Shannon as 10<sup>120</sup>, a number known as the Shannon number. [99] Typically an average position has thirty to forty possible moves, but there may be as few as zero (in the case of checkmate or stalemate) or as many as 218. [100]

One of the most important mathematical challenges of chess is the development of algorithms that can play chess. The idea of creating a chess-playing machine dates to the 18th century; around 1769, the chess-playing automaton called The Turk became famous before being exposed as a hoax. [101] Serious trials based on

automatons, such as El Ajedrecista, were too complex and limited to be useful.

Since the advent of the digital computer in the 1950s, chess enthusiasts, computer engineers and computer scientists have built, with increasing degrees of seriousness and success, chess-playing machines and computer programs.[102] The groundbreaking paper on computer chess, "Programming a Computer for Playing Chess", was published in 1950 by Shannon.[note 7] He wrote:

The chess machine is an ideal one to start with, since: (1) the problem is sharply defined both in allowed operations (the moves) and in the ultimate goal (checkmate); (2) it is neither so simple as to be trivial nor too difficult for satisfactory solution; (3) chess is generally considered to require "thinking" for skillful play; a solution of this problem will force us either to admit the possibility of a mechanized thinking or to further restrict our concept of "thinking"; (4) the discrete structure of chess fits well into the digital nature of modern computers.[104]

The Association for Computing Machinery (ACM) held the first major chess tournament for computers, the North American Computer Chess Championship, in September 1970. CHESS 3.0, a chess program from Northwestern University, won the championship. Nowadays, chess programs compete in the World Computer Chess Championship, held annually since 1974. At first considered only a curiosity, the best chess playing programs, for example Rybka, have become extremely strong. In 1997, a computer won a chess match against a reigning World Champion for the first time: IBM's Deep Blue beat Garry Kasparov 3½-2½ (it scored two wins, one loss, and three draws).[105][106] In 2009, a mobile phone won a category 6 tournament with a performance rating 2898: chess engine Hiarcs 13 running on the mobile phone HTC Touch HD won the Copa Mercosur tournament with nine wins and one draw.[107] The best chess programs are now able to beat the strongest human players.

With huge databases of past games and high analytical ability, computers can help players to learn chess and prepare for matches. Internet Chess Servers allow people to find and play opponents all over the world. The presence of computers and modern communication tools have raised concerns regarding cheating during games, most notably the "bathroom controversy" during the 2006 World Championship.[108]

Zermelo's theorem states that it is possible to solve chess, i. e. to determine with certainty the outcome of a perfectly played game (namely that if the game cannot end in a draw, then one of the two players must have a winning strategy). However, according to Claude Shannon, the timeframe required puts this possibility beyond the limits of any feasible technology. It is unknown whether an indirect proof of the outcome of a perfectly played game exists. In other words, it is not known whether or not it is possible to determine the outcome without determining the optimal strategy itself.

#### Psychology

There is an extensive scientific literature on chess psychology.[note 8][note 9][110][111][112][113] Alfred Binet and others showed that knowledge and verbal, rather than visuospatial, ability lies at the core of expertise.[114][115] In his doctoral thesis, Adriaan de Groot showed that chess masters can rapidly perceive the key features of a position.[116] According to de Groot, this perception, made possible by years of practice and study, is more important than the sheer ability to anticipate moves. De Groot showed that chess masters can memorize positions shown for a few seconds almost perfectly. The ability to memorize does not alone account for chess-playing skill, since masters and novices, when faced with random arrangements of chess pieces, had equivalent recall (about half a dozen positions in each case). Rather, it is the ability to recognize patterns, which are then memorized, which distinguished the skilled players from the novices. When the positions of the pieces were taken from an actual game, the masters had almost total positional recall.[117]

More recent research has focused on chess as mental training; the respective roles of knowledge and look-ahead search; brain imaging studies of chess

masters and novices; blindfold chess; the role of personality and intelligence in chess skill; gender differences; and computational models of chess expertise. The role of practice and talent in the development of chess and other domains of expertise has led to a lot of research recently. Ericsson and colleagues have argued that deliberate practice is sufficient for reaching high levels of expertise in chess.[118] Recent research indicates that factors other than practice are also important. For example, Fernand Gobet and colleagues have shown that stronger players started playing chess at a young age and that experts born in the Northern Hemisphere are more likely to have been born in late winter and early spring. Chess players are more likely to be non-right-handed, though they found no correlation between handedness and skill.[119]

#### Chess and intelligence

Although the link between performance in chess and general intelligence is often assumed, researchers have largely failed to confirm its existence.[120] For example, a 2006 study found no differences in fluid intelligence, as measured by Raven's Progressive Matrices, between strong adult chess players and regular people.[121] There is some evidence towards a correlation between performance in chess and intelligence among beginning players. However, performance in chess also relies substantially on one's amount of experience playing the game, and the role of experience may overwhelm the role of intelligence. Chess experts are estimated to have in excess of 10,000 and possibly as many as 300,000 position patterns stored in their memory; prolonged training is necessary to acquire that amount of data.[122]

A 2007 study of young chess players in the United Kingdom found that strong players tended to have above-average IQ scores, but, within that group, the correlation between chess skill and IQ was actually moderately negative, meaning that smarter children tended to achieve a lower level of chess skill.[122]

#### Variants

Main article: Chess variant

Chess variants are forms of chess where the game is played using a different board (e.g. hexagonal chess or 3D chess), different rules, or special fairy pieces. There are more than two thousand published variants, the most popular being xiangqi in China and shogi in Japan.[123][124] Chess variants can include, but are not limited to:

- direct predecessors of chess (chaturanga and shatranj);
- traditional national or regional variants like xiangqi, shogi, janggi (Korea), and makruk (Thailand), which share common predecessors with Western chess;
- modern variants such as Chess960, where the starting position is selected randomly, rendering advance preparation of opening lines impracticable and compelling players to rely on their talent and creativity.[125]

See also

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FIDE

Split title

FIDE

December to Dismember (2006) was a professional wrestling pay-per-view event produced by World Wrestling Entertainment (WWE), which took place on DecemberÂ 3, 2006 at the James Brown Arena in Augusta, Georgia. Professional wrestling is a type of sports entertainment in which theatrical events are combined with a competitive sport. The buildup to the matches and the scenarios that took place before, during, and after the event, were planned by WWE's script writers. The event starred wrestlers from the ECW brand: storyline expansions of the promotion where employees are assigned to wrestling brands under the WWE banner. Despite it being an ECW brand pay-per-view, wrestlers from the Raw and SmackDown! brands also worked on the pay-per-view.[2] Its name was derived from

the December to Dismember event held by the original Extreme Championship Wrestling in 1995.

The main attraction on the event card was an Extreme Elimination Chamber match for the ECW World Championship. It featured wrestlers fighting in a ring surrounded by a steel structure of chain and girders. The six participants were defending champion Big Show, Bobby Lashley, Rob Van Dam, Hardcore Holly, CM Punk and Test. Lashley won the match and the ECW World Championship after pinning Big Show following a spear.[3] The featured bout on the undercard was a tag team bout between The Hardys (real-life brothers Matt and Jeff) and MNM (Joey Mercury and Johnny Nitro), in which The Hardys were victorious.[4]

The event had an attendance of 4,800 and received about 90,000 pay-per-view buys, with 55,000 of them domestic buys the lowest buyrate in WWE history.[5][6] Although it was scheduled to be held again in 2007, the show was canceled after all pay-per-view events became tri-branded, which meant that there would be pay-per-view events with the entire roster on two consecutive weeks.[7]

[edit] Background

Outside of the weekly ECW on Sci Fi broadcast, one of WWE's primary television programs, the pay-per-view received little buildup on either the Raw or SmackDown! television shows, as WWE concentrated more on the Survivor Series pay-per-view that aired one week prior to December to Dismember.[8] At this time, the main storyline on the Raw brand featured tag teams D-Generation X and Rated-RKO,[9] and the main storyline on the SmackDown! brand featured Batista and World Heavyweight Champion King Booker.[10] The buildup for December to Dismember began in the middle of October, six weeks before the event occurred.[11] This was the only ECW brand exclusive pay-per-view produced by WWE before the decision was made to include wrestlers from all three brands on all pay-per-views.[12]

The main event at December to Dismember featured an Extreme Elimination Chamber match. On the October 24, 2006 episode of ECW, Rob Van Dam won an opportunity at the ECW World Championship by defeating Big Show in a ladder match.[13] Van Dam traded in this championship opportunity at the December to Dismember pay-per-view.[14] Authority figure Paul Heyman authorized Van Dam's decision by adding him to the Extreme Elimination Chamber contest along with five other wrestlers, including the champion, Big Show.[15] The remaining four participants for the match were decided through standard wrestling matches. The first person to qualify for the Elimination Chamber was Sabu, who defeated Kevin Thorn on the October 31, 2006 episode of ECW.[15] The following week, CM Punk and Test qualified by defeating Mike Knox and Tommy Dreamer, respectively.[16] The final place was to be given to Hardcore Holly in a contract signing segment on the November 14, 2006 episode of ECW. As Holly was making his way to the ring, however, Bobby Lashley, a wrestler from the SmackDown! brand, attacked Holly and signed the contract himself to gain the sixth and final place in the Extreme Elimination Chamber.[17] Although the six spots in the bout were filled, Heyman announced a contest between Van Dam and Holly in an Extreme Rules match on the November 21, 2006 episode of ECW, with the stipulation that if Van Dam lost, Holly would get his spot in the Extreme Elimination Chamber; Van Dam however, won the match.[18] Van Dam continued his momentum into December to Dismember as he, along with team members Sabu, Lashley, John Cena and Kane defeated the team of Big Show, Test, Umaga, Finlay and Montel Vontavious Porter in a 5-on-5 elimination tag team match. The match took place at the Survivor Series event.[19] On the final episode of ECW before December to Dismember, Van Dam defeated Sabu. Later in the show, CM Punk faced Test, but both men were counted out in their bout. In the main event, Big Show was disqualified in his match against Lashley as Test and Heyman's Security Force (Doug and Danny Basham) assaulted Lashley, causing the disqualification.[20]

The other main rivalry heading into December to Dismember was between brothers Matt and Jeff Hardy and MNM (Joey Mercury, Johnny Nitro and Melina). Unlike the Extreme Elimination Chamber rivalry, this one did not include ECW wrestlers and

was only between members of the Raw and SmackDown! brands, making the event span all three WWE brands.[20][21][22] The buildup began when Nitro and Jeff began to feud over the Intercontinental Championship on Raw.[23][24] The two competed in several different types of matches, including a ladder match.[9] The Hardys had just teamed up for the first time since 2002 on ECW, when they defeated Tony Mamaluke and Little Guido Maritato.[18] At Survivor Series, The Hardys, along with D-Generation X and CM Punk defeated the team of Nitro, Rated-RKO (Edge and Randy Orton), Mike Knox and Gregory Helms.[25] The next day at the December to Dismember press conference, The Hardys made an open challenge for the pay-per-view. Later that night on Raw, Nitro accepted the challenge, announcing the return of Mercury and the "one night only" reformation of MNM.[21] That Tuesday on ECW, MNM attacked The Hardys after they won their match against Elijah Burke and Sylvester Terkay.[20] Meanwhile, Voodoo Kin Mafia, a tag team from the Total Nonstop Action Wrestling (TNA) promotion, issued a statement via the TNA website stating that they accepted The Hardys' open challenge for December to Dismember.[26] Voodoo Kin Mafia did not turn up at the event, and WWE never acknowledged the challenge. Only two matches were officially announced for the pay-per-view before it aired.[2][27] Before the event went live on pay-per-view, Stevie Richards defeated RenÃ© DuprÃ© in a dark match, a non-televised match used to generate excitement in the crowd.[28]

#### [edit] Preliminary matches

The first match that aired was the tag team encounter between MNM and The Hardys. After a back and forth match, which lasted over 20 minutes, MNM performed a flapjack DDT on Jeff, a move that sees an opponent get pushed upwards in air by the tag team and then is forced to dive forward onto his own head. During a pinfall attempt, Matt interrupted and performed a double neckbreaker on MNM. Jeff then performed a Swanton bomb and pinned Nitro.[2][4][29] Next was Matt Striker versus Balls Mahoney in a "Striker's Rules" match, a match with "no gouging of the eyes, no pulling of the hair, no maneuvers off the top rope and, most importantly, no foul language".[2][30] Mahoney won the match after he performed a spinebuster.[2][29]

After the match, Sabu was depicted as injured backstage and unable to compete in the Extreme Elimination Chamber match.[31][32] His place was taken by Hardcore Holly.[2] In reality, however, it was rumored that Sabu had animosity surrounding him backstage and was said to be uninterested at television tapings. Rumors evolved stating that WWE viewed Sabu as being "useless" in normal matches and that he could only perform in matches that included "stunts and tables and they [WWE] don't respect him because of that". This was reportedly part of the reason he had been scripted to be easily defeated by Umaga on an episode of Raw a few weeks earlier.[9][33] WWE chairman Vince McMahon wanted to put Holly in the match, so Lashley would have more villains to overcome. Heyman was legitimately unhappy with the decision, saying that Sabu's high-flying wrestling would be "the ideal showcase" inside the Extreme Elimination Chamber.[27] The fans inside the James Brown Arena chanted "bullshit" during the segment.[2]

In the second tag-team match of the night, Elijah Burke and Sylvester Terkay defeated F.B.I. members Little Guido Maritato and Tony Mamaluke. Burke pinned Mamaluke after a Forward Russian legsweep on him.[34] After the match, Terkay performed a Muscle Buster on Maritato.[29] During this match, the fans inside the James Brown Arena chanted "TNA, TNA" (a reference to WWE's rival professional wrestling promotion, as well as two of their performers utilizing the moves of Jeff Jarrett and Samoa Joe, respectively).[2] A standard match between Daivari and Tommy Dreamer followed. The Great Khali accompanied Daivari to the ring for this match but was ejected from ringside early on for interfering. Daivari won the match using a roll-up. Khali came back out after the match had ended and grabbed Dreamer by the neck and gave him a chokebomb. EMTs came out to help Dreamer up, but he got up on his own and headed backstage.[2][29][35]

The next match was an intergender tag team match between Kevin Thorn and Ariel

against Mike Knox and Kelly Kelly. Before the match began, Kelly Kelly was shown wishing CM Punk, her on-screen crush, luck for the main event. The finish of the match came when Knox walked out on Kelly Kelly, leaving her on her own in the ring. Ariel performed a legsweep, a variation of a takedown, on Kelly Kelly for the pinfall.[29] Following the match, Ariel and Thorn then tried to attack Kelly Kelly, however, The Sandman interrupted and hit Thorn repeatedly with a kendo stick.[2][36]

[edit] Main event match

The final match was the Extreme Elimination Chamber main event for the ECW World Championship. Before it began, Paul Heyman came out to the ring and explained the rules of the match and said that there was a weapon in each of the four different pods that housed the wrestlers.[29] In a conversation backstage with Big Show before heading to the ring not seen by television viewers, Heyman revealed that for the first time in his professional career he was not motivated to give the promo.[27] Rob Van Dam and Hardcore Holly started off the match, and one of the other four competitors entered every five minutes afterward. The first person to be released from his pod was CM Punk, who entered the match with a steel chair in hand. Test came out five minutes after Punk with a crowbar. Punk was the first person eliminated from the match when Van Dam performed a Five Star Frog Splash from the top turnbuckle. Moments later, Test charged at Holly and hit his head with his boot and pinned him. Van Dam was the third person eliminated by Test via a diving elbow drop from the top of a pod. When Bobby Lashley's pod was supposed to open, he could not get out of it because Heyman's Security Force had bolted the pod shut. Lashley used the table that was with him to smash the pod open, allowing him to escape. Lashley then hit Test with a spear to get a pinfall. Big Show was the final man to exit his pod and enter the match, with a baseball bat wrapped in barbed wire. Lashley blocked Big Show's swing of the bat with a folding chair and then threw Big Show into a pod, causing him to bleed. Lashley managed to turn an attempted chokeslam from Big Show into a DDT and then landed a spear to win the match and become the new ECW World Champion.[3][29]

[edit] Aftermath

Not long after December to Dismember, Big Show was offered a long-term contract extension by WWE, reported to be around \$1Â million a year. He turned it down, however, because he was burned out and hurting physically.[2][27][38] On the episode of ECW, which aired two days after December to Dismember, Show faced Lashley in an ECW World title rematch, which Show lost, thus ending their storyline feud.[39] He was not seen on WWE television thereafter, and his contract was not renewed before it expired in February 2007.[40]

After the storyline feud with Big Show ended, Lashley entered a short program with Rob Van Dam, which led to Van Dam earning a title match on the January 2, 2007 episode of ECW. The match between the two ended in a No Contest after Test interfered during the bout.[41] Test's interference led to a program with the champion, leading to a title match at the Royal Rumble, which Lashley won.[42]

[edit] Reception

Less than 24 hours after the pay-per-view, WWE announced on their official website that Vince McMahon had sent Heyman home, citing "slumping television ratings and a disgruntled talent roster as causes for Mr. Heyman's dismissal".[43] Heyman and McMahon clashed on the plane to the North Charleston Coliseum.[44] After a producers' meeting,[44] Heyman was escorted from the Coliseum and sent home. Heyman was also immediately pulled from ECW's creative team. McMahon was attempting to put the blame on Heyman for the poorly received pay-per-view, and after a meeting with Vince and Stephanie McMahon, Heyman legitimately left World Wrestling Entertainment but remained under contract.[44][45][46] Heyman was against Lashley being booked to win the ECW Championship, however, McMahon stated that fans would be happy to see a new champion and a 10-minute celebration.[27][44][47] In an early 2008 interview with The Sun, Heyman stated how he would have booked the Elimination Chamber main-event, which included having Punk enter first and quickly eliminating Big Show via submission. According to the interview, McMahon disliked the idea, but

Big Show liked the direction Heyman was heading, and was eager for the opportunity to "make" a rising star like Punk. Heyman also stated that he kept going to McMahon on the night of the pay-per-view to say that "The people are going to throw this back in our face".[44] Upset at how the event turned out, Tommy Dreamer and Stevie Richards both asked after the event to be released from their contracts. Both requests were refused by McMahon and WWE's Vice President of Talent Relations John Laurinaitis.[8]

Critics had a negative reaction to the pay-per-view.[48][49][50]Slam! Sports rated the pay-per-view 4 out of 10 stars, stating, "the two matches that were promoted saved this thing from being a debacle".[2] In the 2006 Wrestling Observer Newsletter awards, the event was voted the "worst major wrestling show of the year".[51]

[edit] Results

[edit] Elimination Chamber entrances and eliminations

Eliminated

Wrestler

Entered

Eliminated by

Weapon

Method of elimination

Time

1 !First

CM Punk

3 !Third

RVD

Steel chair

Pinned by RVD after a Five-Star Frog Splash from the top turnbuckle

12:35

2 !Second

Hardcore Holly

1 !First

Test

n/a

Pinned by Test after a running big boot

12:45

3 !Third

Rob Van Dam

2 !Second

Test

n/a

Pinned by Test after a diving elbow drop onto a steel chair from the top of Big Show's pod

14:15

4 !Fourth

Test

4 !Fourth

Lashley

Crowbar

Pinned by Lashley after a crowbar shot to the gut and a spear

19:42

5 !Fifth

Big Show

6 !Sixth

Lashley

Barbed wirebaseball bat

Pinned by Lashley after a spear

24:42

6 !Winner

Bobby Lashley

5 !Fifth

N/A

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N/A

N/A

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[edit] External links

The Exelon Pavilions are four buildings that generate electricity from solar energy and provide access to underground parking in Millennium Park in the Loop community area of Chicago in Cook County, Illinois, United States. The Northeast Exelon Pavilion and Northwest Exelon Pavilion (jointly the North Exelon Pavilions) are located on the northern edge of the park along Randolph Street, and flank the Harris Theater. The Southeast Exelon Pavilion and Southwest Exelon Pavilion (jointly the South Exelon Pavilions) are located on the southern edge of the park along Monroe Street, and flank the Lurie Garden. Together the pavilions generate 19,840 kilowatt-hours (67,697Â MBtu) of electricity annually,[1] worth about \$2,350 per year.[2]

The four pavilions, which cost \$7 million,[3] were designed in January 2001; construction began in January 2004. The South Pavilions were completed and opened in July 2004, while the North Pavilions were completed in November 2004, with a grand opening on April 30, 2005.[4] In addition to producing energy, three of the four pavilions provide access to the parking garages below the park, while the fourth serves as the park's welcome center and office.[5]Exelon, a company that generates the electricity transmitted by its subsidiary Commonwealth Edison,[3] donated \$5.5Â million for the pavilions.[1][6][7]Chicago Tribune architecture critic Blair Kamin praised the South Pavilions as "minor modernist jewels", but criticized the North Pavilions as "nearly all black and impenetrable".[3] The North Pavilions have received the Leadership in Energy and Environmental Design (LEED) silver rating from the United States Green Building Council, as well as an award from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).[8]

[edit] Background

Lying between Lake Michigan to the east and the Loop to the west, Grant Park has been Chicago's front yard since the mid-19th century. Its northwest corner, north of Monroe Street and the Art Institute, east of Michigan Avenue, south of Randolph Street, and west of Columbus Drive, had been Illinois Central rail yards and parking lots until 1997, when it was made available for development by the city as Millennium Park.[9] As of 2009, Millennium Park trailed only Navy Pier as a Chicago tourist attraction.[10]

In 1836, a year before Chicago was incorporated,[11] the Board of Canal Commissioners held public auctions for the city's first lots. Citizens with the foresight to keep the lakefront as public open space convinced the commissioners to designate the land east of Michigan Avenue between Randolph Street and Park Row (11th Street) "Public Groundâ ~A Common to Remain Forever Open, Clear and Free of Any Buildings, or Other Obstruction, whatever." [12] Grant Park has been "forever open, clear and free" since, protected by legislation that has been affirmed by four previous Illinois Supreme Court rulings.[13][14][15] In 1839, United States Secretary of War Joel Roberts Poinsett decommissioned the Fort Dearborn reserve and declared the land between Randolph Street and Madison Street east of Michigan Avenue "Public Ground forever to remain vacant of buildings".[11]

Aaron Montgomery Ward, who is known both as the inventor of mail order and the protector of Grant Park, twice sued the city of Chicago to force it to remove buildings and structures from Grant Park, and to keep it from building new

ones.[16][17] In 1890, arguing that Michigan Avenue property owners held easements on the park land, Ward commenced legal actions to keep the park free of new buildings. In 1900, the Illinois Supreme Court concluded that all landfill east of Michigan Avenue was subject to dedications and easements.[18] In 1909, when he sought to prevent the construction of the Field Museum of Natural History in the center of the park, the courts affirmed his arguments and the museum was built elsewhere.[19][20][21]

As a result, the city has what are termed the Montgomery Ward height restrictions on buildings and structures in Grant Park; structures over 40 feet (12Â m) tall are not allowed in the park, with the exception of bandshells.[22] However, within Millennium Park, the 50-foot (15Â m) Crown Fountain and the 139-foot (42Â m) Jay Pritzker Pavilion were exempt from the height restrictions, because they were classified as works of art and not buildings or structures. Shorter structures do not run afoul of the height restrictions. The Harris Theater, which lies between the North Pavilions, was built mostly underground to avoid the restrictions.[23][24] The Northwest Pavilion, tallest of the four, is three stories high; the Northeast Pavilion is two stories, and the South Pavilions are each one story.[4]

[edit] Design and construction

The pavilions are named for Exelon, a Chicago-based company that generates the electricity transmitted by its subsidiary Commonwealth Edison (ComEd).[3] The city of Chicago has collaborated with Exelon and ComEd on a variety of environmental projects, including the installation of solar power in buildings, support for sustainable design and renewable energy, and furthering educational and social awareness of green architecture in the city.[8] The pavilions cost \$7Â million,[3] \$5.5Â million of which was donated by Exelon and ComEd.[1]

The lead designer for the North Pavilions was Thomas H. Beeby of Hammond Beeby Rupert Ainge Architects.[4] Beeby's designs for the North Pavilions are "in harmony with the Harris Theater",[25] for which he was the architect as well. The North Pavilions are along Randolph Street on either side of the theater, which is Millennium Park's indoor performing-arts venue.[4]

The South Pavilions were designed by architect Renzo Piano of Renzo Piano Building Workshop.[4] Piano designed the Art Institute of Chicago's Modern Wing, which is across Monroe Street from the South Pavilions and opened in 2009. The facades of the South Pavilions are limestone and glass in order to complement the Modern Wing, even though it was not completed until several years after the pavilions were finished.[1] Piano also designed the Nichols Bridgeway, which connects Millennium Park and the Art Institute, and is next to the Southwest Pavilion.[26]

The design process for the Exelon Pavilions began in September 2001, with construction starting in January 2004. The general contractor for all four pavilions was Walsh Construction. The South Pavilions were completed in July 2004 and opened when Millennium Park celebrated its grand opening on July 16, 2004. The North Pavilions were not finished in July 2004, but were completed in November of that year. All four Exelon Pavilions were officially opened to the public on April 30, 2005.[3][4]

[edit] Structures

The North Pavilions were designed as minimalist black cubes,[5] and together are capable of producing 16,000 kilowatt-hours (54,594 MBtu) of electricity annually.[1] The outermost layer of the exterior of each pavilion is a curtain wall made of recycled aluminum. These walls contain specially designed "mono-crystalline photovoltaic modules and insulated glass".[27] Convection from radiant solar heat gain causes air to cycle within air cavities covered by the photovoltaic modules. A "highly heat-reflective thermoplastic membrane" is used to waterproof each roof, and helps mitigate the urban heat island effect.[27]

The photovoltaic modules generate electricity to power much of the pavilions' lighting.[27] The North Pavilions are the first Chicago buildings to use building integrated photovoltaic cells, which are a solar energy system incorporated into the building's structural elements.[8] Millennium Park's planners claimed that the pavilions had the first electricity-generating

curtain walls in the Midwest.[3]

[edit] Northwest Pavilion

The Northwest Pavilion, located at 151 E. Randolph Street,[28] houses the Millennium Park Welcome Center and an Exelon energy display.[5] It contains the Millennium Park offices, and public restrooms.[1] The three-story Northwest Pavilion is the largest of the four pavilions, with 6,100 square feet (566.7Â m<sup>2</sup>),[4] and is the only pavilion that does not provide access to the parking garage below.[5] The Northwest Pavilion has 460 photovoltaic modules to harness solar energy, houses recycling facilities, and its "interior finishes and construction materials are derived from renewable resources".[1]

The Millennium Park Welcome Center in the Northwest Pavilion offers guides to the park and wheelchairs. It houses exhibitions on parks and energy, and has interactive displays on how the pavilions' solar panels function and on renewable energy. There are exhibits with interactive web-based touch screens that depict the city's use of solar energy, and a dynamic multi-screen video presentation on electricity generation and usage. The building's atrium includes a sculpture by Chicago-based artists Patrick McGee and Adelheid Mers with three backlit 9-foot (2.7Â m) two-way mirrors. The sculpture, titled Heliosphere, Biosphere, Technosphere, is "designed to interpret the links between the Earth's atmosphere, the solar system and scientific applications".[1] It is the only permanent work of art by Chicago artists within the park.[29]

[edit] Northeast Pavilion

The Northeast Pavilion houses a pedestrian entrance to the Millennium Park parking garage,[1] and provides access to the Harris Theater's rooftop terrace.[8][28] It is at 201 E. Randolph Street, east of the theater and west of the McDonald's Cycle Center. The pavilion's second floor has the Chicago Shop, which offers a self-guided Millennium Park audio tour for rental and sells official Millennium Park and Chicago souvenirs.[30] The two-story Northeast Pavilion is the second-largest, with 4,100 square feet (380.9Â m<sup>2</sup>) of surface area,[4] and also has 460 photovoltaic modules to generate electricity from sunlight.[1]

[edit] South Pavilions

The south pavilions are east and west of the Lurie Garden along Monroe Street, and their glass walls allow views of the garden.[3] Both of the South Pavilions provide access to the parking garage below the park. The 550-square-foot (51Â m<sup>2</sup>) Southwest Pavilion is the smallest of the four pavilions,[4] and has the least number of photovoltaic modules with 16 on its roof.[1] It is west of the garden and east of the Nichols Bridgeway. The Southeast Pavilion is east of the garden, has the second smallest area at 750 square feet (69.7Â m<sup>2</sup>),[4] and has 24 rooftop photovoltaic modules. Together these two pavilions are capable of producing 3,840 kilowatt-hours (13,102.6Â MBtu) of electricity annually.[1]

[edit] Reception and recognition

Pulitzer Prize-winning Chicago Tribune architecture critic Blair Kamin praised the decision to have architects design the pavilions as an "inspired stroke", speculating that if their designs had been left to contractors, visitors to Millennium Park could have instead seen unimpressive "blunt utilitarian huts".[3] Kamin was pleased with Piano's South Pavilions, describing them as "minor modernist jewels, almost house-like".[3] He lauded the way their limestone walls complement the transparent glass by way of contrast, and noted that they anticipated Piano's then-forthcoming addition to the Art Institute of Chicago Building. Kamin gave the South Pavilions a rating of three stars out of a possible four, or "very good".[3]

Kamin was less pleased with Beeby's North Pavilions, which he described as "nearly all black and impenetrable" and compared to Darth Vader's helmet.[3] He did acknowledge the pavilions' innovative technology, and their "urban design function" as wings for the Harris Theater, which Kamin felt "allows the theater to better stand up to the Frank Gehry-designed Pritzker Pavilion to its south".[3] Because they were not finished when he wrote his review in July 2004, Kamin did not give the North Pavilions an overall star rating; he did

express the hope that they would have a more pleasant appearance once completed.[3]

The pavilions have been recognized for their innovative use of renewable energy and green design. In 2005, the North Pavilions received the Leadership in Energy and Environmental Design (LEED) silver rating from the United States Green Building Council.[8][31] They received a Technology Award Honorable Mention in the category of "Alternative and/or Renewable Energy Use â ^ New Construction" from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).[8][32] The United States Department of Energy has recognized all the pavilions as part of its Million Solar Roofs Initiative. In 2005 Chicago ranked fourth among U.S. cities in solar installations;[1] the completion of the Exelon Pavilions took the city to a total of 1 MW of installed photovoltaic systems.[33] The pavilions together generate 19,840 kilowatt-hours (67,697Â MBtu) of electricity annually,[1] worth \$2,353 per year at 2010 average Illinois electricity prices.[2] According to the City of Chicago, this is enough energy to power the equivalent of 14 Energy Star-rated efficient houses in Chicago.[5]

[edit] Image map

Northwest Exelon Pavilion 41Â°53â 2.67â 3N 87Â°37â 20.54â 3Wî»¿ / î»¿41.884075Â°N 87.6223722Â°Wî»¿ / 41.884075; -87.6223722

Northeast Exelon Pavilion 41Â°53â 2.72â 3N 87Â°37â 16.90â 3Wî»¿ / î»¿41.8840889Â°N 87.621361 / 41.8840889; -87.621361

Southwest Exelon Pavilion 41Â°52â 51.70â 3N 87Â°37â 20.10â 3Wî»¿ / î»¿41.881028Â°N 87.62225Â°Wî»¿ / 41.881028; -87.62225

Southeast Exelon Pavilion 41Â°52â 51.62â 3N 87Â°37â 17.02â 3Wî»¿ / î»¿41.8810056Â°N 87.6213944Â°Wî»¿ / 41.8810056; -87.6213944

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#### [edit] External links

Yellowstone National Park

Grand Canyon of Yellowstone

Location of Yellowstone in the United States

Location

Park County, WyomingTeton County, WyomingGallatin County, MontanaPark County,

MontanaFremont County, Idaho

Coordinates

44°36′ 2″N 110°30′ 2″W﻿ / ﻿44.6°N 110.5°W﻿ / 44.6; -110.5Coordinates: 44°36′ 2″N 110°30′ 2″W﻿ / ﻿44.6°N 110.5°W﻿ / 44.6; -110.5

Area

2,219,791 acres (898,318 ha)[1]

Established

March 1, 1872 (1872-March-01)

Visitors

3,394,326 (in 2011)[2]

Governing body

U.S. National Park Service

Type:

Natural

Criteria:

vii, viii, ix, x

Designated:

1978 (2nd session)

Reference #:



28[3]

Region:

The Americas

Endangered:

1995â ^2003

Yellowstone National Park (Arapaho: Henihco'oo' or Hãetã-hco'oo[4]), established by the U.S.Â Congress and signed into law by President Ulysses S. Grant on March 1, 1872,[5][6] is a national park located primarily in the U.S. state of Wyoming, although it also extends into Montana and Idaho. Yellowstone, widely held to be the first national park in the world,[7] is known for its wildlife and its many geothermal features, especially Old Faithful Geyser, one of the most popular features in the park.[8] It has many types of ecosystems, but the subalpine forest is dominant.

Native Americans have lived in the Yellowstone region for at least 11,000Â years.[9] The region was bypassed during the Lewis and Clark Expedition in the early 19th century. Aside from visits by mountain men during the early-to-mid-19th century, organized exploration did not begin until the late 1860s. The U.S. Army was commissioned to oversee the park just after its establishment. In 1917, administration of the park was transferred to the National Park Service, which had been created the previous year. Hundreds of structures have been built and are protected for their architectural and historical significance, and researchers have examined more than 1,000 archaeological sites.

Yellowstone National Park spans an area of 3,468.4 square miles (8,983Â km2),[1] comprising lakes, canyons, rivers and mountain ranges.[8]Yellowstone Lake is one of the largest high-altitude lakes in North America and is centered over the Yellowstone Caldera, the largest supervolcano on the continent. The caldera is considered an active volcano. It has erupted with tremendous force several times in the last two million years.[10] Half of the world's geothermal features are in Yellowstone, fueled by this ongoing volcanism.[11]Lava flows and rocks from volcanic eruptions cover most of the land area of Yellowstone. The park is the centerpiece of the Greater Yellowstone Ecosystem, the largest remaining, nearly intact ecosystem in the Earth's northern temperate zone.[12]

Hundreds of species of mammals, birds, fish and reptiles have been documented, including several that are either endangered or threatened.[8] The vast forests and grasslands also include unique species of plants. Yellowstone Park is the largest and most famous megafauna location in the Continental United States. Grizzly bears, wolves, and free-ranging herds of bison and elk live in the park. The Yellowstone Park bison herd is the oldest and largest public bison herd in the United States. Forest fires occur in the park each year; in the large forest fires of 1988, nearly one third of the park was burnt. Yellowstone has numerous recreational opportunities, including hiking, camping, boating, fishing and sightseeing. Paved roads provide close access to the major geothermal areas as well as some of the lakes and waterfalls. During the winter, visitors often access the park by way of guided tours that use either snow coaches or snowmobile.

[edit] History

The park is located at the headwaters of the Yellowstone River, from which it takes its historical name. Near the end of the 18th century, French trappers named the river "Roche Jaune," which is probably a translation of the Minnetaree name "Mi tsi a-da-zi" (Rock Yellow River).[13] Later, American trappers rendered the French name in English as "Yellow Stone." Although it is commonly believed that the river was named for the yellow rocks seen in the Grand Canyon of the Yellowstone, the Native American name source is not clear.[14]

The human history of the park begins at least 11,000 years ago when aboriginal Americans first began to hunt and fish in the region. During the construction of the post office in Gardiner, Montana, in the 1950s, an obsidian projectile point of Clovis origin was found that dated from approximately 11,000 years ago.[15] These Paleo-Indians, of the Clovis culture, used the significant

amounts of obsidian found in the park to make such cutting tools and weapons. Arrowheads made of Yellowstone obsidian have been found as far away as the Mississippi Valley, indicating that a regular obsidian trade existed between local tribes and tribes farther east.[16] By the time white explorers first entered the region during the Lewis and Clark Expedition in 1805, they encountered the Nez Perce, Crow and Shoshone tribes. While passing through present day Montana, the expedition members were informed of the Yellowstone region to the south, but they did not investigate it.[16]

In 1806, John Colter, a member of the Lewis and Clark Expedition, left to join a group of fur trappers. After splitting up with the other trappers in 1807, Colter passed through a portion of what later became the park, during the winter of 1807â ^1808. He observed at least one geothermal area in the northeastern section of the park, near Tower Fall.[17] After surviving wounds he suffered in a battle with members of the Crow and Blackfoot tribes in 1809, he gave a description of a place of "fire and brimstone" that was dismissed by most people as delirium. The supposedly imaginary place was nicknamed "Colter's Hell". Over the next forty years, numerous reports from mountain men and trappers told of boiling mud, steaming rivers and petrified trees, yet most of these reports were believed at the time to be myth.[18]

After an 1856 exploration, mountain man Jim Bridger (also believed to be the first or second European American to have seen the Great Salt Lake) reported observing boiling springs, spouting water, and a mountain of glass and yellow rock. These reports were largely ignored because Bridger was known for being a "spinner of yarns". In 1859, Captain William F. Raynolds, U.S. Army surveyor embarked on a two-year survey of the northern Rockies. After wintering in Wyoming, in May 1860, Raynolds and his party which included naturalist Ferdinand Vandeveer Hayden and guide Jim Bridger attempted to cross the Continental Divide over Two Ocean Plateau from the Wind River drainage in northwest Wyoming. Heavy spring snows prevented their passage but had they been able to traverse the divide, the party would have been the first organized survey to enter the Yellowstone region.[19] The American Civil War hampered further organized explorations until the late 1860s.[20]

The first detailed expedition to the Yellowstone area was the Cookâ ^Folsomâ ^Peterson Expedition of 1869, which consisted of three privately funded explorers. The Folsom party followed the Yellowstone River to Yellowstone Lake.[21] The members of the Folsom party kept a journal and based on the information it reported, a party of Montana residents organized the Washburn-Langford-Doane Expedition in 1870. It was headed by the surveyor-general of Montana Henry Washburn, and included Nathaniel P. Langford (who later became known as "National Park" Langford) and a U.S. Army detachment commanded by Lt.Â Gustavus Doane.

The expedition spent about a month exploring the region, collecting specimens, and naming sites of interest. A Montana writer and lawyer named Cornelius Hedges, who had been a member of the Washburn expedition, proposed that the region should be set aside and protected as a National Park; he wrote a number of detailed articles about his observations for the Helena Herald newspaper between 1870 and 1871. Hedges essentially restated comments made in October 1865 by acting Montana Territorial Governor Thomas Francis Meagher, who had previously commented that the region should be protected.[22] Others made similar suggestions. In an 1871 letter from Jay Cooke to Ferdinand V. Hayden, Cooke wrote that his friend, Congressman William D. Kelley had also suggested "Congress pass a bill reserving the Great Geyser Basin as a public park forever".[23]

[edit] Park creation

In 1871, eleven years after his failed first effort, Ferdinand V. Hayden was finally able to make another attempt to explore the region. With government sponsorship, Hayden returned to Yellowstone region with a second, larger expedition, the Hayden Geological Survey of 1871. He compiled a comprehensive report on Yellowstone, which included large-format photographs by William Henry Jackson, as well as paintings by Thomas Moran. His report helped to convince

the U.S. Congress to withdraw this region from public auction. On March 1, 1872, President Ulysses S. Grant signed The Act of Dedication[6] law that created Yellowstone National Park.[24]

Hayden, while not the only person to have thought of creating a park in the Yellowstone region, was the park's first and most enthusiastic advocate.[25] He believed in "setting aside the area as a pleasure ground for the benefit and enjoyment of the people" and warned that there were those who would come and "make merchandise of these beautiful specimens".[25] Worrying the area could face the same fate as Niagara Falls, he concluded the site should "be as free as the air or Water." [25] In his report to the Committee on Public Lands, he concluded that if the bill failed to become law, "the vandals who are now waiting to enter into this wonder-land, will in a single season despoil, beyond recovery, these remarkable curiosities, which have required all the cunning skill of nature thousands of years to prepare".[26]

[27] Hayden and his 1871 party recognized that Yellowstone was a priceless treasure, which would become rarer with time. He wished for others to see and experience it as well. Eventually the railroads and, some time after that, the automobile would make that possible. The Park was not set aside strictly for ecological purposes; however, the designation "pleasure ground" was not an invitation to create an amusement park. Hayden imagined something akin to the scenic resorts and baths in England, Germany, and Switzerland.[25]

#### THE ACT OF DEDICATION[27]

AN ACT to set apart a certain tract of land lying near the headwaters of the Yellowstone River as a public park. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tract of land in the Territories of Montana and WyomingÂ ... is hereby reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people; and all persons who shall locate, or settle upon, or occupy the same or any part thereof, except as hereinafter provided, shall be considered trespassers and removed there fromÂ ...Approved March 1, 1872.

Signed by:

There was considerable local opposition to the Yellowstone National Park during its early years: some locals feared that the regional economy would be unable to thrive if there remained strict federal prohibitions against resource development or settlement within park boundaries; local entrepreneurs advocated reducing the size of the park so that mining, hunting, and logging activities could be developed[29] and numerous bills were introduced into Congress by Montana representatives who sought to remove the federal land-use restrictions.[30]

After the park's official formation, Nathaniel Langford was appointed as the park's first superintendent in 1872. He served for five years but was denied a salary, funding, and staff. Langford lacked the means to improve the land or properly protect the park, and without formal policy or regulations, he had few legal methods to enforce such protection. This left Yellowstone vulnerable to poachers, vandals, and others seeking to raid its resources. He addressed the practical problems park administrators faced in the 1872 Report to the Secretary of the Interior[31] and correctly predicted that Yellowstone will become a major international attraction deserving the continuing stewardship of the government. In 1875, Colonel William Ludlow, who had previously explored areas of Montana under the command of George Armstrong Custer, was assigned to organize and lead an expedition to Montana and the newly established Yellowstone Park. Observations about the lawlessness and exploitation of park

resources were included in Ludlow's Report of a Reconnaissance to the Yellowstone National Park. The report included letters and attachments by other expedition members, including naturalist and mineralogist George Bird Grinnell. Grinnell documented the poaching of buffalo, deer, elk, and antelope for hides. "It is estimated that during the winter of 1874â ^1875, not less than 3,000 buffalo and mule deer suffer even more severely than the elk, and the antelope nearly as much." [32]

As a result, Langford was forced to step down in 1877. [33] [34] Having traveled through Yellowstone and witnessed land management problems first hand, Philetus Norris volunteered for the position following Langford's exit. Congress finally saw fit to implement a salary for the position, as well as to provide a minimal funding to operate the park. Norris used these funds to expand access to the park, building numerous crude roads and facilities. [34]

In 1880, Harry Yount was appointed as a gamekeeper to control poaching and vandalism in the park. Yount had previously spent a number of years exploring the mountain country of present-day Wyoming, including the Grand Tetons, after joining F V. Hayden's Geological Survey in 1873. [35] Today, he is considered the first national park ranger, [36] and Younts Peak, located at the head of the Yellowstone River, was named in his honor. [37] However, these measures still proved to be insufficient in protecting the park, as neither Norris, nor the three superintendents who followed, were given sufficient manpower or resources.

The Northern Pacific Railroad built a train station in Livingston, Montana, connecting to the northern entrance in the early 1880s, which helped to increase visitation from 300 in 1872 to 5,000 in 1883. [38] Visitors in these early years were faced with poor roads and limited services, and most access into the park was on horse or via stagecoach. By 1908 visitation increased enough to also attract a Union Pacific Railroad connection to West Yellowstone, though rail visitation fell off considerably by World War II and ceased around the 1960s. Much of the railroad line was converted to nature trails, among them the Yellowstone Branch Line Trail.

During the 1870s and 1880s Native American tribes were effectively excluded from the national park. A number of tribes had made seasonal use of the Yellowstone area, but the only year-round residents were small bands of Western Shoshone known as "Sheepeaters". They left the area under the assurances of a treaty negotiated in 1868, under which the Sheepeaters ceded their lands but retained the right to hunt in Yellowstone. The United States never ratified the treaty and refused to recognize the claims of the Sheepeaters or any other tribe that had made use of Yellowstone. [39] The Nez Perce band associated with Chief Joseph, numbering about 750 people, passed through Yellowstone National Park in thirteen days during late August 1877. They were being pursued by the U.S. Army and entered the national park about two weeks after the Battle of the Big Hole. Some of the Nez Perce were friendly to the tourists and other people they encountered in the park, some were not. Nine park visitors were briefly taken captive. Despite Joseph and other chiefs ordering that no one should be harmed, at least two people were killed and several wounded. [40] [41] One of the areas where encounters occurred was in Lower Geyser Basin and east along a branch of the Firehole River to Mary Mountain and beyond. [40] That stream is still known as Nez Perce Creek. [42] A group of Bannocks entered the park in 1878, alarming park Superintendent Philetus Norris. In the aftermath of the Sheepeater Indian War of 1879, Norris built a fort for the purpose of preventing Native Americans from entering the national park. [39] [41]

Ongoing poaching and destruction of natural resources continued unabated until the U.S. Army arrived at Mammoth Hot Springs in 1886 and built Camp Sheridan. Over the next 22 years the army constructed permanent structures, and Camp Sheridan was renamed Fort Yellowstone. [43] With the funding and manpower necessary to keep a diligent watch, the army developed their own policies and regulations that permitted public access while protecting park wildlife and natural resources. When the National Park Service was created in 1916, many of the management principles developed by the army were adopted by the new

agency.[43] The army turned control over to the National Park Service on October 31, 1918.[44]

[edit] Later history

By 1915, 1,000 automobiles per year were entering the park, resulting in conflicts with horses and horse driven transportation. In subsequent years horse travel on roads was eventually prohibited.[45]

The Civilian Conservation Corps (CCC), a New Deal relief agency for young men, played a major role between 1933 and 1942 in developing Yellowstone facilities. CCC projects included reforestation, campground development of many of the park's trails and campgrounds, trail construction, fire hazard reduction, and fire-fighting work. The CCC built the majority of the early visitor centers, campgrounds and the current system of park roads.[46]

During World War II, tourist travel fell sharply, staffing was cut, and many facilities fell into disrepair.[47] By the 1950s, visitation increased tremendously in Yellowstone and other national parks. To accommodate the increased visitation, park officials implemented Mission 66, an effort to modernize and expand park service facilities. Planned to be completed by 1966, in honor of the 50th anniversary of the founding of the National Park Service, Mission 66 construction diverged from the traditional log cabin style with design features of a modern style.[48] During the late 1980s, most construction styles in Yellowstone reverted to the more traditional designs. After the enormous forest fires of 1988 damaged much of Grant Village, structures there were rebuilt in the traditional style. The visitor center at Canyon Village, which opened in 2006, incorporates a more traditional design as well.[49]

The 1959 Yellowstone earthquake just west of Yellowstone at Hebgen Lake damaged roads and some structures in the park. In the northwest section of the park, new geysers were found, and many existing hot springs became turbid.[50] It was the most powerful earthquake to hit the region in recorded history. In 1963, after several years of public controversy regarding the forced reduction of the elk population in Yellowstone, United States Secretary of the Interior Stewart Udall appointed an advisory board to collect scientific data to inform future wildlife management of the national parks. In a paper known as the Leopold Report, the committee observed that culling programs at other national parks had been ineffective, and recommended management of Yellowstone's elk population.[51]

The wildfires during the summer of 1988 were the largest in the history of the park. Approximately 793,880 acres (321,272 ha; 1,240 sq mi) or 36% of the parkland was impacted by the fires, leading to a systematic re-evaluation of fire management policies. The fire season of 1988 was considered normal until a combination of drought and heat by mid-July contributed to an extreme fire danger. On "Black Saturday", August 20, 1988, strong winds expanded the fires rapidly, and more than 150,000 acres (61,000 ha; 230 sq mi) burned.[52]

The expansive cultural history of the park has been documented by the 1,000 archeological sites that have been discovered. The park has 1,106 historic structures and features, and of these Obsidian Cliff and five buildings have been designated National Historic Landmarks.[8] Yellowstone was designated an International Biosphere Reserve on October 26, 1976, and a UN World Heritage Site on September 8, 1978. The park was placed on the List of World Heritage in Danger from 1995 to 2003 due to the effects of tourism, infection of wildlife, and issues with invasive species.[53] In 2010, Yellowstone National Park was honored with its own quarter under the America the Beautiful Quarters Program.[54]

[edit] Heritage and Research Center

The Heritage and Research Center is located at Gardiner, Montana, near the north entrance to the park.[55] The center is home to the Yellowstone National Park's museum collection, archives, research library, historian, archeology lab, and herbarium. The Yellowstone National Park Archives maintain collections of historical records of Yellowstone and the National Park Service. The collection includes the administrative records of Yellowstone, as well as resource management records, records from major projects, and donated

manuscripts and personal papers. The archives are affiliated with the National Archives and Records Administration.[56][57]

[edit] Geography

Approximately 96 percent of the land area of Yellowstone National Park is located within the state of Wyoming. Another three percent is within Montana, with the remaining one percent in Idaho. The park is 63 miles (101 km) north to south, and 54 miles (87 km) west to east by air. Yellowstone is 2,219,789 acres (898,317 ha; 3,468.420 sq mi)[1] in area, larger than the states of Rhode Island or Delaware. Rivers and lakes cover five percent of the land area, with the largest water body being Yellowstone Lake at 87,040 acres (35,220 ha; 136.00 sq mi). Yellowstone Lake is up to 400 feet (120 m) deep and has 110 miles (180 km) of shoreline. At an elevation of 7,733 feet (2,357 m) above sea level, Yellowstone Lake is the largest high altitude lake in North America. Forests comprise 80 percent of the land area of the park; most of the rest is grassland.[8]

The Continental Divide of North America runs diagonally through the southwestern part of the park. The divide is a topographic feature that separates Pacific Ocean and Atlantic Ocean water drainages. About one third of the park lies on the west side of the divide. The origins of the Yellowstone and Snake Rivers are near each other but on opposite sides of the divide. As a result, the waters of the Snake River flow to the Pacific Ocean, while those of the Yellowstone find their way to the Atlantic Ocean via the Gulf of Mexico.

The park sits on the Yellowstone Plateau, at an average elevation of 8,000 feet (2,400 m) above sea level. The plateau is bounded on nearly all sides by mountain ranges of the Middle Rocky Mountains, which range from 9,000 to 11,000 feet (2,700 to 3,400 m) in elevation. The highest point in the park is atop Eagle Peak (11,358 feet / 3,462 metres) and the lowest is along Reese Creek (5,282 feet / 1,610 metres).[8] Nearby mountain ranges include the Gallatin Range to the northwest, the Beartooth Mountains in the north, the Absaroka Range to the east, and the Teton Range and the Madison Range to the southwest and west. The most prominent summit on the Yellowstone Plateau is Mount Washburn at 10,243 feet (3,122 m).

Yellowstone National Park has one of the world's largest petrified forests, trees which were long ago buried by ash and soil and transformed from wood to mineral materials. This ash and other volcanic debris, are believed to have come from the park area itself. This is largely due to the fact that Yellowstone is actually a massive caldera of a supervolcano. There are 290 waterfalls of at least 15 feet (4.6 m) in the park, the highest being the Lower Falls of the Yellowstone River at 308 feet (94 m).[8]

Three deep canyons are located in the park, cut through the volcanic tuff of the Yellowstone Plateau by rivers over the last 640,000 years. The Lewis River flows through Lewis Canyon in the south, and the Yellowstone River has carved two colorful canyons, the Grand Canyon of the Yellowstone and the Black Canyon of the Yellowstone in its journey north.

[edit] Geology

Yellowstone is at the northeastern end of the Snake River Plain, a great U-shaped arc through the mountains that extends from Boise, Idaho some 400 miles (640 km) to the west. This feature traces the route of the North American Plate over the last 17 million years as it was transported by plate tectonics across a stationary mantle hotspot. The landscape of present-day Yellowstone National Park is the most recent manifestation of this hotspot below the crust of the Earth.[58]

The Yellowstone Caldera is the largest volcanic system in North America. It has been termed a "supervolcano" because the caldera was formed by exceptionally large explosive eruptions. The current caldera was created by a cataclysmic eruption that occurred 640,000 years ago, which released 240 cubic miles (1,000 km<sup>3</sup>) of ash, rock and pyroclastic materials. This eruption was 1,000 times larger than the 1980 eruption of Mount St. Helens.[59] It produced a caldera nearly five eighths of a mile (1 km) deep and 45 by 28 miles (72 by 45 km) in area and deposited the Lava Creek Tuff, a welded tuff geologic

formation. The most violent known eruption, which occurred 2.1 million years ago, ejected 588 cubic miles (2,450 km<sup>3</sup>) of volcanic material and created the rock formation known as the Huckleberry Ridge Tuff and created the Island Park Caldera.[60] A smaller eruption ejected 67 cubic miles (280 km<sup>3</sup>) of material 1.3 million years ago, forming the Henry's Fork Caldera and depositing the Mesa Falls Tuff.[59]

Each of the three climactic eruptions released vast amounts of ash that blanketed much of central North America, falling many hundreds of miles away. The amount of ash and gases released into the atmosphere probably caused significant impacts to world weather patterns and led to the extinction of some species, primarily in North America.[61]

A subsequent caldera-forming eruption occurred about 160,000 years ago. It formed the relatively small caldera that contains the West Thumb of Yellowstone Lake. Since the last supereruption, a series of smaller eruptive cycles between 640,000 and 70,000 years ago, has nearly filled in the Yellowstone Caldera with >80 different eruptions of rhyolitic lavas such as those that can be seen at Obsidian Cliffs and basaltic lavas which can be viewed at Sheepeater Cliff. Lava strata are most easily seen at the Grand Canyon of the Yellowstone, where the Yellowstone River continues to carve into the ancient lava flows. The canyon is a classic V-shaped valley, indicative of river-type erosion rather than erosion caused by glaciation.[60]

Each eruption is part of an eruptive cycle that climaxes with the collapse of the roof of a partially emptied magma chamber. This creates a collapsed depression, called a caldera, and releases vast amounts of volcanic material, usually through fissures that ring the caldera. The time between the last three cataclysmic eruptions in the Yellowstone area has ranged from 600,000 to 800,000 years, but the small number of such climactic eruptions cannot be used to make an accurate prediction for future volcanic events.[62]

The most famous geyser in the park, and perhaps the world, is Old Faithful Geyser, located in Upper Geyser Basin. Castle Geyser, Lion Geyser and Beehive Geyser are in the same basin. The park contains the largest active geyser in the world - Steamboat Geyser in the Norris Geyser Basin. There are 300 geysers in Yellowstone and a total of at least 10,000 geothermal features altogether. Half the geothermal features and two-thirds of the world's geysers are concentrated in Yellowstone.[63]

In May 2001, the U.S. Geological Survey, Yellowstone National Park, and the University of Utah created the Yellowstone Volcano Observatory (YVO), a partnership for long-term monitoring of the geological processes of the Yellowstone Plateau volcanic field, for disseminating information concerning the potential hazards of this geologically active region.[64]

In 2003, changes at the Norris Geyser Basin resulted in the temporary closure of some trails in the basin. New fumaroles were observed, and several geysers showed enhanced activity and increasing water temperatures. Several geysers became so hot that they were transformed into purely steaming features; the water had become superheated and they could no longer erupt normally.[65] This coincided with the release of reports of a multiple year United States Geological Survey research project which mapped the bottom of Yellowstone Lake and identified a structural dome that had uplifted at some time in the past. Research indicated that these uplifts posed no immediate threat of a volcanic eruption, since they may have developed long ago, and there had been no temperature increase found near the uplifts.[66] On March 10, 2004, a biologist discovered 5 dead bison which apparently had inhaled toxic geothermal gases trapped in the Norris Geyser Basin by a seasonal atmospheric inversion. This was closely followed by an upsurge of earthquake activity in April 2004.[67] In 2006, it was reported that the Mallard Lake Dome and the Sour Creek Dome - areas that have long been known to show significant changes in their ground movement - had risen at a rate of 1.5 to 2.4 inches (3.8 to 6.1 cm) per year from mid-2004 through 2006. As of late 2007, the uplift has continued at a reduced rate.[68][69] These events inspired a great deal of media attention and speculation about the geologic future of the region. Experts responded to the

conjecture by informing the public that there was no increased risk of a volcanic eruption in the near future.[70]

Yellowstone experiences thousands of small earthquakes every year, virtually all of which are undetectable to people. There have been six earthquakes with at least magnitude 6 or greater in historical times, including a 7.5 magnitude quake that struck just outside the northwest boundary of the park in 1959. This quake triggered a huge landslide, which caused a partial dam collapse on Hebgen Lake; immediately downstream, the sediment from the landslide dammed the river and created a new lake, known as Earthquake Lake. Twenty-eight people were killed, and property damage was extensive in the immediate region. The earthquake caused some geysers in the northwestern section of the park to erupt, large cracks in the ground formed and emitted steam, and some hot springs that normally have clear water turned muddy.[50] A 6.1 magnitude earthquake struck inside the park on June 30, 1975, but damage was minimal.

For three months in 1985, 3,000 minor earthquakes were detected in the northwestern section of the park, during what has been referred to as an earthquake swarm, and has been attributed to minor subsidence of the Yellowstone caldera.[59] Beginning on April 30, 2007, 16 small earthquakes with magnitudes up to 2.7 occurred in the Yellowstone Caldera for several days. These swarms of earthquakes are common, and there have been 70 such swarms between 1983 and 2008.[71] In December 2008, over 250 earthquakes were measured over a four-day span under Yellowstone Lake, the largest measuring a magnitude of 3.9.[72] In January 2010, more than 250 earthquakes were detected over a two-day period.[73] Seismic activity in Yellowstone National Park continues and is reported hourly by the Earthquake Hazards Program of the U.S. Geological Survey.[74]

[edit] Biology and ecology

Yellowstone National Park is the centerpiece of the 20 million acre/31,250 square-mile (8,093,712 ha/80,937 km<sup>2</sup>) Greater Yellowstone Ecosystem, a region that includes Grand Teton National Park, adjacent National Forests and expansive wilderness areas in those forests. The ecosystem is the largest remaining continuous stretch of mostly undeveloped pristine land in the continental United States, considered to be the world's largest intact ecosystem in the northern temperate zone[12] (although the area is mostly not temperate but subalpine, and all the national forest lands surrounding the National Park are not intact). With the successful wolf reintroduction program, which began in the 1990s, virtually all the original faunal species known to inhabit the region when white explorers first entered the area can still be found there.

Over 1,700 species of trees and other vascular plants are native to the park. Another 170 species are considered to be exotic species and are non-native. Of the eight conifer tree species documented, Lodgepole Pine forests cover 80% of the total forested areas.[8] Other conifers, such as Subalpine Fir, Engelmann Spruce, Rocky Mountain Douglas-fir and Whitebark Pine, are found in scattered groves throughout the park. As of 2007, the whitebark pine is threatened by a fungus known as white pine blister rust; however, this is mostly confined to forests well to the north and west. In Yellowstone, about seven percent of the whitebark pine species have been impacted with the fungus, compared to nearly complete infestations in northwestern Montana.[75] Quaking Aspen and willows are the most common species of deciduous trees. The aspen forests have declined significantly since the early 20th century, but scientists at Oregon State University attribute recent recovery of the aspen to the reintroduction of wolves which has changed the grazing habits of local elk.[76]

There are dozens of species of flowering plants that have been identified, most of which bloom between the months of May and September.[77] The Yellowstone Sand Verbena is a rare flowering plant found only in Yellowstone. It is closely related to species usually found in much warmer climates, making the sand verbena an enigma. The estimated 8,000 examples of this rare flowering plant all make their home in the sandy soils on the shores of Yellowstone Lake, well above the waterline.[78]

In Yellowstone's hot waters, bacteria form mats of bizarre shapes consisting



of trillions of individuals. These bacteria are some of the most primitive life forms on earth. Flies and other arthropods live on the mats, even in the middle of the bitterly cold winters. Initially, scientists thought that microbes there gained sustenance only from sulfur. In 2005 researchers from the University of Colorado at Boulder discovered that the sustenance for at least some of the diverse hyperthermophilic species is molecular hydrogen.[79]

*Thermus aquaticus* is a bacterium found in the Yellowstone hot springs that produces an important enzyme (Taq polymerase) that is easily replicated in the lab and is useful in replicating DNA as part of the polymerase chain reaction (PCR) process. The retrieval of these bacteria can be achieved with no impact to the ecosystem. Other bacteria in the Yellowstone hot springs may also prove useful to scientists who are searching for cures for various diseases.[80]

Non-native plants sometimes threaten native species by using up nutrient resources. Though exotic species are most commonly found in areas with the greatest human visitation, such as near roads and at major tourist areas, they have also spread into the backcountry. Generally, most exotic species are controlled by pulling the plants out of the soil or by spraying, both of which are time consuming and expensive.[81]

Yellowstone is widely considered to be the finest megafauna wildlife habitat in the lower 48 states. There are almost 60 species of mammals in the park, including the gray wolf, the threatened lynx, and grizzly bears.[8] Other large mammals include the bison (buffalo), black bear, elk, moose, mule deer, white-tailed deer, mountain goat, pronghorn, bighorn sheep, and mountain lion.

The Yellowstone Park bison herd is the largest public herd of American bison in the United States. The relatively large bison populations are a concern for ranchers, who fear that the species can transmit bovine diseases to their domesticated cousins. In fact, about half of Yellowstone's bison have been exposed to brucellosis, a bacterial disease that came to North America with European cattle that may cause cattle to miscarry. The disease has little effect on park bison, and no reported case of transmission from wild bison to domestic livestock has been filed. However, the Animal and Plant Health Inspection Service (APHIS) has stated that bison are the "likely source" of the spread of the disease in cattle in Wyoming and North Dakota. Elk also carry the disease and are believed to have transmitted the infection to horses and cattle.[82] Bison once numbered between 30 and 60 million individuals throughout North America, and Yellowstone remains one of their last strongholds. Their populations had increased from less than 50 in the park in 1902 to 4,000 by 2003. The Yellowstone Park bison herd reached a peak in 2005 with 4,900 animals. Despite a summer estimated population of 4,700 in 2007, the number dropped to 3,000 in 2008 after a harsh winter and controversial brucellosis management sending hundreds to slaughter.[83] The Yellowstone Park bison herd is believed to be one of only four free roaming and genetically pure herds on public lands in North America. The other three herds are the Henry Mountains bison herd of Utah, at Wind Cave National Park in South Dakota and on Elk Island in Alberta, Canada.[84]

To combat the perceived threat of brucellosis transmission to cattle, national park personnel regularly harass bison herds back into the park when they venture outside of the area's borders. During the winter of 1996-97, the bison herd was so large that 1,079 bison that had exited the park were shot or sent to slaughter.[82] Animal rights activists argue that this is a cruel practice and that the possibility for disease transmission is not as great as some ranchers maintain. Ecologists point out that the bison are merely traveling to seasonal grazing areas that lie within the Greater Yellowstone Ecosystem that have been converted to cattle grazing, some of which are within National Forests and are leased to private ranchers. APHIS has stated that with vaccinations and other means, brucellosis can be eliminated from the bison and elk herds throughout Yellowstone.[82]

Starting in 1914, in an effort to protect elk populations, the U.S. Congress appropriated funds to be used for the purposes of "destroying wolves, prairie dogs, and other animals injurious to agriculture and animal husbandry" on

public lands. Park Service hunters carried out these orders, and by 1926 they had killed 136 wolves, and wolves were virtually eliminated from Yellowstone.[85] Further exterminations continued until the National Park Service ended the practice in 1935. With the passing of the Endangered Species Act in 1973, the wolf was one of the first mammal species listed.[85] After the wolves were extirpated from Yellowstone, the coyote then became the park's top canine predator. However, the coyote is not able to bring down large animals, and the result of this lack of a top predator on these populations was a marked increase in lame and sick megafauna.

By the 1990s, the Federal government had reversed its views on wolves. In a controversial decision by the U.S. Fish and Wildlife Service (which oversees threatened and endangered species), Mackenzie Valley wolves, imported from Canada, were reintroduced into the park. Reintroduction efforts have been successful with populations remaining relatively stable. A survey conducted in 2005 reported that there were 13 wolf packs, totaling 118 individuals in Yellowstone and 326 in the entire ecosystem. These park figures were lower than those reported in 2004 but may be attributable to wolf migration to other nearby areas as suggested by the substantial increase in the Montana population during that interval.[86] Almost all the wolves documented were descended from the 66 wolves reintroduced in 1995-96.[86] The recovery of populations throughout the states of Wyoming, Montana and Idaho has been so successful that on February 27, 2008, the U.S. Fish and Wildlife Service removed the Northern Rocky Mountain wolf population from the endangered species list.[87]

An estimated 600 grizzly bears live in the Greater Yellowstone Ecosystem, with more than half of the population living within Yellowstone. The grizzly is currently listed as a threatened species, however the U.S. Fish and Wildlife Service has announced that they intend to take it off the endangered species list for the Yellowstone region but will likely keep it listed in areas where it has not yet recovered fully. Opponents of delisting the grizzly are concerned that states might once again allow hunting and that better conservation measures need to be implemented to ensure a sustainable population.[88]

Population figures for elk are in excess of 30,000—the largest population of any large mammal species in Yellowstone. The northern herd has decreased enormously since the mid-1990s; this has been attributed to wolf predation and causal effects such as elk using more forested regions to evade predation, consequently making it harder for researchers to accurately count them.[89] The northern herd migrates west into southwestern Montana in the winter. The southern herd migrates southward, and the majority of these elk winter on the National Elk Refuge, immediately southeast of Grand Teton National Park. The southern herd migration is the largest mammalian migration remaining in the U.S. outside of Alaska.

In 2003 the tracks of one female lynx and her cub were spotted and followed for over 2 miles (3.2 km). Fecal material and other evidence obtained were tested and confirmed to be those of a lynx. No visual confirmation was made, however. Lynx have not been seen in Yellowstone since 1998, though DNA taken from hair samples obtained in 2001 confirmed that lynx were at least transient to the park.[90] Other less commonly seen mammals include the mountain lion and wolverine. The mountain lion has an estimated population of only 25 individuals parkwide.[91] The wolverine is another rare park mammal, and accurate population figures for this species are not known.[92] These uncommon and rare mammals provide insight into the health of protected lands such as Yellowstone and help managers make determinations as to how best to preserve habitats.

Eighteen species of fish live in Yellowstone, including the core range of the Yellowstone cutthroat trout—a fish highly sought by anglers.[8][93] The Yellowstone cutthroat trout has faced several threats since the 1980s, including the suspected illegal introduction into Yellowstone Lake of lake trout, an invasive species which consume the smaller cutthroat trout.[94] Although lake trout were established in Shoshone and Lewis lakes in the Snake River drainage from U.S. Government stocking operations in 1890, it was never

officially introduced into the Yellowstone River drainage.[95] The cutthroat trout has also faced an ongoing drought, as well as the accidental introduction of a parasiteâ ~whirling diseaseâ ~which causes a terminal nervous system disease in younger fish. Since 2001, all native sport fish species caught in Yellowstone waterways are subject to a catch and release law.[93] Yellowstone is also home to six species of reptiles, such as the painted turtle and Prairie rattlesnake, and four species of amphibians, including the Boreal Chorus Frog.[96]

311 species of birds have been reported, almost half of which nest in Yellowstone.[8] As of 1999, twenty-six pairs of nesting bald eagles have been documented. Extremely rare sightings of whooping cranes have been recorded, however only three examples of this species are known to live in the Rocky Mountains, out of 385 known worldwide.[97] Other birds, considered to be species of special concern because of their rarity in Yellowstone, include the common loon, harlequin duck, osprey, peregrine falcon and the trumpeter swan.[98]

#### [edit] Forest fires

Wildfire is a natural part of most ecosystems, and plants found in Yellowstone have adapted in a variety of ways. Douglas-fir has a thick bark which protects the inner section of the tree from most fires. Lodgepole Pines â ~the most common tree species in the parkâ ~ generally have cones that are only opened by the heat of fire. Their seeds are held in place by a tough resin, and fire assists in melting the resin, allowing the seeds to disperse. Fire clears out dead and down wood, providing fewer obstacles for lodgepole pines to flourish. Subalpine Fir, Engelmann Spruce, Whitebark Pine, and other species tend to grow in colder and moister areas, where fire is less likely to occur. Aspen trees sprout new growth from their roots, and even if a severe fire kills the tree above ground, the roots often survive unharmed because they are insulated from the heat by soil.[99] The National Park Service estimates that in natural conditions, grasslands in Yellowstone burned an average of every 20 to 25 years, while forests in the park would experience fire about every 300 years.[99]

About thirty-five natural forest fires are ignited each year by lightning, while another six to ten are started by peopleâ ~ in most cases by accident. Yellowstone National Park has three fire lookout towers, each staffed by trained fire fighters. The easiest one to reach is atop Mount Washburn, though it is closed to the public. The park also monitors fire from the air and relies on visitor reports of smoke and/or flames.[100] Fire towers are staffed almost continuously from late June to mid-Septemberâ ~ the primary fire season. Fires burn with the greatest intensity in the late afternoon and evening. Few fires burn more than 100 acres (40Â ha), and the vast majority of fires reach only a little over an acre (0.5Â ha) before they burn themselves out.[101] Fire management focuses on monitoring dead and down wood quantities, soil and tree moisture, and the weather, to determine those areas most vulnerable to fire should one ignite. Current policy is to suppress all human caused fires and to evaluate natural fires, examining the benefit or detriment they may pose on the ecosystem. If a fire is considered to be an immediate threat to people and structures, or will burn out of control, then fire suppression is performed.[102]

In an effort to minimize the chances of out of control fires and threats to people and structures, park employees do more than just monitor the potential for fire. Controlled burns are prescribed fires which are deliberately started to remove dead timber under conditions which allow fire fighters an opportunity to carefully control where and how much wood is consumed. Natural fires are sometimes considered prescribed fires if they are left to burn. In Yellowstone, unlike some other parks, there have been very few fires deliberately started by employees as prescribed burns. However, over the last 30 years, over 300 natural fires have been allowed to burn naturally. In addition, fire fighters remove dead and down wood and other hazards from areas where they will be a potential fire threat to lives and property, reducing the chances of fire danger in these areas.[103] Fire monitors also regulate fire through

educational services to the public and have been known to temporarily ban campfires from campgrounds during periods of high fire danger. The common notion in early United States land management policies was that all forest fires were bad. Fire was seen as a purely destructive force and there was little understanding that it was an integral part of the ecosystem. Consequently, until the 1970s, when a better understanding of wildfire was developed, all fires were suppressed. This led to an increase in dead and dying forests, which would later provide the fuel load for fires that would be much harder, and in some cases, impossible to control. Fire Management Plans were implemented, detailing that natural fires should be allowed to burn if they posed no immediate threat to lives and property.

1988 started with a wet spring season although by summer, drought began moving in throughout the northern Rockies, creating the driest year on record to that point. Grasses and plants which grew well in the early summer from the abundant spring moisture produced plenty of grass, which soon turned to dry tinder. The National Park Service began firefighting efforts to keep the fires under control, but the extreme drought made suppression difficult. Between July 15 and 21, 1988, fires quickly spread from 8,500 acres (3,400Â ha; 13.3Â sqÂ mi) throughout the entire Yellowstone region, which included areas outside the park, to 99,000 acres (40,000Â ha; 155Â sqÂ mi) on the park land alone. By the end of the month, the fires were out of control. Large fires burned together, and on August 20, 1988, the single worst day of the fires, more than 150,000 acres (61,000Â ha; 230Â sqÂ mi) were consumed. Seven large fires were responsible for 95% of the 793,000 acres (321,000Â ha; 1,239Â sqÂ mi) that were burned over the next couple of months. A total of 25,000 firefighters and U.S. military forces participated in the suppression efforts, at a cost of 120 million dollars. By the time winter brought snow that helped extinguish the last flames, the fires had destroyed 67 structures and caused several million dollars in damage.[52] Though no civilian lives were lost, two personnel associated with the firefighting efforts were killed.

Contrary to media reports and speculation at the time, the fires killed very few park animalsâ ~ surveys indicated that only about 345 elk (of an estimated 40,000â ^50,000), 36 deer, 12 moose, 6 black bears, and 9 bison had perished. Changes in fire management policies were implemented by land management agencies throughout the United States, based on knowledge gained from the 1988 fires and the evaluation of scientists and experts from various fields. By 1992, Yellowstone had adopted a new fire management plan which observed stricter guidelines for the management of natural fires.[52]

[edit] Climate

Yellowstone climate is greatly influenced by altitude, with lower elevations generally found to be warmer year round. The record high temperature was 99 Â°F (37Â Â°C) in 2002, while the coldest temperature recorded is â '66 Â°F (â '54Â Â°C) in 1933.[8] During the summer months of June through early September, daytime highs are normally in the 70 to 80 Â°F (21Â to 27Â Â°C) range, while nighttime lows can go to below freezing (0Â Â°C)â ~especially at higher altitudes. Summer afternoons are frequently accompanied by thunderstorms. Spring and fall temperatures range between 30 and 60 Â°F (-1Â and 16Â Â°C) with cold nights in the teens to single digits (â '5 to â '20Â Â°C). Winter in Yellowstone is very cold with high temperatures usually between zero to 20Â Â°F (â '20 to â '5Â Â°C) and nighttime temperatures below zeroÂ Â°F (â '20Â Â°C) for most of the winter.[104]

Precipitation in Yellowstone is highly variable and ranges from 15 inches (380Â mm) annually near Mammoth Hot Springs, to 80 inches (2,000Â mm) in the southwestern sections of the park. The precipitation of Yellowstone is greatly influenced by the moisture channel formed by the Snake River Plain to the west that was, in turn, formed by Yellowstone itself. Snow is possible in any month of the year, with averages of 150 inches (3,800Â mm) annually around Yellowstone Lake, to twice that amount at higher elevations.[104]

Tornadoes in Yellowstone are rare; however, on July 21, 1987, the most powerful tornado recorded in Wyoming touched down in the Teton Wilderness of Bridger-Teton National Forest and hit Yellowstone National Park. Called the

Tetonâ ^Yellowstone tornado, it was classified as an F4, with wind speeds estimated at between 207 and 260 miles per hour (333 and 420 km/h). The tornado left a path of destruction 1 to 2 miles (1.6 to 3.2 km) wide, and 24 miles (39Â km) long, and leveled 15,000 acres (6,100Â ha; 23Â sqÂ mi) of mature pine forest.[105]

Climate data for Yellowstone Lake, elev. 7,870 feet (2,399Â m)

Month

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Year

Record high Â°F (Â°C)

46

(8)

56

(13)

61

(16)

65

(18)

78

(26)

83

(28)

92

(33)

91

(33)

83

(28)

72

(22)

63

(17)

48

(9)

92

(33)

Average high Â°F (Â°C)

22.8

(â ´5.1)

28.3

(â ´2.1)

35.2

(1.8)

42.2

(5.7)

51.0

(10.6)

61.1

(16.2)

70.4  
(21.3)  
70.4  
(21.3)  
60.3  
(15.7)  
48.2  
(9.0)  
33.1  
(0.6)  
24.8  
(â´4.0)  
45.7  
(7.6)  
Average low Å°F (Å°C)  
â´3.1  
(â´19.5)  
â´1.5  
(â´18.6)  
4.3  
(â´15.4)  
14.6  
(â´9.7)  
25.1  
(â´3.8)  
32.5  
(0.3)  
37.5  
(3.1)  
36.5  
(2.5)  
28.6  
(â´1.9)  
20.9  
(â´6.2)  
10.0  
(â´12.2)  
1.1  
(â´17.2)  
17.2  
(â´8.2)  
Record low Å°F (Å°C)  
â´50  
(â´46)  
â´50  
(â´46)  
â´42  
(â´41)  
â´26  
(â´32)  
â´2  
(â´19)  
14  
(â´10)  
20  
(â´7)  
17  
(â´8)  
â´5  
(â´21)

â '13  
(â '25)  
â '30  
(â '34)  
â '43  
(â '42)  
â '50  
(â '46)  
Rainfall inches (mm)  
1.91  
(48.5)  
1.49  
(37.8)  
1.73  
(43.9)  
1.48  
(37.6)  
2.06  
(52.3)  
2.08  
(52.8)  
1.66  
(42.2)  
1.69  
(42.9)  
1.59  
(40.4)  
1.32  
(33.5)  
1.71  
(43.4)  
1.68  
(42.7)  
20.40  
(518.2)  
Snowfall inches (cm)  
30.9  
(78.5)  
21.5  
(54.6)  
26.7  
(67.8)  
16.3  
(41.4)  
5.3  
(13.5)  
.8  
(2)  
0  
(0)  
trace  
1.4  
(3.6)  
5.7  
(14.5)  
24.3  
(61.7)  
25.4  
(64.5)  
158.3

(402.1)

Avg. precipitation days ( $\pm 0.01$  in)

17.4

13.8

14.0

10.8

12.1

13.3

10.7

10.7

9.4

7.4

12.9

15.3

147.8

Avg. snowy days ( $\pm 0.1$  in)

15.6

12.0

12.3

7.2

2.9

.6

0

0

1.0

4.1

12.2

14.1

82.0

Source #1: NOAA (normals, 1971 $\hat{=}$ 2000)[106]

Source #2: The Weather Channel (Records)[107]

Climate data for Yellowstone Park Headquarters, elev. 6,230 feet (1,899 $\hat{=}$  m)

Month

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Year

Average high  $\hat{=}$ °F ( $\hat{=}$ °C)

29.2

( $\hat{=}$  -1.6)

34.1

(1.2)

40.4

(4.7)

48.9

(9.4)

58.9

(14.9)

69.3

(20.7)

78.6



(25.9)  
77.9  
(25.5)  
66.8  
(19.3)  
53.8  
(12.1)  
37.3  
(2.9)  
29.2  
( $\pm 1.6$ )  
52.0  
(11.1)  
Average low  $^{\circ}\text{F}$  ( $^{\circ}\text{C}$ )  
8.6  
( $\pm 13.0$ )  
11.5  
( $\pm 11.4$ )  
17.7  
( $\pm 7.9$ )  
25.4  
( $\pm 3.7$ )  
33.9  
(1.1)  
41.1  
(5.1)  
46.4  
(8.0)  
45.1  
(7.3)  
35.8  
(2.1)  
27.1  
( $\pm 2.7$ )  
16.9  
( $\pm 8.4$ )  
8.7  
( $\pm 12.9$ )  
26.5  
( $\pm 3.1$ )  
Rainfall inches (mm)  
.88  
(22.4)  
.64  
(16.3)  
1.08  
(27.4)  
1.09  
(27.7)  
2.01  
(51.1)  
1.93  
(49)  
1.50  
(38.1)  
1.44  
(36.6)  
1.29  
(32.8)  
.95

(24.1)  
.94  
(23.9)  
.79  
(20.1)  
14.63  
(371.6)  
Snowfall inches (cm)  
11.0  
(27.9)  
9.5  
(24.1)  
10.9  
(27.7)  
6.1  
(15.5)  
2.3  
(5.8)  
.1  
(0.3)  
0  
(0)  
trace  
.3  
(0.8)  
3.5  
(8.9)  
9.1  
(23.1)  
9.6  
(24.4)  
62.4  
(158.5)  
Avg. precipitation days ( $\hat{=}$  ¥ 0.01 in)  
10.8  
9.0  
8.9  
9.1  
13.0  
12.0  
10.2  
10.1  
8.3  
7.6  
9.1  
9.6  
117.7  
Avg. snowy days ( $\hat{=}$  ¥ 0.1 in)  
8.1  
6.0  
6.1  
3.7  
1.1  
.1  
0  
0  
.2  
2.1  
6.3  
6.7

Source: NOAA (normals, 1971â ^2000)[108]

[edit] Recreation

Yellowstone is one of the most popular national parks in the United States. Since the mid-1960s, at least 2 million tourists have visited the park almost every year.[109] In 2010, a record number of visitors came to the park in July: 975,000. July is the busiest month for Yellowstone National Park.[110] At peak summer levels, 3,700 employees work for Yellowstone National Park concessionaires. Concessionaires manage nine hotels and lodges, with a total of 2,238 hotel rooms and cabins available. They also oversee gas stations, stores and most of the campgrounds. Another 800 employees work either permanently or seasonally for the National Park Service.[8]

Park service roads lead to major features; however, road reconstruction has produced temporary road closures. Yellowstone is in the midst of a long term road reconstruction effort, which is hampered by a short repair season. In the winter, all roads aside from the one which enters from Gardiner, Montana, and extends to Cooke City, Montana, are closed to wheeled vehicles.[111] Park roads are closed to wheeled vehicles from early November to mid April, but some park roads remain closed until mid-May.[112] The park has 310 miles (500Â km) of paved roads which can be accessed from five different entrances.[8] There is no public transportation available inside the park, but several tour companies can be contacted for guided motorized transport. In the winter, concessionaires operate guided snowmobile and snow coach tours, though their numbers and access are based on quotas established by the National Park Service.[113] Facilities in the Old Faithful, Canyon and Mammoth Hot Springs areas of the park are very busy during the summer months. Traffic jams created by road construction or by people observing wildlife can result in long delays.

The National Park Service maintains 9 visitor centers and museums and is responsible for maintenance of historical structures and many of the other 2,000 buildings. These structures include National Historical Landmarks such as the Old Faithful Inn built from 1903 to 1904 and the entire Fort Yellowstone â ^ Mammoth Hot Springs Historic District. An historical and educational tour is available at Fort Yellowstone which details the history of the National Park Service and the development of the park. Campfire programs, guided walks and other interpretive presentations are available at numerous locations in the summer, and on a limited basis during other seasons.

Camping is available at a dozen campgrounds with more than 2,000 campsites.[8] Camping is also available in surrounding National Forests, as well as in Grand Teton National Park to the south. Backcountry campsites are accessible only by foot or by horseback and require a permit. There are 1,100 miles (1,800Â km) of hiking trails available.[114] The park is not considered to be a good destination for mountaineering because of the instability of volcanic rock which predominates. Visitors with pets are required to keep them on a leash at all times and are limited to areas near roadways and in "frontcountry" zones such as drive in campgrounds.[115] Around thermal features, wooden and paved trails have been constructed to ensure visitor safety, and most of these areas are handicapped accessible. The National Park Service maintains a year round clinic at Mammoth Hot Springs and provides emergency services throughout the year.[116]

Hunting is not permitted, though it is allowed in the surrounding national forests during open season. Fishing is a popular activity, and a Yellowstone Park fishing license is required to fish in park waters.[117] Many park waters are fly fishing only and all native fish species are catch and release only.[118] Boating is prohibited on rivers and creeks except for a 5 miles (8.0Â km) stretch of the Lewis River between Lewis and Shoshone Lake, and it is open to non-motorized use only. Yellowstone Lake has a marina, and the lake is the most popular boating destination.[119]

In the early history of the park, visitors were allowed, and sometimes even encouraged, to feed the bears. The bears had learned to beg for food, and visitors welcomed the chance to get their pictures taken with them. This led to

numerous injuries to humans each year. In 1970, park officials changed their policy and started a vigorous program to educate the public on the dangers of close contact with bears, and to try to eliminate opportunities for bears to find food in campgrounds and trash collection areas. Although it has become more difficult to observe them in recent years, the number of human injuries and deaths has taken a significant drop and visitors are in less danger.[120]

Other protected lands in the region include Caribou-Targhee, Gallatin, Custer, Shoshone and Bridger-Teton National Forests. The National Park Service's John D. Rockefeller, Jr. Memorial Parkway is to the south and leads to Grand Teton National Park. The famed Beartooth Highway provides access from the northeast and has spectacular high altitude scenery. Nearby communities include West Yellowstone, Montana; Cody, Wyoming; Red Lodge, Montana; Ashton, Idaho; and Gardiner, Montana. The closest air transport is available by way of Bozeman, Montana; Billings, Montana; Jackson; Cody, Wyoming, or Idaho Falls, Idaho.[121] Salt Lake City, 320 miles (510 km) to the south, is the closest large metropolitan area.

[edit] Legal jurisdiction

The entire park is within the jurisdiction of the United States District Court for the District of Wyoming, making it the only federal court district that includes portions of more than one state (Idaho, Montana, and Wyoming). Law professor Brian C. Kalt has argued that it may be impossible to impanel a jury in compliance with the Vicinage Clause of the Sixth Amendment for a crime committed solely in the unpopulated Idaho portion of the park (and that it would be difficult to do so for a crime committed solely in the lightly-populated Montana portion).[122] One defendant accused of a wildlife-related crime in the Montana portion of the park attempted to raise this argument.[123] He eventually pleaded guilty.[124]

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[edit] Further reading  
[edit] External links

Flower Drum Song was the eighth musical by the team of Richard Rodgers and Oscar Hammerstein II. It was based on the 1957 novel, *The Flower Drum Song*, by Chinese-American author C. Y. Lee. The piece opened in 1958 on Broadway and was afterwards presented in the West End and on tour. It was subsequently made into a 1961 musical film.

After their extraordinary early successes, beginning with *Oklahoma!* in 1943, Rodgers and Hammerstein had written two musicals in the 1950s that did not do well and sought a new hit to revive their fortunes. Lee's novel focuses on a father, Wang Chi-yang, a wealthy refugee from China, who clings to traditional values in San Francisco's Chinatown. Rodgers and Hammerstein shifted the focus of the musical to his son, Wang Ta, who is torn between his Chinese roots and assimilation into American culture. The team hired Gene Kelly to make his debut as a stage director with the musical and scoured the country for a suitable Asian â ^ or at least, plausibly Asian-looking â ^ cast. The musical, much more light-hearted than Lee's novel, was profitable on Broadway and was followed by a national tour.

After the release of the 1961 film version, the musical was rarely produced, as it presented casting issues and fears that Asian-Americans would take offense at how they are portrayed. When it was put on the stage, lines and songs that might be offensive were often cut. The piece did not return to Broadway until 2002, when a version with a plot by playwright David Henry Hwang (but retaining most of the original songs) was presented after a successful Los Angeles run. Hwang's story retains the Chinatown setting and the inter-generational and immigrant themes, and emphasizes the romantic relationships. It received mostly poor reviews in New York and closed after six months but had a short tour and has since been produced regionally.

[edit] Background

C.Y. Lee fled war-torn China in the 1940s and came to the United States, where he attended Yale University's playwriting program, graduating in 1947 with an M.F.A. degree. By the 1950s, he was barely making a living writing short stories and working as a Chinese teacher, translator and journalist for San Francisco Chinatown newspapers.[1] He had hoped to break into playwriting, but instead wrote a novel about Chinatown, *The Flower Drum Song* (originally titled *Grant Avenue*). Lee initially had no success selling his novel, but his agent submitted it to the publishing house of Farrar, Straus and Cudahy. The firm sent the manuscript to an elderly reader for evaluation. The reader was found dead in bed, the manuscript beside him with the words "Read this" scrawled on it. The publishing house did so, and bought Lee's novel, which became a bestseller in 1957.[2][3]

Lee's novel centers on Wang Chi-yang, a 63-year-old man who fled China to avoid the communists. The wealthy refugee lives in a house in Chinatown with

his two sons. His sister-in-law, Madam Tang, who takes citizenship classes, is a regular visitor and urges Wang to adopt Western ways. While his sons and sister-in-law are integrating into American culture, Wang stubbornly resists assimilation and speaks only two words of English, "Yes" and "No". Wang also has a severe cough, which he does not wish to have cured, feeling that it gives him authority in his household. Wang's elder son, Wang Ta, woos Linda Tung, but on learning that she has many men in her life, drops her; he later learns she is a nightclub dancer. Linda's friend, seamstress Helen Chao, who has been unable to find a man despite the shortage of eligible women in Chinatown, gets Ta drunk and seduces him. On awakening in her bed, he agrees to an affair, but eventually abandons her, and she commits suicide.

Impatient at Ta's inability to find a wife, Wang arranges for a picture bride for his son. However, before the picture bride arrives, Ta meets a young woman, May Li, who with her father has recently come to San Francisco. The two support themselves by singing depressing flower drum songs on the street. Ta invites the two into the Wang household, with his father's approval, and he and May Li fall in love. He vows to marry her after she is falsely accused by the household servants of stealing a clock, though his father forbids it. Wang struggles to understand the conflicts that have torn his household apart; his hostility toward assimilation is isolating him from his family. In the end, taking his son's advice, Wang decides not to go to the herbalist to seek a remedy for his cough, but walks to a Chinese-run Western clinic, symbolizing that he is beginning to accept American culture.[4]

[edit] Genesis of the musical

Rodgers and Hammerstein, despite extraordinary early successes, such as *Oklahoma!*, *Carousel* and *South Pacific*, had suffered back-to-back Broadway flops in the mid-1950s with *Me and Juliet* and *Pipe Dream*. [5] While *Oklahoma!* had broken new ground in 1943, any new project in the late 1950s would have to compete with modern musicals and techniques, like the brutal realism in *West Side Story*, [6] and with other Broadway musical hits such as *The Music Man*, *My Fair Lady* and *The Pajama Game*. [7] Rodgers and Hammerstein had made it their rule to begin work on their next musical as soon as the last opened on Broadway, but by the start of 1957, six months after *Pipe Dream* closed, the pair had no new stage musical in prospect. They had, however, been working since 1956 on the popular television version of *Cinderella*, which was broadcast on CBS on March 31, 1957. [8] Rodgers was still recovering from an operation for cancer in a tooth socket, and he was drinking heavily [9] and suffering from depression. [10] In June 1957, Rodgers checked himself in to Payne Whitney Psychiatric Clinic, and he remained there for twelve weeks. According to his daughters, Mary and Linda, this did not put a stop to his drinking. [11]

Hammerstein, meanwhile, was in Los Angeles at the filming of *South Pacific*. While at the commissary, he met longtime friend, Joe Fields, who mentioned that he was negotiating for the rights to *The Flower Drum Song*. Intrigued by the title, Hammerstein asked for a copy of the novel, and decided that it had potential as a musical â ^ the lyricist described it as "sort of a Chinese Life with Father". Hammerstein consulted with Rodgers, and they agreed to make it their next work, to be written and produced in association with Fields. [12] Hammerstein began work in mid-1958. In July, however, he fell ill and was hospitalized for a month. This forced him to hurry his writing, as the production team had hoped to have the show in rehearsal by the start of September; this was postponed by two weeks. In interviews, however, Hammerstein pointed out that he had, when necessary, written songs for previous shows while in rehearsals for them. [13]

The musical retained Lee's "central theme â ^ a theme coursing through much 20th-century American literature: the conflict between Old World immigrants and their New World offspring". [14] Hammerstein and Fields shifted the focus of the story, however, from the elder Wang, who is central to Lee's novel, to his son Ta. They also removed the darker elements of Lee's work, including Helen Chao's suicide after her desperate fling with Ta, added the festive nightclub subplot and emphasized the romantic elements of the story. [15] According to David Lewis

in his book about the musical, "Mr. Hammerstein and his colleagues were evidently in no mood to write a musical drama or even to invest their comedic approach with dramatic counterpoint of the sort that Jud Fry had given Oklahoma!... [They] took the safest commercial route by following the eldest son's search for love â ^ the most popular theme at the time with Broadway audiences." [15] Lewis notes that Chao's role, though diminished in the musical, nevertheless gives it some of its darkest moments, and she serves much the same purpose as Jud Fry: to be, in Hammerstein's words, "the bass fiddle that gives body to the orchestration of the story". [16] Though the new story was less artistically adventurous than the earlier Rodgers and Hammerstein hits, it was innovative, even daring in its treatment of Asian-Americans, "an ethnic group that had long been harshly caricatured and marginalized in our mainstream pop culture." [14]

[edit] 1958 plot

Act I: Wang Ta, a young Chinese-American man living in his father's house in San Francisco's Chinatown, discusses the problems of finding a wife with his aunt, Madam Liang ("You Are Beautiful") before hurrying off on a blind date. Nightclub owner Sammy Fong arrives with an offer for Ta's immigrant father, Master Wang, a very old-fashioned Chinatown elder. Sammy's picture bride has just arrived from China, illegally, but the shy Mei Li is clearly the wrong girl for Sammy, who already has an assertive girlfriend, a characteristic he likes. Sammy offers to sign the contract over to the Wang family: this would free Sammy from the contract and arrange a suitable wife for Ta. Sammy has taken the liberty of bringing the girl and her father with him; Wang is charmed ("A Hundred Million Miracles") and invites them to live in his home on the understanding that if the proposed marriage falls through, Fong will still be bound to marry Mei Li.

Ta's blind date proves to be the thoroughly Americanized Linda Low, who we will learn is Sammy Fong's girlfriend and a stripper at his club. On the date with Ta ("I Enjoy Being a Girl"), Linda lies to Ta about her career and family. Ta, knowing that Chinese-Americans with college degrees find it hard to get a job befitting their education, plans to go to law school, postponing the likely career struggle by three years. The impetuous Ta asks Linda to marry him. She agrees, but she needs family consent and lies, saying that she has a brother who will approve the marriage. Ta returns home and meets Mei Li, who is immediately attracted to him ("I Am Going to Like It Here"), though Ta is unimpressed. That changes when Ta sees her in a Western dress ("Like a God").

Linda comes to Madam Liang's graduation party from citizenship school with Linda's "brother" (actually the comedian from Sammy's nightclub) and presents herself as Ta's intended, with her "brother" giving his consent for the marriage. The extroverted, Americanized woman is not what Wang has in mind for his elder son, and Wang and Ta argue. Sammy Fong arrives and quickly penetrates Linda's scheme: Linda, frustrated by the five years she has been seeing Sammy, is determined to marry someone, and if Sammy won't step forward, she will settle for Ta. Sammy quickly strikes back by inviting the Wangs, Mei Li and her father to watch the show at his "Celestial Bar" ("Fan Tan Fannie"). Linda does her striptease, realizing too late who is sitting at the best table. Sammy's special guests storm out, except for Ta, who is so humiliated that he does not know what to do. He is led away by childhood friend Helen Chao, a seamstress who fits Linda's costumes for her, and whose love for Ta is unrequited. Linda, goaded beyond endurance when Sammy raises his glass to her, dumps a champagne bucket over his head.

Act II: The drunken Ta spends the night at Helen's apartment ("Ballet"). In the morning, Mei Li delivers Master Wang's coat for Helen to mend and is distressed to see Ta's dinner jacket there. Mei Li jumps to conclusions and leaves horrified. Ta leaves the lonely Helen, totally oblivious to her attempts to interest him. Wang wants the bar and its "evil spirits" shut down; his sister-in-law informs him that free enterprise cannot be shut down, and the two wonder at the foibles of the younger generation ("The Other Generation"). Ta arrives home to admit that his father was right, Mei Li is the girl for him.

But now, Mei Li wants nothing to do with him, and the Lis leave the Wang home. Sammy Fong and Linda decide to get married ("Sunday"), but when he goes to the Three Family Association (a benevolent association)[17] to announce Linda as his bride, he finds Mei Li and her father there, and the elders insist that he honor his betrothal to the immigrant girl.

Ta brings Mei Li a wedding gift of a pair of his mother's earrings that she wore on her wedding day and tries unsuccessfully to hide the fact that he is now deeply in love with her. The wedding procession moves down San Francisco's Grant Avenue with the bride, heavily veiled, carried on a sedan chair ("Wedding Parade"). Sammy drinks from the traditional wedding goblet, then offers the goblet to his new bride. Unveiled, Mei Li confesses to Sammy's mother that she cannot marry Sammy as she is an illegal alien â ^ a tactic she learned by watching American television. The contract is void, and that gives both Sammy and Ta the opportunity to marry their true loves, Linda and Mei Li.

[edit] Casting and tryouts

According to Rodgers biographer Meryle Secrest, Rodgers, Hammerstein and Fields had hoped to engage Yul Brynner as director. Brynner, who had gained fame in the team's 1951 hit, *The King and I*, was an accomplished director. However, he was busy starring in *The Sound and the Fury*, and they could not negotiate his release from Twentieth-Century Fox. Instead, they hired actor and dancer Gene Kelly, who had never directed on stage before. Kelly felt that the work would not be one of Rodgers and Hammerstein's best, but "as long as I crammed the show brim-full of every joke and gimmick in the book, I could get it to work".[18]

The three producers sought Chinese, or at least Asian, actors to fill the cast, an idea that was, at the time, considered "very risky".[14] In the 1950s, there were relatively few Asian-American actors;[19] Rodgers believed that Asians avoided acting because of shyness.[20] Critics note, in any case, that Asian-Americans "had found few opportunities in mainstream theatre." [14] Joshua Logan recommended a young Japanese actress, Miyoshi Umeki, whom he had discovered and cast the previous year opposite Marlon Brando in the film *Sayonara* (for which she won the Best Supporting Actress Oscar); she was cast as Mei Li.[19] They cast Keye Luke, well known as Charlie Chan's Number One Son, as Master Wang.[21] Rodgers and Hammerstein considered young talent from *The King and I* who might fit the parts, and came up with teenager Patrick Adiarte, a Filipino-American who had played several of the young princes as he grew up, before finishing as the crown prince, Chulalongkorn. A talented dancer, he was cast as Wang San, Ta's thoroughly Americanized younger brother.[22] Pat Suzuki, a Japanese-American who had been interned during World War II, was a recent arrival in New York who had made strong positive impressions for her singing on such television programs as *The Tonight Show* (with Jack Paar) and *The Ed Sullivan Show*. She became the first Linda Low, as Ta's nightclub love interest was renamed.[23]

The team found it difficult to fill the remaining places in the company with Asian performers, especially in the chorus. Four other shows with Asian themes had opened or were in rehearsal in New York, and the demand for the few Asian actors was strong.[24] Kelly and the show's choreographer, Carol Haney, journeyed to cities across the country to seek out talent. Agents were sent to other cities; in Honolulu, they found nightclub singer and Native Hawaiian Ed Kenney, who would originate Wang Ta. Meanwhile, in New York, the three producers were visiting dance schools. An advertisement in New York Chinatown newspapers received one response. No formal audition was held in San Francisco's Chinatown, and the only find was Forbidden City nightclub comedian Goro "Jack" Suzuki (who soon changed his name to Jack Soo), who was cast as Frankie Wing, comedian at Sammy Fong's Celestial Bar.[25] The role of Fong proved difficult to cast. Initially, it was given to Larry Storch, a nightclub comic, but during the Boston tryouts, it was given to another Caucasian, Larry Blyden,[21] who was married to Carol Haney, the show's choreographer.[26] The role of Madam Liang, Master Wang's sister-in-law, fell to Juanita Hall, a light-skinned African American who had played a Polynesian, Bloody Mary, in

South Pacific.[27] Another African-American performer, Diahann Carroll, was considered for the cast but not hired.[28] Rodgers later wrote, "what was important was that the actors gave the illusion of being Chinese. This demonstrates one of the most wonderful things about theatre audiences. People want to believe what they see on a stage, and they will gladly go along with whatever is done to achieve the desired effect. Ask them to accept Ezio Pinza as a Frenchman [in South Pacific], Yul Brynner as Siamese and they are prepared to meet you nine tenths of the way even before the curtain goes up." [29]

When rehearsals began in September 1958, Hammerstein was absent, still recuperating from his surgery. Rodgers was present, but kept falling asleep.[20] Hammerstein was told by his son James that Kelly was ineffective as a director, and began attending rehearsals.[30] A number of changes were made to the songs. "My Best Love", a song for Master Wang, was at first thought better suited to his sister-in-law, but when Juanita Hall could not make it work, the song was cut entirely. Rodgers and Hammerstein transformed a song entitled "She Is Beautiful" into "You Are Beautiful". The team decided to include a song for Sammy Fong to explain to Mei Li that they should not wed. In the span of a few hours, they wrote the lyrics and music to "Don't Marry Me".[21] Once the songs were finalized, Robert Russell Bennett, who had orchestrated several of the creators' most successful previous shows, did the same for the score of Flower Drum Song.[31]

The musical opened for tryouts on October 27, 1958 at Boston's Shubert Theatre. The audience gave it an enthusiastic response, causing Rodgers to leave his seat repeatedly and race to the back of the theatre, looking for someone to hug. The Boston critics thought well of the work, stating that after the show was polished, it was likely to be a hit.[32] Shortly after the Boston opening, Fields suffered a heart attack, and, after his release from the hospital, he had to return to New York to recuperate. Author C. Y. Lee, who had quietly watched the rehearsals, recalled that, at the Boston performances, Hammerstein would have a secretary mark on the script any sound of the chairs squeaking, as indicating that the audience was restless. Hammerstein rewrote some of the book to expand the focus from Ta himself to the romantic relationships of the two couples.[33]

[edit] Productions

[edit] Original Broadway production

After the Boston tryouts, Flower Drum Song opened on Broadway at the St. James Theatre on December 1, 1958. Sets were designed by Oliver Smith, costumes by Irene Sharaff and lighting by Peggy Clark.[31]

C.Y. Lee sat in the audience on the first night; he later stated that he had been nervous and was "bowled over" by the positive audience reaction.[2] The show attracted considerable advance sales; even when these were exhausted, sales remained strong and sellouts were the norm. Cast album sales were similar to previous Rodgers and Hammerstein hits.[34] The show received six Tony Award nominations, but won only one Tony (Best Conductor and Musical Director, for Salvatore Dell'Isola). It was overshadowed that year by Redhead, which though it received only slightly better reviews than Flower Drum Song, and had a considerably shorter run, dominated the Tony Awards in the musical categories.[35] Flower Drum Song ran for 600 performances, a longer run than any other musical from the 1958-1959 season - it lasted longer than any of the shows with which it had competed for Asian performers.[36]

Midway through the run, Larry Blyden left the show and was replaced in the role of Sammy Fong by Jack Soo, with Larry Leung assuming the role of Frankie Wing.[36] The production returned \$125,000 profit to its backers on an investment of \$360,000. Attendance began to decline in December 1959, though it continued to draw at above the 70% of capacity level which a Broadway play then needed to meet expenses. With the summer approaching, generally a bad time for attendance, it was decided to close the show, and the last Broadway performance was given on May 7, 1960.[37]

In his autobiography, Rodgers wrote of the effect the success of Flower Drum Song had on his state of mind:

The entire experience of working on Flower Drum Song was rewarding in many ways, not the least of which was that it convinced me that I had overcome all traces of my depression. My only thought was to keep on doing what I was doing, and I saw nothing in the future that could stop me.[29]

[edit] Subsequent productions

The show opened in London's Palace Theatre on March 24, 1960 and ran for 464 performances.[38] Fewer Asian performers were used in London; the West End production starred Yau Shan Tung as Mei Li, Kevin Scott as Ta, George Minami as Wang, Yama Saki as Linda Low, Tim Herbert as Sammy Fong and Ida Shepley as Madam Liang.[31] The production used Haney's choreography, Bennett's orchestrations and the Broadway set and costume designs, but was directed and supervised by Jerome Whyte.[39] Both the production and the London cast album were well received.[40][41]

Following the closure of the Broadway production, a U.S. national tour began on May 10, 1960 in Detroit. Four of the New York leads, Hall, Soo, Kenney and Luke, joined the tour. By this time, Hammerstein was in his final illness (he died in August 1960), and none of the three producers accompanied the show on the road.[42] After three weeks in Detroit, the show moved to Los Angeles, where the premiere attracted a star-studded audience, including three Scandinavian princesses.[43] San Francisco gave the show a rapturous reception when it opened at the Curran Theatre on August 1. Lee and Fields, both present for the local premiere, were given ovations.[44] Geary Street, on which the theatre is located, was decorated with Chinese lanterns, and a marching band of "Chinese girl musicians" played outside.[45] The tour continued to be successful, spending 21½ weeks in Chicago alone. It closed on October 14, 1961 in Cleveland, a month before the film of the musical opened.[31][46]

Lewis calls the 1961 film version of Flower Drum Song, starring Umeki, Soo, Hall and Suzie Wong star Nancy Kwan, "a bizarre pastiche of limping mediocrity". He comments that since the 1958 version of the musical was rarely revived, the film "would in future years come to stand for the stage musical it so crassly misrepresented"[47] and would serve as the version that academics and latter-day theatre critics would judge when they analyzed the musical. The film was the only Hollywood adaptation of a Rodgers and Hammerstein musical to lose money.[48] Nevertheless, it was nominated for five Academy Awards and featured choreography by Hermes Pan.[31] As early as mid-1961, the musical was licensed for local productions. That summer, the San Diego Civic Light Opera filled the 4,324-seat Balboa Park Bowl to overflowing for a highly successful run of the musical.[49] It was less successfully revived by that company five years later; though it still attracted large crowds, local critics complained that Hammerstein's view of Asians was outdated.[50] Other early productions included successful revivals by the St. Louis Municipal Opera in 1961 and 1965[51] and revivals in the San Francisco area in 1963 and 1964, both times with Soo as Sammy Fong.[52]

The musical proved difficult to produce for amateur and school groups, however, because it requires a cast either Asian or made up as Asian. Even professional companies found it difficult to round up an entire cast of Asian singer-dancer-actors.[14] By the late 1960s, the musical was rarely staged,[31] and was often relegated to dinner theater productions.[53] The Rodgers & Hammerstein Organization, which licenses the partnership's works, believes that the work's loss of popularity was due in part to increased racial sensitivity in the U. S. after the civil rights movement.[2] In addition, producers found the show to be thinly plotted, and the songs not integrated as organically with the characters and story, as compared with Rodgers and Hammerstein's most popular musicals.[14]

Flower Drum Song came to be seen by some as stereotypical and patronizing towards Asians, and that it was "inauthentic, even offensive in its relentlessly upbeat picture of a big-city Chinatown".[14] In 1983, the announcement that it would be produced in San Francisco started a furor; the



producers pointedly stated that the show would be set in the 1930s and would have "a greater sensitivity toward the Chinese immigration problems at that time".[54] They added a scene in which Mei Li listens apprehensively to a radio broadcast warning about the dangers to the United States caused by Asian immigration. Many lines of dialogue were cut, and producer Fred Van Patten stated that "[w]hat we've done is cut things in the show that Asians said to make white people laugh." [55] The song "Chop Suey" was deleted, as was Master Wang's line that all white men look alike (based on a line in C. Y. Lee's novel, in which Wang states that all foreigners look alike).[56] The author gave a rare public interview to defend his novel and suggest that by doing such things as eliminating pigtails from the production, the producers were attempting to rewrite history. The show, which had been scheduled for a three-week run, closed early.[57] A well-attended production in Oakland in 1993 adhered strictly to the 1958 script, though part of the ballet was cut for lack of rehearsal time;[58] a more heavily censored 1996 production in San Mateo also did well at the box office.[59]

[edit] 2002 revival

In 1996, while attending the successful revival of *The King and I*, Chinese-American playwright David Henry Hwang considered whether other Rodgers and Hammerstein shows could be revived and decided to work on *Flower Drum Song*. To Chinese Americans, the musical "represented political incorrectness incarnate. But [Hwang] had a secret soft spot for the movie version. 'It was kind of a guilty pleasure ... and one of the only big Hollywood films where you could see a lot of really good Asian actors onscreen, singing and dancing and cracking jokes.'" [14] Ted Chapin, president of the Rodgers & Hammerstein Organization, announced that an unnamed "Asian playwright" had approached him about revising *Flower Drum Song*. [60] Chapin called the musical "a naive, old fashioned, anti-feminist story with a truly great score.Â ... It's one that ... needs changes." [60] Rodgers' will urged his heirs to do what they believed he would have agreed to (Hammerstein's instructions are unknown), but during her lifetime, his widow Dorothy had refused to countenance major changes in the plays. [61] Hwang's involvement was soon revealed, and in 1997, C. Y. Lee announced that the rewrite had his approval. [62]

Hwang was given a free hand with dialogue; he was not allowed to change lyrics. [63] Hwang was inexperienced at writing musicals, and the producers hired veteran Robert Longbottom to direct the production and collaborate on the new script, "really a new musical which has a pre-existing score." [14] Only the character names, the San Francisco Chinatown setting and some of the relationships were retained, but the pair sought to be faithful to the spirit of both Lee's novel and the musical's original concept of old-world and older generation values struggling with new-world temptations and the desires of the younger generation. This concept is reflected in the struggle for survival of Wang's Chinese opera company, as it competes with the more modern, Americanized night club run by Ta. [14] The role of Mei-li (as spelled in the revision) was expanded. The character of Madam Liang was changed "from the wise-owl aunt" to a "savvy career woman" in show business. [14] Chinatown is portrayed as a more gritty and difficult place for new immigrants, and the pursuit of material success is given a more cynical face, especially in Act II. [14] The song "The Other Generation" was deleted; "My Best Love", which had been cut in tryouts in 1958, was restored in its place, and "The Next Time It Happens" was imported from *Pipe Dream*. [64] New orchestrations were by Don Sebesky and music director David Chase. [14] According to *The New York Times*, Hwang "has reshaped the story to elucidate two of his own abiding thematic interests: the idea of the theater as a prism for society and the generational clashes of diversely assimilated immigrants." [65]

In September 2000, after development through a series of workshops, the new version was presented at two well-attended workshops for potential backers. The show failed to raise enough money for an immediate Broadway run, but Hwang hoped that an extended Los Angeles run would lead to raising additional funds. [66] The revival was originally planned for the 2,000-seat Ahmanson

Theatre in Los Angeles, but to save money he moved it to the nearby 739-seat Mark Taper Forum. Producer Gordon Davidson engaged an all-Asian cast, including Broadway star Lea Salonga as Mei-li.[67] When it finally opened on October 14, 2001,[68] the production received rave reviews from the Los Angeles critics.[69] The show regularly sold out and was so popular it became the first show at the Taper to extend its scheduled run. It finally closed on January 13, 2002.[70]

The success of the Los Angeles run sparked sufficient investment to move the show to Broadway.[71] Half the cast was dismissed after the Los Angeles run for unstated reasons. Mary Rodgers later commented that Randall Duk Kim replaced Tzi Ma as Wang because she had admired Kim's performance as the Kralahome in the 1996 revival of *The King and I*, but Kim was unavailable for the Los Angeles run.[72] Hwang considerably altered and trimmed his long script during Broadway rehearsals and previews; "The Next Time It Happens" was removed from the show. During the runup to the Broadway opening, the show received mostly positive publicity.[73]

Opening night at the Virginia Theatre on October 17, 2002 was attended by veterans of the film and 1958 production. Though it received warm applause from the audience, the critics mostly panned it.[74] Attendance was near-capacity during the first month of the run, but then dropped off precipitously. The producers hoped the show could hold out long enough to get a boost from the Tony Awards[75] (though nominated for three, including best book, it won none),[76] but in February, they announced that the show would close on March 16, 2003, after 169 performances. The show's backers lost their entire investment.[75]

The production was directed and choreographed by Longbottom, with scenic design by Robin Wagner, costume design by Gregg Barnes and lighting design by Natasha Katz.[77] Critic Karen Wada, in her afterword to the published script, blamed "the sluggish economy, post-September 11 jitters, the New York Times' mixed review, and unusually bitter winter weather" for the unexpectedly short run.[78] Lee also felt that the influential Times review had hurt the show's acceptance, but commented that Hwang added some dialogue to Act II after the Los Angeles run that Lee felt slowed the show down.[1] The closing was followed by a national tour that garnered mixed reviews, although Hwang stated that it was well received in every city except New York.[79]

Subsequent productions have favored the Hwang script, although the older version remains available for license[80] and has received occasional revivals, including a 2006 staged concert as part of Ian Marshall Fisher's *Lost Musicals* series. A review in London's *The Times* compared this production with "the much grander production of *Show Boat* currently docked at the Albert Hall" and judged that "Flower Drum Song makes the more stimulating experience." [81]

[edit] 2002 plot

Prologue: In 1960, Wu Mei-li, a performer in Chinese opera, flees China with a flower drum after her father dies in prison for defying the Communists ("A Hundred Million Miracles").

Act I: On arrival in the United States, Mei-li goes to the Golden Pearl Theatre in San Francisco's Chinatown, where little-attended Chinese opera is presented by her father's old friend Wang Chi-yang and Wang's foster brother Chin. One night a week, Wang's son Ta turns the theater into a nightclub, starring the very assimilated Linda Low, a Chinese-American stripper from Seattle. Linda's constant companion is a gay costume designer, Harvard (so named by his success-obsessed Chinese parents). The nightclub is profitable; the Chinese opera is not. Mei-li joins the opera company ("I Am Going to Like It Here") and is soon attracted to the indifferent Ta, who favors Linda. Mei-li is fascinated by Linda, who urges her to adopt the American lifestyle ("I Enjoy Being a Girl"). Linda is soon signed by talent agent Rita Liang, who pushes Wang to turn the theater into a club full-time ("Grant Avenue"), and he reluctantly opens Club Chop Suey.

Ta slowly is becoming attracted to Mei-li, who now serves as a waitress, but he has competition from fortune cookie factory worker Chao, whom Mei-li met on

the slow journey from China, and who is rapidly becoming discontented with America. Wang is also unhappy, despite the club's success, and it is no consolation the crowd is having a good time â ^ after all, in the old country, no crowd ever came to his theater expecting to enjoy themselves. Outraged at Harvard's poor acting skills, Wang takes the stage in his place, his stage instincts take over ("Gliding Through My Memories"), and he is soon an enthusiastic supporter of the change, taking the stage name Sammy Fong. Linda advises Mei-li to put on one of her old stripper dresses to attract Ta, but the stratagem backfires, since Ta is attracted to Mei-li because of her wholesomeness. Ta and Mei-li quarrel; she takes her flower drum and leaves Club Chop Suey.

Act II: Several months pass, and Club Chop Suey has become even flashier ("Chop Suey"). Ta can not forget Mei-li, and his uncle Chin (a janitor under the new regime) advises Ta to pursue her ("My Best Love"). He finds her in a fortune cookie factory working alongside Chao. Mei-li tells Ta that she and Chao have decided to return to China together, or at least to Hong Kong, then administered by the British. Meanwhile, Wang now finds himself attracted to Madam Liang, and the two have dinner together, though they decide not to marry ("Don't Marry Me"). They marry anyway.

Linda announces that she is leaving for Los Angeles, as Wang's "Sammy Fong" act has effectively taken over the show, and she has received a better offer. Ta intercepts Mei-li at the docks and persuades her to remain in America; Ta leaves Club Chop Suey and the two become street performers as Chao departs for Hong Kong. Harvard announces his intention to return home and attempt a reconciliation with his disappointed parents. Despite his irritation at Ta, Wang allows him to marry Mei-li at the club (which now features Ta's Chinese opera one day a week), as the company celebrates how Chinese and American cultures have converged to create this happy moment (Finale: "A Hundred Million Miracles").[82]

[edit] Critical reception

[edit] Original productions

Of the seven major New York newspaper drama reviewers, five gave the show very positive reviews. For example, New York Journal American critic John McClain stated, "Flower Drum Song is a big fat Rodgers and Hammerstein hit, and nothing written here will have the slightest effect on the proceeds." [83] The New York Daily Mirror termed it, "Another notable work by the outstanding craftsmen of our musical theatre... a lovely show, an outstanding one in theme and treatment." [84] Less enthusiastic, however, was the longtime New York Times critic, Brooks Atkinson, who repeatedly described it as merely "pleasant." [83] UPI's drama critic, Jack Gaver, scored it as "well north of Me and Juliet and Pipe Dream" but "well south" of Oklahoma!, Carousel, South Pacific and even the team's first flop, Allegro. [85] Ward Morehouse applauded Suzuki for having "a brassy voice and the assurance of a younger Ethel Merman" and termed the production "an excellent Broadway show" though "[p]erhaps it doesn't belong in the same world... as The King and I and Carousel." [86] Critic Kenneth Tynan, in The New Yorker magazine, alluded to the show The World of Suzie Wong in dismissing Flower Drum Song with the spoonerism, "a world of woozy song." [87]

When the national tour of the show visited the city of its setting, most San Francisco reviewers gave the show very positive reviews, though the Oakland Tribune critic described the musical as one "which has little by way of witty dialogue, outstanding songs or vigorous choreography". Nevertheless, she called the touring production superior to the Broadway one. [44]

[edit] 2002 revival

Michael Phillips of the Los Angeles Times called the show "wholly revised and gleefully self-aware... a few tons short of a mega-musical â ^ no fake helicopters here, no power ballads saccharine enough to stop Communism in its tracks." [69] The Hollywood Reporter thought the revival was, "while not perfect, an exhilarating accomplishment." [69] Variety called it "a bold theatrical operation, an artistic success." [69]

Critics reviewing the New York production generally gave it poor

reviews.[88] Ben Brantley of The New York Times applauded the creative team's "honorable intentions" in bringing back a work thought to be "terminally out-of-date", but felt both the new Mei-li and the show around her lacked personality.[65] Howard Kissel of the New York Daily News termed it "an entertaining, albeit vulgar revival", and Clive Barnes of the New York Post found it no more memorable than the earlier version.[88] The review in Talkin' Broadway is scathing, criticizing Hwang's use of the songs and characters, and the orchestrations, and commenting: "Hwang's book lacks much of the charm, warmth, and wit of the original, and never takes the high road where the low road will do. ... Hwang felt it necessary to reduce the original, uniquely colorful story into just another backstageer with a love triangle and lame jokes." [89] Michael Kuchwara commented about Harvard in his lukewarm review for Associated Press: "Then there's Linda Low's gay confidante, Harvard. Talk about stereotypes. If you are going to perpetuate one at least give him better jokes." [88] On the other hand, both USA Today and Time magazine gave it positive reviews. The CurtainUp review was mostly positive and observed that Hwang and Longbottom "were able to keep numbers like 'Chop Suey' and milk it for its razzle-dazzle fun while using its condescending stereotyping as a springboard to satirize attitudes towards Asians." [90] Brantley disagreed, writing, "because the show's satiric point of view is so muddled, there's no verve in such numbers, no joy in the performing of them." [65]

In 2006, David Lewis compared the original script to Hwang's version:

History never completely goes away. Hwang's champions are unlikely to fade away, either, in rhetorical defeat. Dick and Oscar and Joe mined C. Y. Lee's novel for the generational conflict and for the three women who substantiated Ta's honorable search for love. Those themes, like it or not, still resonate today. [91]

[edit] Music and recordings

Rodgers and Hammerstein sought to give the new work an Eastern flavor, without using existing oriental music. [92] According to Ben Brantley in his review of the 2002 Broadway revival, the use by Rodgers "of repetitive Eastern musical structures gives the numbers a sing-song catchiness that, for better or worse, exerts a sticky hold on the memory." [65] The most oriental-sounding song in the work is "A Hundred Million Miracles", which provides the eight-note drumbeat which is the musical signature of the work from overture to curtain. [93] Hammerstein wrote Mei Li's first act song, "I Am Going to Like It Here", in a Malaysian poetic form called pantoum in which the second and fourth lines of each stanza become the first and third lines of the next. [29] [92] One critic thought that the 2001 version's orchestrations "boast more Asian accents and a jazzier edge than the original", [14] but another felt that they "pale in comparison" to Bennett's typically lilting sound. [89]

As with many of Rodgers and Hammerstein's musicals, the work features a ballet at the start of the second act, choreographed in the original production by Carol Haney. [94] The ballet dramatizes the confused romantic longings of Wang Ta towards the women in his life, and ends as he awakens in Helen Chao's bed. [95] Thomas Hischak, in his The Rodgers and Hammerstein Encyclopedia, notes that the ballets in Oklahoma! and Carousel (choreographed by Agnes de Mille) broke new ground in illustrating facets of the characters beyond what is learned in songs and dialogue, but describes the ballet in Flower Drum Song as "pleasant but not memorable". [94] Although Hischak describes Rodgers as "the greatest waltz composer America has ever seen", [96] Flower Drum Song was the first Rodgers and Hammerstein musical not to feature one. [92]

Several of the characters are given "I am" songs that introduce them to the audience, allowing the character to express his dreams or desires and for onlookers to establish empathy with the character. Linda Low, for example, expresses her self-confidence with "I Enjoy Being a Girl"; we learn Mei Li's hopes with the quieter "I Am Going to Like It Here". [97] Although not a formal musical number, the brief "You Be the Rock, I'll Be the Roll", sung and danced

by Linda and by Wang San, Ta's Americanized teenage brother, was described by Lewis as "virtually the first self-consciously rock and roll ditty ever sung" in a Broadway musical.[98] Patrick Adiarte, who originated the role of Wang San, however, saw it as "corny stuff" ... put in there to get a laugh".[98] Helen Chao's sad "Love, Look Away" is described by Lewis as "arguably the most tautly crafted blues song Dick and Oscar ever wrote".[92]

Having decided that record companies were profiting more from the sales of their cast albums than they were, Rodgers and Hammerstein formed their own record company to produce the cast recording for the original production of Flower Drum Song. The album sold a relatively modest 300,000 copies, compared with sales of over a million copies for Rodgers and Hammerstein's next and final musical, The Sound of Music.[99] Still, it was certified as a gold record for having at least a million dollars in sales,[100] and it spent 67 weeks in the U.S. Top 40, three of them at number 1, and also did well in the UK when the show opened there in 1960.[101] The original cast album is relatively complete, even including parts of the Wedding Parade, though it does not include the ballet.[31]

In 1960, the London cast recording was released. According to Hischak, the individual performers do not sing as well as the New York cast; the London recording's strong points are the nightclub numbers. The 1961 album from the film uses a larger orchestra and, according to Hischak, has a fuller sound than the Broadway recording. It features dubbing by the opera singer Marilyn Horne ("Love, Look Away") and band singer B. J. Baker (for Linda Low's songs). A cast album for Hwang's revision was released in 2002 featuring strong performances from Lea Salonga as Mei-li and Jose Llana as Wang Ta. This was nominated for a Grammy,[3][102] though it did not win.[103] Hischak notes that it is unfair to compare the later version with its earlier predecessors, as Hwang's version "has some of the dark corners and richness of a musical play".[31]

[edit] Musical numbers (original version)

Act I[31]

Overture

You Are Beautiful ^ Ta and Madam Liang

A Hundred Million Miracles ^ Mei Li, Dr. Li, Wang, Madam Liang and Liu Ma

I Enjoy Being a Girl ^ Linda and Company

I Am Going to Like It Here ^ Mei Li

Like a God ^ Ta

Chop Suey ^ Madam Liang, Wang and Ensemble

Don't Marry Me ^ Sammy Fong and Mei Li

Grant Avenue ^ Linda and Ensemble

Love, Look Away ^ Helen

Fan Tan Fannie ^ Frankie and Girls

Gliding Through My Memories ^ Frankie and Girls

Finale: Grant Avenue ^ Linda and Girls

Act II[31]

Ballet

Love, Look Away (Reprise) ^ Helen

The Other Generation ^ Madam Liang and Wang

Sunday ^ Linda and Sammy Fong

The Other Generation (Reprise) ^ Wang San and Children

Wedding Parade ^ Mei Li and Dancers

Finale ^ Company

The 2002 revival restored "My Best Love", a song that was cut from the original production, which is sung by Chin. "The Other Generation" was cut from the revival.

The principal casts of major productions of the musical (and of the film) have been as follows:

\*Linda Low's singing voice was dubbed by B. J. Baker, and Chao's "Love, Look Away" was dubbed by Marilyn Horne.

Dashes indicate roles cut from 2002 production. The 2002 production also featured Alvin Ing as Chin, Allen Liu as Harvard and Hoon Lee as Chao.[104]

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[edit] Original Broadway production  
[edit] 2002 Broadway revival  
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^ Block, p. 175

^ Secrest, pp. 334â ^35

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^ a b Secrest, p. 341

^ a b c Nolan, p. 242

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^ Lewis, pp. 41â ^42

^ Lewis, p. 43. The other shows were Rashomon, The World of Suzie Wong, Kabuki, and A Majority of One.

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[edit] External links

Full-length plays

Short plays

Film/television

Music theatre

1000 Airplanes on the Roof (1988, with Glass and Sirlin)

The Voyage (1992, with Glass)

The Silver River (1997, with Sheng)

Aida (2000, with Woolverton & Falls, John and Rice, from Verdi)

Flower Drum Song (2001, with Rodgers and Hammerstein, from Fields, Hammerstein, and Lee)

Ainadamar (2003, with Golijov)

The Sound of a Voice (2003, with Glass)

Tarzan (2006, with Collins, from Burroughs)

Alice in Wonderland (2007, with Chin, from Carroll)

The Fly (2008, with Shore)

The Greater Crested Tern<sup>[2]</sup> (*Thalasseus bergii*), also called Crested Tern or Swift Tern, is a seabird in the tern family which nests in dense colonies on coastlines and islands in the tropical and subtropical Old World. Its five subspecies breed in the area from South Africa around the Indian Ocean to the central Pacific and Australia, all populations dispersing widely from the breeding range after nesting. This large tern is closely related to the Royal and Lesser Crested Terns, but can be distinguished by its size and bill colour.

The Greater Crested Tern has grey upperparts, white underparts, a yellow bill, and a shaggy black crest which recedes in winter. Its young have a distinctive appearance, with strongly patterned grey, brown and white plumage, and rely on their parents for food for several months after they have fledged. Like all members of the genus *Thalasseus*, the Greater Crested Tern feeds by plunge diving for fish, usually in marine environments; the male offers fish to the female as part of the courtship ritual.

This is an adaptable species which has learned to follow fishing boats for jettisoned bycatch, and to utilise unusual nest sites such as the roofs of buildings and artificial islands in salt pans and sewage works. Its eggs and young are taken by gulls and ibises, and human activities such as fishing, shooting and egg harvesting have caused local population declines. There are no global conservation concerns for this bird, which has a stable total population of more than 500,000 individuals.

[edit] Taxonomy

The terns, family Sternidae, are small to medium-sized seabirds closely related to the gulls, skimmers and skuas. They are gull-like in appearance, but typically have a lighter build, long pointed wings (which give them a fast, buoyant flight), a deeply forked tail and short legs. Most species are grey above and white below, and have a black cap which is reduced or flecked with white in the winter.<sup>[3]</sup>

The Greater Crested Tern was originally described as *Sterna bergii* by German naturalist Martin Lichtenstein in 1823, but was moved to its current genus, *Thalasseus*,<sup>[5]</sup> after mitochondrial DNA studies confirmed that the three main head patterns shown by terns (no black cap, black cap, black cap with a white

forehead) corresponded to distinct clades.[6]

The Greater Crested Tern's closest relatives within its genus appear to be the Lesser Crested Tern (*T. bengalensis*), and the Royal Tern, (*T. maximus*).[6] The DNA study did not include the critically endangered Chinese Crested Tern (*T. bernsteini*), but as that bird was formerly considered to be conspecific with the Greater Crested Tern as a synonym of the subspecies *T. b. cristatus*, it is presumably also very closely related.[7]

The genus name of the Greater Crested Tern is derived from Greek *Thalassa*, "sea", and the species epithet *bergii* commemorates Carl Heinrich Bergius, a Prussian pharmacist and botanist who collected the first specimens of this tern near Cape Town.[8]

The Greater Crested Tern has about five geographical races, differing mainly in the colour of the upperparts and bill. These are listed below in taxonomic sequence. A similar number of other potential subspecies have been proposed, but are not considered valid.[9]

Subspecies[10]

Breeding range

Distinctive features

Population estimates

*T. b. bergii*[11]

(Lichtenstein, 1823)

Coasts of South Africa and Namibia

Dark grey above, slightly larger than *thalassina*, least white on head[12]

20,000 individuals (inc 6,336 breeding pairs in South Africa and up to 1,682 pairs in Namibia)[13]

*T. b. enigma*[11][14]

(Clancey, 1979)

Zambezi delta, Mozambique, south to Durban, South Africa

Palest subspecies[9]

8,000–10,000 individuals in Madagascar and Mozambique[13]

*T. b. cristata*[12]

(Stephens, 1826)

Eastern Indian Ocean, Australia and western Pacific Ocean

Like *bergii*, with tail, rump and back concolorous. paler in Australia

500,000+ individuals in Australia[9]

*T. b. thalassina*[12]

(Stresemann, 1914)

Western Indian Ocean

Small and pale, larger and less pale in south of range

2,550–4,500 individuals in Eastern Africa and Seychelles[13]

*T. b. velox*[12]

(Cretzschmar, 1827)

Red Sea, Persian Gulf, northern Indian Ocean

Largest, heaviest, darkest and longest-billed subspecies

33,000 in Middle East (inc 4,000 pairs Oman and 3,500 pairs on islands off Saudi Arabia)[9]

[edit] Description

The Greater Crested Tern is a large tern with a long (5.4–6.5 cm, 2.1–2.6 in) yellow bill, black legs, and a glossy black crest which is noticeably shaggy at its rear. The breeding adult of the nominate subspecies *T. b. bergii* is 46–49 cm (18–19 in) long, with a 125–130 cm (49–51 in) wing-span; this subspecies weighs 325–397 g (11.4–14.0 oz).[12] The forehead and the underparts are white, the back and inner wings are dusky-grey. In winter, the upperparts plumage wears to a paler grey, and the crown of the head becomes white, merging at the rear into a peppered black crest and mask.[15]

The adults of both sexes are identical in appearance, but juvenile birds are distinctive, with a head pattern like the winter adult, and upperparts strongly patterned in grey, brown, and white; the closed wings appear to have dark bars. After moulting, the young terns resemble the adult, but still have a variegated wing pattern with a dark bar on the inner flight feathers.[12]

The northern subspecies *T. b. velox* and *T. b. thalassina* are in breeding plumage from May to September or October, whereas the relevant period for the two southern African races is from December to April. For *T. b. cristata*, the moult timing depends on location; birds from Australia and Oceania are in breeding plumage from September to about April, but those in Thailand, China and Sulawesi have this appearance from February to June or July.[12]

The Royal Tern is similar in size to this species, but has a heavier build, broader wings, a paler back and a blunter, more orange bill. The Greater Crested often associates with the Lesser Crested Tern, but is 25% larger than the latter, with a proportionately longer bill, longer and heavier head, and bulkier body.[15] Lesser Crested Tern has an orange-tinted bill, and in immature plumage it is much less variegated than Greater Crested.[11]

The Greater Crested Tern is highly vocal, especially at its breeding grounds. The territorial advertising call is a loud, raucous, crow-like kerrak. Other calls include a korrkorrkorr given at the nest by anxious or excited birds, and a hard wep wep in flight.[15]

[edit] Distribution and habitat

The Greater Crested Tern occurs in tropical and warm temperate coastal parts of the Old World from South Africa around the Indian Ocean to the Pacific and Australia. The subspecies *T. b. bergii* and *T. b. enigma* breed in Southern Africa from Namibia to Tanzania, and possibly on islands around Madagascar. There is then a break in the breeding distribution of this species until Somalia and the Red Sea, and another discontinuity further east in southern India.[9]

The Greater Crested Tern breeds on many islands in the Indian Ocean including Aldabra and Etoile in the Seychelles, the Chagos Archipelago, and Rodrigues.[16] There are colonies on numerous Pacific islands, including Kiribati, Fiji, Tonga, the Society Islands and the Tuamotus.[17]

The nests are located on low-lying sandy, rocky, or coral islands, sometimes amongst stunted shrubs, often without any shelter at all.[15] When not breeding, the Greater Crested Tern will roost or rest on open shores, less often on boats, pilings, harbour buildings and raised salt mounds in lagoons. It is rarely seen on tidal creeks or inland waters.[13]

All populations of Greater Crested Tern disperse after breeding. When Southern African birds leave colonies in Namibia and Western Cape Province, most adults move east to the Indian Ocean coastline of South Africa. Many young birds also travel east, sometimes more than 2,000 km (1,200 mi), but others move northwards along the western coast. *T. b. thalassina* winters on the east African coast north to Kenya and Somalia and may move as far south as Durban. Populations of *T. b. velox* breeding from the Persian Gulf eastwards appear to be sedentary or dispersive rather than truly migratory, but those breeding in the Red Sea winter south along the east African coast to Kenya.[13] *T. b. cristata* mostly stays within 400 km (260 mi) of its colonies, but some birds wander up to around 1,000 km (600 mi).[18] This species has occurred as a vagrant to Hawaii,[19] New Zealand,[20][21] North Korea,[20] Jordan,[20] and Israel.[15]

[edit] Behaviour

[edit] Breeding

The Greater Crested Tern breeds in colonies, often in association with other seabirds. It is monogamous and the pair bond is maintained through the year and sometimes in consecutive breeding seasons.[22] The colony size is related to the abundance of pelagic fish prey,[13] and the largest documented colony, with 13,000 to 15,000 pairs, is in the Gulf of Carpentaria in northern Australia, a region which also supports major colonies of other seabirds. Since nesting in this area follows the summer monsoonal flooding, it is presumably a response to fish stocks rising, probably due to river run-off providing extra nutrient to the Gulf.[23] This tern does not show site fidelity, frequently changing its nest site from year to year,[15] sometimes by more than 200 km (130 mi).[18]

A male Greater Crested Tern establishes a small area of the colony in preparation for nesting, and initially pecks at any other tern entering his

territory. If the intruder is another male, it retaliates in kind, and is normally vigorously repelled by the incumbent. A female entering the nest area reacts passively to the male's aggression, enabling him to recognise her sex and initiate pair formation by display, including head raising and bowing; this behaviour is frequently repeated during nesting to reinforce the bond between the pair. Terns also use fish as part of the courtship ritual. One bird flies around the colony with a fish in its beak, calling loudly; its partner may also fly, but the pair eventually settle and the gift is exchanged.[24]

The nest is a shallow scrape in the sand on open, flat or occasionally sloping ground. It is often unlined, but sometimes includes stones or cuttlefish bones. One, sometimes two, eggs are laid and incubated by both parents for 25 to 30 days prior to hatching.[13] The eggs are cream with blackish streaks.[25] Egg laying is synchronised within a breeding colony[26] and more tightly so within sub-colonies.[27] Parents do not recognize their own eggs or newly hatched chicks, but are able to distinguish their chicks by the time they are two days-old, shortly before they begin to wander from the nest.[28] The precocial chicks, which are very pale with black speckling, are brooded and fed by both parents, but may gather in crÃ"ches when older. The young terns fledge after 38 to 40 days, but remain dependent on the parents after leaving the colony until they are about four months old.[13]

In South Africa, this species has adapted to breeding on the roofs of building, sometimes with Hartlaub's Gull, which also shares the more typical nesting sites of the nominate race. In 2000, 7.5% of the population of this subspecies bred on roofs.[29] Artificial islands in salt pans and sewage works have also recently been colonised by this adaptable seabird.[9]

Adult terns have few predators, but in Namibia immature birds are often robbed of their food by Kelp Gulls, and that species, along with Hartlaub's Gull, Silver Gull and Sacred Ibis, has been observed feeding on eggs or nestlings, especially when colonies are disturbed.[9][30] Smaller subcolonies with a relatively larger numbers of nests located on the perimeter are subject to more predation.[27] In Australia, predation by cats and dogs, and occasional deaths by shooting or collisions with cars, wires or light-towers have been documented.[8]

Commercial fisheries can have both positive and negative effects on the Greater Crested Tern. Juvenile survival rates are improved where trawler discards provide extra food, and huge population increases in the southeastern Gulf of Carpentaria are thought to have been due to the development of a large prawn trawl fishery.[31] Conversely, purse-seine fishing reduces the available food supply, and sizeable fluctuations in the numbers of Great Crested Terns breeding in the Western Cape of South Africa are significantly related to changes in the abundance of pelagic fish, which are intensively exploited by purse-seine fishing.[30] Terns may be killed or injured by collisions with trawl warps, trapped in trawls or discarded gear, or hooked by longline fishing, but, unlike albatrosses and petrels, there is little evidence that overall numbers are significantly affected.[13]

An unusual incident was the incapacitation of 103 terns off Robben Island, South Africa by marine foam, generated by a combination of wave action, kelp mucilage and phytoplankton. After treatment, 90% of the birds were fit to be released.[32]

#### [edit] Feeding

Fish are the main food of the Greater Crested Tern, found to make up nearly 90% of all prey items with the remainder including cephalopods, crustaceans and insects.[13] Unusual vertebrate prey included agamid lizards and green turtle hatchlings.[31]

The Great Crested Tern feeds mostly at sea by plunge diving to a depth of up to 1 m (3 ft), or by dipping from the surface, and food is usually swallowed in mid-air. Birds may forage up to 10 km (6 mi) from land in the breeding season. Prey size ranges from 7 to 138 mm (0.27 to 5.4 in) in length and up to 30 g (1.1 oz) in weight. Shoaling pelagic fish such as anchovy and sardine are typical prey,[13] but bottom-living species are taken as discards from commercial

fishing. This tern actively follows trawlers, including at night, and during the fishing season trawl discards can constitute 70% of its diet.[31] Prawn fishing is particularly productive in providing extra food, since prawns usually represent only 10–20% of the catch, the remaining being bycatch, mainly fish such as cardinalfish and gobies.[31]

A study of an area of the Great Barrier Reef where the number of breeding Great Crested Terns has grown ten-fold, probably due to extra food from trawl by-catch, suggested that Lesser Crested and Sooty Terns have moved away and now breed on a part of the reef where fishing is banned. It is possible that the large increase in the number of Greater Crested Terns may have affected other species through competition for food and nesting sites.[33]

Terns have red oil droplets in the cone cells of the retinas of their eyes. This improves contrast and sharpens distance vision, especially in hazy conditions.[34] Birds that have to see through an air/water interface, such as terns and gulls, have more strongly coloured carotenoid pigments in the cone oil drops than other avian species.[35] The improved eyesight helps terns to locate shoals of fish, although it is uncertain whether they are sighting the phytoplankton on which the fish feed, or observing other terns diving for food.[36] Tern's eyes are not particularly ultraviolet sensitive, an adaptation more suited to terrestrial feeders like the gulls.[37]

[edit] Status

The Greater Crested Tern has a widespread distribution range, estimated at 1–10 million square kilometres (0.4–3.8 million square miles). The population has not been quantified, but it is not believed to approach the thresholds for either the size criterion (fewer than 10,000 mature individuals) or the population decline criterion (declining more than 30% in ten years or three generations) of the IUCN Red List. For these reasons, the species is evaluated as being of Least Concern at the global level.[1] However, there are concerns for populations in some areas such as the Gulf of Thailand where the species no longer breeds, and in Indonesia where egg harvesting has caused declines.[9]

All subspecies except *T. b. cristata* are covered under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA).[38] Parties to the Agreement are required to engage in a wide range of conservation strategies described in a detailed action plan. The plan is intended to address key issues such as species and habitat conservation, management of human activities, research, education, and implementation.[39]

<sup>a b</sup> BirdLife International (2009). "*Sterna bergii*". IUCN Red List of Threatened Species. Version 2009.1. International Union for Conservation of Nature. <http://www.iucnredlist.org/apps/redlist/details/144240>. Retrieved 6 October 2010.

<sup>a</sup> Gill, F; Donsker D (eds). "IOC World Bird Names (v 2.11)". International Ornithologists' Union. <http://www.worldbirdnames.org/n-shorebirds.html>. Retrieved 28 February 2012

<sup>a</sup> Snow & Perrin (1998) 764

<sup>a</sup> Adapted from Bridge et al. (2005). This study did not include the Chinese Crested Tern

<sup>a</sup> This genus had originally been created by Heinrich Boie in 1822, but had been abandoned until the Bridge (2005) study confirmed the need for a separate genus for the crested terns.

<sup>a b</sup> Bridge, Eli S.; Jones, Andrew W. & Baker, Allan J. (2005). "A phylogenetic framework for the terns (Sternini) inferred from mtDNA sequences: implications for taxonomy and plumage evolution" (PDF). *Molecular Phylogenetics and Evolution* 35 (2): 459–469. doi:10.1016/j.ympev.2004.12.010. PMID 15804415. <http://www.cmnh.org/site/Files/Ornithology/MPETerns.pdf>.

<sup>a</sup> (Dutch) Mees, G. F. (1975). "Identiteit en status van *Sterna bernsteini* Schlegel". *Ardea* 63: 78–86.

<sup>a b</sup> Higgins & Davies (1996) 605–609

<sup>a b c d e f g h</sup> Del Hoyo et al. (1996) 648

<sup>a</sup> Parentheses indicate originally described under a different name

^ a b c Harrison (1988) 383

^ a b c d e f g Olsen & Larsson (1995) 35â ^42

^ a b c d e f g h i j k Cooper (2006) 760â ^764

^ Not considered by Olsen & Larsson (1995)

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#### [edit] External links

Funerary art is any work of art forming, or placed in, a repository for the remains of the dead. Tomb is a general term for the repository, while grave goods are objects other than the primary human remains which have been placed inside.[1] Such objects may include the personal possessions of the deceased, objects specially created for the burial, or miniature versions of things believed to be needed in an afterlife. Knowledge of many non-literate cultures is drawn largely from these sources.

Funerary art may serve many cultural functions. It can play a role in burial rites, serve as an article for use by the dead in the afterlife, and celebrate the life and accomplishments of the dead, whether as part of kinship-centred practices of ancestor veneration or as a publicly directed dynastic display. It can also function as a reminder of the mortality of humankind, as an expression of cultural values and roles, and help to propitiate the spirits of the dead, maintaining their benevolence and preventing their unwelcome intrusion into the affairs of the living.

The deposit of objects with an apparent aesthetic intention may go back to the Neanderthals over 50,000 years ago,[2] and is found in almost all subsequent cultures Hindu culture, which has little, is a notable exception. Many of the best-known artistic creations of past cultures from the Egyptian pyramids and the Tutankhamun treasure to the Terracotta Army surrounding the tomb of the Qin Emperor, the Mausoleum of Halicarnassus, the Sutton Hoo ship burial and the Taj

Mahalâ ~are tombs or objects found in and around them. In most instances, specialized funeral art was produced for the powerful and wealthy, although the burials of ordinary people might include simple monuments and grave goods, usually from their possessions.

An important factor in the development of traditions of funerary art is the division between what was intended to be visible to visitors or the public after completion of the funeral ceremonies.[3] The Tutankhamun treasure, for example, though exceptionally lavish, was never intended to be seen again after it was deposited, while the exterior of the pyramids was a permanent and highly effective demonstration of the power of their creators. A similar division can be seen in grand East Asian tombs. In other cultures, nearly all the art connected with the burial, except for limited grave goods, was intended for later viewing by the public or at least those admitted by the custodians. In these cultures, traditions such as the sculpted sarcophagus and tomb monument of the Greek and Roman empires, and later the Christian world, have flourished. The mausoleum intended for visiting was the grandest type of tomb in the classical world, and later common in Islamic culture.

[edit] Common terms

A tumulus, mound, kurgan, or long barrow covered important burials in many cultures, and the body may be placed in a sarcophagus, usually of stone, or a coffin, usually of wood. A mausoleum is a building erected mainly as a tomb, taking its name from the Mausoleum of Mausolus at Halicarnassus. Stele is a term for erect stones that are often what are now called gravestones. Ship burials are mostly found in coastal Europe, while chariot burials are found widely across Eurasia. Catacombs, of which the most famous examples are those in Rome and Alexandria, are underground cemeteries connected by tunnelled passages. A large group of burials with traces remaining above ground can be called a necropolis; if there are no such visible structures, it is a grave field. A cenotaph is a memorial without a burial.[4]

Related genres of commemorative art for the dead take many forms, such as the moai figures of Easter Island, apparently a type of sculpted ancestor portrait, though hardly individualized.[5] These are common in cultures as diverse as Ancient Rome and China, in both of which they are kept in the houses of the descendants, rather than being buried.[6] Many cultures have psychopomp figures, such as the Greek Hermes and Etruscan Charun, who help conduct the spirits of the dead into the afterlife.

[edit] History

[edit] Pre-history

Most of humanity's oldest known archaeological constructions are tombs.[7] Mostly megalithic, the earliest instances date to within a few centuries of each other, yet show a wide diversity of form and purpose. Tombs in the Iberian peninsula have been dated through thermoluminescence to c. 4510Â BCE, and some burials at the Carnac stones in Brittany also date back to the fifth millennium BCE.[8] The commemorative value of such burial sites are indicated by the fact that, at some stage, they became elevated, and that the constructs, almost from the earliest, sought to be monumental. This effect was often achieved by encapsulating a single corpse in a basic pit, surrounded by an elaborate ditch and drain. Over-ground commemoration is thought to be tied to the concept of collective memory, and these early tombs were likely intended as a form of ancestor-worship, a development available only to communities that had advanced to the stage of settled livestock and formed social roles and relationships and specialized sectors of activity.[9]

In Neolithic and Bronze Age societies, a great variety of tombs are found, with tumulus mounds, megaliths, and pottery as recurrent elements. In Eurasia, a dolmen is the exposed stone framework for a chamber tomb originally covered by earth to make a mound which no longer exists. Stones may be carved with geometric patterns (petroglyphs), for example cup and ring marks. Group tombs were made, the social context of which is hard to decipher. Urn burials, where bones are buried in a pottery container, either in a more elaborate tomb, or by themselves, are widespread, by no means restricted to the Urnfield culture



which is named after them, or even to Eurasia. Menhirs, or "standing stones", seem often to mark graves or serve as memorials,[10] while the later runestones and image stones often are cenotaphs, or memorials apart from the grave itself; these continue into the Christian period. The Senegambian stone circles are a later African form of tomb markers.[11]

[edit] Ancient Egypt and Nubia

Egyptian funerary art was inseparably connected to the religious belief that life continued after death â ^ even more, it expressed a belief that "death is a mere phase of life".[12] Aesthetic objects and images connected with this belief were partially intended to preserve material goods, wealth and status for the journey between this life and the next,[13] and to "commemorate the life of the tomb ownerÂ ... depict performance of the burial rites, and in general present an environment that would be conducive to the tomb owner's rebirth." [14] In this context, Egyptian mummies encased in one or more layers of decorated coffin, are famous; canopic jars preserved the internal organs. A special category of Ancient Egyptian funerary texts clarify the purposes of the burial customs. The early mastaba type of tomb had a sealed underground burial chamber but an offering-chamber on the ground level for visits by the living, a pattern repeated in later types of tomb. A Ka statue effigy of the deceased might be walled up in a serdab connected to the offering chamber by vents that allowed the smell of incense to reach the effigy.[15] The walls of important tomb-chambers and offering chambers were heavily decorated with reliefs in stone or sometimes wood, or paintings, depicting religious scenes, portraits of the deceased, and at some periods vivid images of everyday life, depicting the afterlife. The chamber decoration usually centred on a "false door", through which only the soul of the deceased could pass, to received the offerings left by the living.[16]

Representational art, such as individual portraiture of the deceased, is found extremely early on and continues into the Roman period in the encaustic Faiyum funerary portraits applied to coffins. However, it is still hotly debated whether there was realistic portraiture in Ancient Egypt.[17] The purpose of the life-sized reserve heads found in burial shafts or tombs of nobles of the Fourth dynasty is not well understood; they may have been a discreet method of eliding an edict by Khufu forbidding nobles from creating statues of themselves, or may have protected the deceased's spirit from harm or magically eliminated any evil in it, or perhaps functioned as alternate containers for the spirit if the body should be harmed in any way.[18]

Architectural works such as the massive Great Pyramid and two smaller ones built during the Old Kingdom in the Giza Necropolis and (much later, from about 1500Â BCE) the tombs in the Valley of the Kings were built for royalty and the elite. The Theban Necropolis was later an important site for mortuary temples and mastaba tombs. The Kushite kings who conquered Egypt and ruled as pharaohs during the Twenty-fifth dynasty were greatly influenced by Egyptian funerary customs, employing mummification, canopic jars and ushabti funerary figurines. They also built the Nubian pyramids, which in both size and design more closely resemble the smaller Seventeenth dynasty pyramids at Thebes than those of the Old Kingdom near Memphis.[19]

Lower-class citizens used common forms of funerary artâ ~including shabti figurines (to perform any labor that might be required of the dead person in the afterlife), models of the scarab beetle and books of the deadâ ~which they believed would protect them in the afterlife.[20] During the Middle Kingdom, miniature wooden or clay models depicting scenes from everyday life became popular additions to tombs. In an attempt to duplicate the activities of the living in the afterlife, these models show laborers, houses, boats and even military formations which are scale representations of the ideal ancient Egyptian afterlife.[21]

[edit] Ancient Greece

The ancient Greeks did not generally leave elaborate grave goods, except for a coin to pay Charon, the ferryman to Hades, and pottery; however the epitaphios or funeral orationÂ from which the word epitaph comesÂ was regarded as of great

importance, and animal sacrifices were made. Those who could afford them erected stone monuments, which was one of the functions of kouros statues in the Archaic period before about 500Â BCE. These were not intended as portraits, but during the Hellenistic period, realistic portraiture of the deceased was introduced and family groups were often depicted in bas-relief on monuments, usually surrounded by an architectural frame.[22] The walls of tomb chambers were often painted in fresco, although few examples have survived in as good condition as the Tomb of the Diver from southern Italy or the tombs at Vergina in Macedon. Almost the only surviving painted portraits in the classical Greek tradition are found in Egypt rather than Greece. The Fayum mummy portraits, from the very end of the classical period, were portrait faces, in a Graeco-Roman style, attached to mummies.[23]

Early Greek burials were frequently marked above ground by a large piece of pottery, and remains were also buried in urns. Pottery continued to be used extensively inside tombs and graves throughout the classical period.[24] The larnax is a small coffin or ash-chest, usually of decorated terracotta. The two-handled loutrophoros was primarily associated with weddings, as it was used to carry water for the nuptial bath. However, it was also placed in the tombs of the unmarried, "presumably to make up in some way for what they had missed in life." [25] The one-handled lekythos had many household uses, but outside the household, its principal use was the decoration of tombs.[26] Scenes of a descent to the underworld of Hades were often painted on these, with the dead depicted beside Hermes, Charon or bothâ ~though usually only with Charon.[27] Small pottery figurines are often found, though it is hard to decide if these were made especially for placement in tombs; in the case of the Hellenistic Tanagra figurines, this seems probably not the case.[28] But silverware is more often found around the fringes of the Greek world, as in the royal Macedonian tombs of Vergina, or in the neighbouring cultures such as those of Thrace or the Scythians.[29]

The extension of the Greek world after the conquests of Alexander the Great brought peoples with different tomb-making traditions into the Hellenistic sphere, resulting in new formats for art in Greek styles.[30] A generation before Alexander, Mausolus was a Hellenized satrap or semi-independent ruler under the Persian Empire, whose enormous tomb (begun 353Â BCE) was wholly exceptional in the Greek world â ^ together with the Pyramids it was the only tomb to be included in the Seven Wonders of the Ancient World. The exact form of the Mausoleum of Halicarnassus, which gave the name to the form, is now unclear, and there are several alternative reconstructions that seek to reconcile the archaeological evidence with descriptions in literature.[31] It had the size and some elements of the design of the Greek temple, but was much more vertical, with a square base and a pyramidal roof. There were quantities of large sculpture, of which most of the few surviving pieces are now in the British Museum.[32] Other local rulers adapted the high-relief temple frieze for very large sarcophagi, starting a tradition which was to exert a great influence on Western art up to 18th century Neo-Classicism. The late 4th century Alexander Sarcophagus was in fact made for another Hellenized Eastern ruler, one of a number of important sarcophagi found at Sidon in the modern Lebanon. The two long sides show Alexander's great victory at the Battle of Issus and a lion hunt; such violent scenes were common on ostentatious classical sarcophagi from this period onwards, with a particular revival in Roman art of the 2nd century. More peaceful mythological scenes were popular on smaller sarcophagi, especially of Bacchus.[33]

[edit] Etruscans

Objects connected with death, in particular sarcophagi and cinerary urns, form the basis of much of current knowledge of the ancient Etruscan civilization and its art, which once competed with the culture of ancient Rome, but was eventually absorbed into it.[34] The sarcophagi and the lids of the urns often incorporate a reclining image of the deceased. The reclining figures in some Etruscan funerary art are shown using the *mano cornuta* to protect the grave.[35]

The motif of the funerary art of the 7th and 6th centuriesÂ BCE was typically a feasting scene, sometimes with dancers and musicians, or athletic competitions. Household bowls, cups, and pitchers are sometimes found in the graves, along with food such as eggs, pomegranates, honey, grapes and olives for use in the afterlife.[36][37] From the 5th century, the mood changed to more somber and gruesome scenes of parting, where the deceased are shown leaving their loved ones,[38] often surrounded by underworld demons, and psychopomps, such as Charon or the winged female Vanth. The underworld figures are sometimes depicted as gesturing impatiently for a human to be taken away.[39] The handshake was another common motif, as the dead took leave of the living.[39] This often took place in front of or near a closed double doorway, presumably the portal to the underworld. Evidence in some art, however, suggests that the "handshake took place at the other end of the journey, and represents the dead being greeted in the Underworld".[39]

[edit] Ancient Rome

The burial customs of the ancient Romans were influenced by both of the first significant cultures whose territories they conquered as their state expanded, namely the Greeks of Magna Graecia and the Etruscans.[40] The original Roman custom was cremation, after which the burnt remains were kept in a pot, ash-chest or urn, often in a columbarium; pre-Roman burials around Rome often used hut-urnsâ ~little pottery houses.[41] From about the 2nd centuryÂ CE, inhumation (burial of unburnt remains) in sarcophagi, often elaborately carved, became more fashionable for those who could afford it.[42] Greek-style medallion portrait sculptures on a stela, or small mausoleum for the rich, housing either an urn or sarcophagus, were often placed in a location such as a roadside, where it would be very visible to the living and perpetuate the memory of the dead. Often a couple are shown, signifying a longing for reunion in the afterlife rather than a double burial.[43]

In later periods, life-size sculptures of the deceased reclining as though at a meal or social gathering are found, a common Etruscan style. Family tombs for the grandest late Roman families, like the Tomb of the Scipios, were large mausoleums with facilities for visits by the living, including kitchens and bedrooms. The Castel Sant'Angelo, built for Hadrian, was later converted into a fortress. Compared to the Etruscans, though, there was less emphasis on provision of a lifestyle for the deceased, although paintings of useful objects or pleasant activities, like hunting, are seen.[44] Ancestor portraits, usually in the form of wax masks, were kept in the home, apparently often in little cupboards,[45] although grand patrician families kept theirs on display in the atrium. They were worn in the funeral processions of members of the family by persons wearing appropriate costume for the figure represented, as described by Pliny the Elder and Polybius. Pliny also describes the custom of having a bust-portrait of an ancestor painted on a round bronze shield (clipeus), and having it hung in a temple or other public place. No examples of either type have survived.[46]

By the late Republic there was considerable competition among wealthy Romans for the best locations for tombs, which lined all the approach roads to the city up to the walls, and a variety of exotic and unusual designs sought to catch the attention of the passer-by and so perpetuate the memory of the deceased and increase the prestige of their family. Examples include the Tomb of Eurysaces the Baker, a freedman, the Pyramid of Cestius, and the Mausoleum of Caecilia Metella, all built within a few decades of the start of the Common Era.[47]

In Italy, sarcophagi were mostly intended to be set against the wall of the tomb, and only decorated on three sides, in contrast to the free-standing styles of Greece and the Eastern Empire. The relief scenes of Hellenistic art became even more densely crowded in later Roman sarcophagi, as for example in the 2nd century Portonaccio sarcophagus, and various styles and forms emerged, such as the columnar type with an "architectural background of columns and niches for its figures".[48] A well-known Early Christian example is the Sarcophagus of Junius Bassus, used for an important new convert who died in

359. Many sarcophagi from leading centres were exported around the Empire.[49] The Romans had already developed the expression of religious and philosophical ideas in narrative scenes from Greek mythology, treated allegorically;[50] they later transferred this habit to Christian ideas, using biblical scenes.[51]

Funerary art varied greatly across Chinese history. Tombs of early rulers rival the ancient Egyptians for complexity and value of grave goods, and have been similarly pillaged over the centuries by tomb robbers. For a long time, literary references to jade burial suits were regarded by scholars as fanciful myths, but a number of examples were excavated in the 20th century, and it is now believed that they were relatively common among early rulers. Knowledge of pre-dynastic Chinese culture has been expanded by spectacular discoveries at Sanxingdui and other sites. Very large tumuli could be erected, and later, mausoleums. Several special large shapes of Shang dynasty bronze ritual vessels may have been made for burial only; the Tomb of Fu Hao (c. BCE 1200) is one of the few undisturbed royal tombs of the period to have been excavated. Most funerary art has appeared on the art market without archaeological context.[52]

The discovery in 1974 of the Terracotta army located the tomb of the First Qin Emperor (died 210 BCE), but the main tumulus, of which literary descriptions survive, has not been excavated. Remains surviving above ground from several imperial tombs of the Han dynasty show traditions maintained until the end of imperial rule. The tomb itself is an "underground palace" beneath a sealed tumulus surrounded by a wall, with several buildings set at some distance away down avenues for the observation of rites of veneration, and the accommodation of both permanent staff and those visiting to perform rites, as well as gateways, towers and other buildings.

Chinese imperial tombs are typically approached by a "spirit road", sometimes several kilometres long, lined by statues of guardian figures, based on both humans and animals. A tablet extolling the virtues of the deceased, mounted on a stone tortoise (bixi) is often the centerpiece of the ensemble. In Han tombs the guardian figures are mainly of "lions" and "chimeras"; in later periods they are much more varied.[53] A looted tomb with fine paintings is the Empress Dowager Wenming tomb of the 5th century CE, and the many tombs of the 7th century Tang dynasty Qianling Mausoleum group are an early example of a generally well-preserved ensemble.[54]

The complex of Goguryeo Tombs, from a kingdom of the 5th to 7th centuries which included modern Korea, are especially rich in paintings. Only one of the Imperial Tombs of the Ming and Qing Dynasties has been excavated, in 1956, with such disastrous results for the conservation of the thousands of objects found, that the current policy is to leave them undisturbed.[55]

The Lei Cheng Uk Han Tomb Museum in Hong Kong displays a far humbler middle-class Han dynasty tomb, and the mid-2nd century Wu Family tombs of Jiaxiang County, Shandong are the most important group of commoner tombs for funerary stones.[56] The walls of both the offering and burial chambers of tombs of commoners from the Han period may be decorated with stone slabs carved or engraved in very low relief with crowded and varied scenes, which are now the main indication of the style of the lost palace frescoes of the period. A cheaper option was to use large clay tiles which were carved or impressed before firing.[57] After the introduction of Buddhism, carved "funerary couches" featured similar scenes, now mostly religious.[58] During the Han Dynasty, miniature ceramic models of buildings were often made to accompany the deceased in the graves; to them is owed much of what is known of ancient Chinese architecture. Later, during the Six Dynasties, sculptural miniatures depicting buildings, monuments, people and animals adorned the tops of the hunping funerary vessels.[59] The outsides of tombs often featured monumental brick or stone-carved pillar-gates (que 阙); an example from 121 CE appears to be the earliest surviving Chinese architectural structure standing above ground.[60] Tombs of the Tang Dynasty (618–907) are often rich in glazed pottery figurines of horses, servants and other subjects, whose forceful and free style is greatly admired today. The tomb art reached its peak in the Song and Jin periods; most spectacular tombs were built by rich commoners.[61]

Early burial customs show a strong belief in an afterlife and a spirit path to it that needed facilitating. Funerals and memorials were also an opportunity to reaffirm such important cultural values as filial piety and "the honor and respect due to seniors, the duties incumbent on juniors"[62] The common Chinese funerary symbol of a woman in the door may represent a "basic male fantasy of an elysian afterlife with no restrictions: in all the doorways of the houses stand available women looking for newcomers to welcome into their chambers"[63] Han Dynasty inscriptions often describe the filial mourning for their subjects,[64] for example text from a funeral stele for the daughter of a scholar-official of the dynasty, which described the "hurt and grief" of her two sons:[65]

ä, ä°«é 1ä1'  
 She did not enjoy old age  
 ä»¥æ°,æ"¥ç§  
 With long years  
 å¼ è ä, è¿~  
 She is gone and will not return,  
 æ¿³æ.ªãð@ä1½  
 She has sunken deep into the great darkness.  
 ä.ä`¼ä^ ä^  
 Alas, sorrowful indeed!  
 ä ,ä,-è ,è"-  
 Tables and mats are set but unused,  
 ä¹ ä,³ç@°é ³  
 The curtains and canopies have been put out in vain.  
 ä^ ç @ç ¶ä "  
 Her things are still there,  
 ä, è| ä ¶ä°°  
 We do not see her person.  
 é- æ°féfé éfé  
 Her ghost drifts about.  
 ç æ ä@ ç¥.  
 How could we pacify her spirit?

Murals painted on the walls of the Goguryeo Tombs are examples of Korean painting from its Three Kingdoms era. Although thousands of these tombs have been found, only about 100 have murals.[66] These tombs are often named for the dominating theme of the murals â ^ these include the Tomb of the Dancers, the Tomb of the Hunters, the Tomb of the Four Spirits, and the Tomb of the Wrestlers.[67] Heavenly bodies are a common motif, as are depictions of events from the lives of the royalty and nobles whose bodies had been entombed. The former include the sun, represented as a three-legged bird inside a wheel,[68] and the various constellations, including especially the Four directional constellations: the Azure Dragon of the East, the Vermilion Bird of the South, the White Tiger of the West, and the Black Tortoise of the North.[69]

The Royal Tombs of the Joseon Dynasty in Korea, built between 1408 and 1966, reflect a combination of Chinese and Japanese traditions, with a tomb mound, often surrounded by a screen wall of stone blocks, and sometimes with stone animal figures above ground, not unlike the Japanese haniwa figures (see below). There is usually one or more T-shaped shrine buildings some distance in front of the tomb, which is set in extensive grounds, usually with a hill behind them, and facing a view towards water and distant hills. They are still a focus for ancestor worship rituals. From the 15th century, they became more simple, while retaining a large landscape setting.[70]

The Kofun period of Japanese history, from the 3rd to 6th centuries CE, is named after kofun, the often enormous keyhole-shaped Imperial mound-tombs, often on a moated island. None of these have ever been allowed to be excavated, so their possibly spectacular contents remain unknown.[71] Late examples which have been investigated, such as the Kitora Tomb, had been robbed of most of their contents, but the Takamatsuzuka Tomb retains mural paintings. Lower down the social scale in the same period, terracotta haniwa figures, as much as a

metre high, were deposited on top of aristocratic tombs as grave markers, with others left inside, apparently representing possessions such as horses and houses for use in the afterlife.[72] Both kofun mounds and haniwa figures appear to have been discontinued as Buddhism became the dominant Japanese religion.[73]

Since then, Japanese tombs have been typically marked by elegant but simple rectangular vertical gravestones with inscriptions. Funerals are one of the areas in Japanese life where Buddhist customs are followed even by those who followed other traditions, such as Shinto. The bodaiji is a special and very common type of temple whose main purpose is as a venue for rites of ancestor worship, though it is often not the actual burial site. This was originally a custom of the feudal lords, but was adopted by other classes from about the 16th century. Each family would use a particular bodaiji over generations, and it might contain a second "grave" if the actual burial were elsewhere. Many later emperors, from the 13th to 19th centuries, are buried simply at the Imperial bodaiji, the Tsuki no wa no misasagi mausoleum in the SennyÅ«-ji temple at Kyoto.[74]

[edit] The Americas

Unlike many Western cultures, that of Mesoamerica is generally lacking in sarcophagi, with a few notable exceptions such as that of Pacal the Great or the now-lost sarcophagus from the Olmec site of La Venta. Instead, most Mesoamerican funerary art takes the form of grave goods and, in Oaxaca, funerary urns. Two well-known examples of Mesoamerican grave goods are those from Jaina Island, a Maya site off the coast of Campeche, and those associated with the Western Mexico shaft tomb tradition. The tombs of Mayan rulers can only normally be identified by inferences drawn from the lavishness of the grave goods and, with the possible exception of vessels made from stone rather than pottery, these appear to contain no objects specially made for the burial.[76]

The Jaina Island graves are noted for their abundance of clay figurines. Human remains within the roughly 1,000 excavated graves on the island (out of 20,000 total)[77] were found to be accompanied by glassware, slateware, or pottery, as well as one or more ceramic figurines, usually resting on the occupant's chest or held in their hands. The function of these figurines is not known: due to gender and age mismatches, they are unlikely to be portraits of the grave occupants, although the later figurines are known to be representations of goddesses.[78]

The so-called shaft tomb tradition of western Mexico is known almost exclusively from grave goods, which include hollow ceramic figures, obsidian and shell jewelry, pottery, and other items (see this Flickr photo for a reconstruction). Of particular note are the various ceramic tableaux including village scenes, for example, players engaged in a Mesoamerican ballgame. Although these tableaux may merely depict village life, it has been proposed that they instead (or also) depict the underworld.[79] Ceramic dogs are also widely known from looted tombs, and are thought by some to represent psychopomps (soul guides),[80] although it should also be noted that dogs were often the major source of protein in ancient Mesoamerica.[81]

The Zapotec civilization of Oaxaca is particularly known for its clay funerary urns, such as the "bat god" shown at right. Numerous types of urns have been identified.[83] While some show deities and other supernatural beings, others seem to be portraits. Art historian George Kubler is particularly enthusiastic about the craftsmanship of this tradition:

No other American potters ever explored so completely the plastic conditions of wet clay or retained its forms so completely after firingÅ« ... [they] used its wet and ductile nature for fundamental geometric modelling and cut the material, when half-dry, into smooth planes with sharp edges of an unmatched brilliance and suggestiveness of form.[84]

The Maya Naj Tunich cave tombs and other sites contain paintings, carved

stelae, and grave goods in pottery, jade and metal, including death masks. In dry areas, many ancient textiles have been found in graves from South America's Paracas culture, which wrapped its mummies tightly in several layers of elaborately patterned cloth. Elite Moche graves, containing especially fine pottery, were incorporated into large adobe structures also used for human sacrifices, such as the Huaca de la Luna. Andean cultures such as the Sican often practiced mummification and left grave goods in precious metals with jewels, including tumi ritual knives and gold funerary masks, as well as pottery.

The Mimbres of the Mogollon culture buried their dead with bowls on top of their heads and ceremonially "killed" each bowl with a small hole in the centre so that the deceased's spirit could rise to another world. Mimbres funerary bowls show scenes of hunting, gambling, planting crops, fishing, making love and giving birth.[85]

Some of the North American mounds, such as Grave Creek Mound (c. 2500-1500 BCE) in West Virginia, functioned as burial sites, while others had different purposes.[86]

[edit] Traditional societies

There is an enormous diversity of funeral art from traditional societies across the world, much of it in perishable materials, and some is mentioned elsewhere in the article. In traditional African societies, masks often have a specific association with death, and some types may be worn mainly or exclusively for funeral ceremonies.[87] The funeral ceremonies of the Indigenous Australians typically feature body painting; the Yolngu and Tiwi people create carved pukumani burial poles from ironwood trunks,[88] while elaborately carved burial trees have been used in south-eastern Australia.[89] The Toraja people of central Sulawesi are famous for their burial practices, which include the setting-up of effigies of the dead on cliffs. The 19th and 20th century royal Kasubi Tombs in Uganda, destroyed by fire in 2010, were a circular compound of thatched buildings similar to those inhabited by the earlier Kabakas when alive, but with special characteristics.[90]

In several cultures, goods for use in the afterlife are still interred or cremated, for example Hell bank notes in East Asian communities.[91] In Ghana, mostly among the Ga people, elaborate figurative coffins in the shape of cars, boats or animals are made of wood. These were introduced in the 1950s by Seth Kane Kwei.[92]

[edit] Funerary art and religion

[edit] Hinduism

Cremation is traditional among Hindus, who also believe in reincarnation, and there is far less of a tradition of funerary monuments in Hinduism than in other major religions.[93] However there are regional, and relatively recent, traditions among royalty, and the samādhi mandir is a memorial temple for a saint. Both may be influenced by Islamic practices. The mausolea of the sultans of Orchha, from the 16th century onwards, are among the best known. Other rulers were commemorated by memorial temples of the normal type for the time and place, which like similar buildings from other cultures fall outside the scope of this article, though Angkor Wat in Cambodia, the most spectacular of all, must be mentioned.

[edit] Buddhism

Buddhist tombs themselves are typically simple and modest, although they may be set within temples, sometimes large complexes, built for the purpose in the then-prevailing style. According to tradition, the remains of the Buddha's body after cremation were entirely divided up into relics (cetiya), which played an important part in early Buddhism. The stupa developed as a monument enclosing deposits of relics of the Buddha from plain hemispherical mounds in the 3rd century BCE to elaborate structures such as those at Sanchi in India and Borobudur in Java. Regional variants such as the pagoda of China and Japan and the candi of Indonesia evolved from the Indian form. However, none of these can strictly be called tombs.[94] Some important Tibetan lamas are buried in relatively small chortens (Tibetan stupas), sometimes of precious metal, inside

or outside monasteries, sometimes after mummification. There are examples at Kursha Monastery in Zanskar and Tashiding Monastery in Sikkim, as well as the Potala Palace in Lhasa and many other monasteries.[95] However, most chortens do not function as tombs.

[edit] Christianity

The Catacombs of Rome contain most of the surviving Christian art of the Early Christian period, mainly in the form of frescos and sculpted sarcophagi. They show a Christian iconography emerging, initially from Roman popular decorative art, but later borrowing from official imperial and pagan motifs. Initially, Christians avoided iconic images of religious figures, and sarcophagi were decorated with ornaments, Christian symbols like the Chi Rho monogram and, later, narrative religious scenes.[96] The Early Christians' habit, after the end of their persecution, of building churches (most famously St Peter's, Rome) over the burial places of martyrs who had originally been buried discreetly or in a mass grave perhaps led to the most distinctive feature of Christian funerary art, the church monument, or tomb inside a church.[97] The beliefs of many cultures, including Judaism and Hinduism as well as classical paganism, consider the dead ritually impure and avoid mixing temples and cemeteries (though see above for Moche, and below for Islamic culture).[98]

Christians believed in a bodily resurrection of the dead at the Second Coming of Christ, and the Catholic Church only relaxed its opposition to cremation in 1963.[99] Although mass ossuaries have also been used, burial has always been the preferred Christian tradition, at least until recent times. Burial was, for as long as there was room, usually in a graveyard adjacent to the church, with a gravestone or horizontal slab, or for the wealthy or important clergy, inside it. Wall tombs in churches strictly include the body itself, often in a sarcophagus, while often the body is buried in a crypt or under the church floor, with a monument on the wall. Persons of importance, especially monarchs, might be buried in a free-standing sarcophagus, perhaps surrounded by an elaborate enclosure using metalwork and sculpture; grandest of all were the shrines of saints, which became the destinations of pilgrimages. The monument to Maximilian I, Holy Roman Emperor in the Hofkirche, Innsbruck took decades to complete,[100] while the tomb of Saint Dominic in Bologna took several centuries to reach its final form.[101]

If only because its strong prejudice against free-standing and life-size sculpture, Eastern Orthodoxy could not have developed the tomb monument in the same way as the Western Church, and the burials of rich or important individuals continued the classical tradition of sarcophagi carved in relief, with the richness of the carving tending to diminish over the centuries, until just simple religious symbols were left. Constantine I and most later Byzantine Emperors up to 1028 were buried in the Church of the Holy Apostles in Constantinople, which was destroyed after the fall of Constantinople of 1453. Some massive but mostly plain porphyry sarcophagi from the church are now placed outside the Istanbul Archaeology Museums.[102]

The Tomb of Antipope John XXIII in Florence is a grand Early Renaissance wall tomb by Donatello and Michelozzo; although classical in style, it reflects the somewhat inharmonious stacking up of different elements typical of major Gothic tombs. It has a life-size effigy lying on the sarcophagus, which was common from the Romanesque period through to the Baroque and beyond.[103] Ruling dynasties were often buried together, usually in monasteries; the Chartreuse de Champmol was founded for that purpose by the Valois Dukes of Burgundy in 1383. The Scaliger tombs in Verona are magnificent free-standing Gothic canopied tombs~they are outside the church in a special enclosure, and so are unrestricted in height.[104] Important churches like Saint Peter's in Rome, Saint Paul's Cathedral, London, Santi Giovanni e Paolo, Venice (twenty-five Doges), and the Basilica of Santa Croce, Florence contain large numbers of impressive monuments to the great and the good, created by the finest architects and sculptors available. Local parish churches are also often full of monuments, which may include large and artistically significant ones for local landowners and notables. Often a prominent family would add a special



chapel for their use, including their tombs; in Catholic countries, bequests would pay for masses to be said in perpetuity for their souls. By the High Renaissance, led by Michelangelo's tombs, the effigies are often sitting up, and later may stand. Often they turn towards the altar, or are kneeling facing it in profile.[105]

In the late Middle Ages, influenced by the Black Death and devotional writers, explicit memento mori imagery of death in the forms of skulls or skeletons, or even decomposing corpses overrun with worms in the transi tomb, became common in northern Europe, and may be found in some funerary art, as well as motifs like the Dance of Death and works like the *Ars moriendi*, or "Art of Dying".[106] It took until the Baroque period for such imagery to become popular in Italy, in works like the tomb of Pope Urban VIII by Bernini (1628-1647), where a bronze winged skeleton inscribes the Pope's name on a tablet below his enthroned effigy.[107] As cities became more crowded, bones were sometimes recovered after a period, and placed in ossuaries where they might be arranged for artistic effect, as at the Capuchin Crypt in Rome or the Czech Sedlec Ossuary, which has a chandelier made of skulls and bones.

The church struggled to eliminate the pagan habits of leaving grave goods except for the clothing and usual jewellery of the powerful, especially rings. Kings might be buried with a sceptre, and bishops with a crozier, their respective symbols of office.[108] The 7th century Stonyhurst Gospel, with a unique Insular original leather binding, was recovered from St Cuthbert's coffin, itself a significant object; it was probably Cuthbert's personal copy, which he had very likely scribed himself.[109] The armour and sword of a knight might be hung over his tomb, as those of the Black Prince still are in Canterbury Cathedral. The Early Christian Church, to the frustration of historians of costume, encouraged burial in a plain white winding-sheet, as being all that would be required at the Second Coming. For centuries, most except royalty followed this custom, which at least kept clothing, which was very expensive for rich and poor alike, available for the use of the living. The use of a rich cloth pall to cover the coffin during the funeral grew during the Middle Ages; initially these were brightly coloured and patterned, only later black. They were usually then given to the Church to use for vestments or other decorations.[110]

From the early 13th century to the 16th, a popular form of monument north of the Alps, especially for the smaller landowner and merchant classes, was the monumental brass, a sheet of brass on which the image of the person or persons commemorated was engraved, often with inscriptions and an architectural surround. They could be on the floor or wall inside a church. These provide valuable evidence as to changes in costume, especially for women. Many bishops and even some German rulers were commemorated with brasses.[111]

The *castrum doloris* was a temporary catafalque erected around the coffin for the lying in state of important people, usually in a church, the funerary version of the elaborate temporary decorations for other court festivities, like royal entries. These began in the late Middle Ages, but reached their height of elaboration in the 18th century.[112] A particular feature in Poland was the coffin portrait, a bust-length painted portrait of the deceased, attached to the coffin, but removed before burial and often then hung in the church. Elsewhere, death masks were used in similar fashion. Hatchments were a special lozenge-shaped painted coat of arms which was displayed on the house of the deceased for a mourning period, before usually being moved to hang in the church. Like mourning clothes, these fall outside a strict definition of art.[113]

For some time after the Protestant Reformation, English church monuments formed the majority of large-scale artworks added to Protestant churches, especially in sculpture. The English upper classes ceased to commission altarpieces and other religious art for churches, but their tomb monuments continued to grow in size to fill the empty wall spaces; similar trends were seen in Lutheran countries, but Calvinists tended to be more disapproving of figure sculpture.[114] Many portraits were painted after death, and sometimes

dead family members were included along with the living; a variety of indications might be used to suggest the distinction.[115]

The large Baroque tomb monument continued likely to include a portrait of the deceased, and was more likely to include personified figures of Death, Time, Virtues or other figures than angels. The late medieval transi tomb vocabulary of images of bodily decay, such as skulls and skeletons, was sometimes re-introduced, but in a less confrontational manner.[116] Neo-Classicism, led by Antonio Canova, revived the classical stela, either with a portrait or a personification; in this style there was little or no difference between the demands of Catholic and Protestant patrons.[117]

By the 19th century, many Old World churchyards and church walls had completely run out of room for new monuments, and cemeteries on the outskirts of cities, towns or villages became the usual place for burials.[118] The rich developed the classical styles of the ancient world for small family tombs, while the rest continued to use gravestones or what were now usually false sarcophagi, placed over a buried coffin. The cemeteries of the large Italian cities are generally accepted to have outdone those of other nations in terms of extravagant statuary, especially the Monumental Cemetery of Staglieno in Genoa, the Cimitero Monumentale di Milano and the Certosa di Bologna.[119] In Italy at least, funerary sculpture remained of equal status to other types during the 19th and early 20th centuries, and was made by the leading artists, often receiving reviews in the press, and being exhibited, perhaps in maquette form.[120] Monuments kept up with contemporary stylistic developments during the 19th century, embracing Symbolism enthusiastically, but then gradually became detached from the avant-garde after Art Nouveau and a few Art Deco examples.[121] Where burials in church crypts or floors took place, memorial stained glass windows, mostly on normal religious subjects but with a commemorative panel, are often found. War memorials, other than on the site of a battle, were relatively unusual until the 19th century, but became increasingly common during it, and after World War I were erected even in villages of the main combatant nations.[122]

Islamic funerary art is dominated by architecture. Grave goods are discouraged to the point that their absence is frequently one recognition criterion of Muslim burials.[123] Royalty and important religious figures were typically buried in plain stone sarcophagi, perhaps with a religious inscription. However, funerary architecture often offered a means of "moving beyond the strictures of formal Muslim burial rites" and expressing social dimensions such as status, piety, love for the deceased, and Muslim identity.[124] A number of distinct architectural traditions arose for expressing these social elements. The Islamic tradition was slow in starting; the hadith "condemn the building of tombs, and Muhammad himself set the example of requesting burial in an unmarked grave in one of the chambers of his house" in Medina,[125] though by at least the 12th century, buildings of the vast Al-Masjid an-Nabawi complex already marked the site. The earliest identified Muslim monumental tomb, in Samarra in Iraq, only dates from 862, and was commissioned by the Byzantine princess whose son was buried there.[126] At some point, the tradition incorporated the idea of a garden setting, perhaps following the Islamic concept of Paradise, an association certainly made when the tradition was mature, although the difficulty of reconstructing gardens from archaeology makes the early stages of this process hard to trace. At any rate, gardens surrounding tombs became established in Islamic tradition in many parts of the world, and existing pleasure gardens were sometimes appropriated for this purpose. Versions of the formal Persian charbagh design were widely used in India, Persia and elsewhere.[127]

Another influence may have been the octagonal Dome of the Rock in Jerusalem, not a mausoleum itself, but "the earliest Islamic model for centrally planned commemorative buildings", adapting the Byzantine form of the martyrion in a building standing alone, though on a stone platform rather than in a garden.[128] In the Persian sphere, a tradition of relatively small mausoleums evolved, often in the shape of short hexagonal or octagonal domed towers,

usually containing a single chamber, like the Malek Tomb. These single-chambered tombs developed into larger buildings in the Timurid and Mughal Empires,[129] like the Gur-e Amir tomb of Timur at Samarkand and the famous Mughal tombs of India, which culminated in the Taj Mahal. The Mughal tombs are mostly set in a large walled charbagh (chahar-bagh) or Mughal gardens, often with pavilions at the corners[129] and a gatehouse. The Taj Mahal is atypically placed at the end of the garden, backing onto the river Yamuna; a central placing is usual.[130] They may have minarets, although they do not normally function as mosques. The Tomb of Jahangir lacks any dome,[131] while the Tomb of Akbar the Great has only small decorative ones. Other Islamic Indian rulers built similar tombs, such as Gol Gumbaz.

In all this tradition, the contemporary architectural style for mosques was adapted for a building with a smaller main room, and usually no courtyard. Decoration was often tilework, and could include parchin kari inlays in semi-precious stone, painting, and decorative carving. No animals would be represented, but geometric patterns and written inscriptions were common. The sarcophagus might be in a small inner chamber, dimly visible through a grille of metal or stone, or might stand in the main room. Money would be bequeathed to pay for continuous readings of the Qur'an in the mausoleum, and they were normally open for visitors to pay their respects. The Mausoleum of Khomeini, still under construction in a Tehran cemetery, and intended to be the centre of a huge complex, continues these traditions.[132]

The tradition evolved differently in the Ottoman world, where smaller single-roomed tombs typically stand on the grounds of mosque complexes, often built by the deceased. The sarcophagi (often purely symbolic, as the body is below the floor) may be draped in a rich pall, and surmounted by a real cloth or stone turban, which is also traditional at the top of ordinary Turkish gravestones (usually in stylised form). Two of the most famous are in the Şeymaniye Mosque in Istanbul; the Yeşil Türbe ("Green Tomb") of 1421 is an unusually large example in Bursa, and also unusual in having extensive tile work on the exterior, which is usually masonry, whereas the interiors are often decorated with brightly colored tiles.[133]

Other parts of the Islamic world reflected local techniques and traditions. The 15th century royal Tomb of Askia in Mali used the local technique of mud-building to erect a 17 metre high pyramidal tomb set in a mosque complex.[134] At the other end of the Islamic world, Javanese royalty are mostly buried in royal graveyards such as those at Kota Gede and Imogiri.

In the Arab world, mausoleums of rulers are more likely to be a side-room inside a mosque or form part of a larger complex containing perhaps a hospital, madrasah or library. Large domes, elaborately decorated inside, are common. The tomb-mosque of Sultan Qaitbay (died 1496) is a famous example, one of many in Cairo, though here the tomb chamber is unusually large compared to the whole.[135]

[edit] Modern period

Funerary art tends to be conservative in style, and many grave markers in various cultures follow rather traditional patterns, while others reflect modernism or other recent styles. Public monuments to the dead continue to be erected, especially war memorials. Some are fairly traditional, while those reflecting more contemporary styles include the Vietnam Veterans Memorial, and several Holocaust memorials, such as Yad Vashem in Jerusalem, the Vel d'Hiv Memorial in Paris (1994), the Memorial to the Murdered Jews of Europe in Berlin (2004), and the Judenplatz Holocaust Memorial in Vienna (2000). These are in notable contrast to the style of most war memorials to the military of World War II; earlier modernist memorials to the dead of World War I were sometimes removed after a time as inappropriate.[136] Some war memorials, especially in countries like Germany, have had a turbulent political history, for example the much-rededicated Neue Wache in Berlin.[137] Several critics detect a crisis in public memorial style from 1945, when the traditional figurative symbolic language, and evocation of nationalist values, came to seem inadequate, especially in relation to genocide, at least on the Western side of the Iron

Curtain.[138] In the Communist East the established style of Socialist Realism was still considered appropriate, at least by the authorities.[139] The generation of abstracted and conceptual war and Holocaust memorials erected in the West from the 1990s onwards seems finally to have found a resolution for these issues.[140]

Many large mausoleums have been constructed for political leaders, including Lenin's Mausoleum and those for Atatürk, Jinnah, Kim Il-Sung, Che Guevara and several Presidential memorials in the United States. The Mausoleum of Khomeini is a grand mosque complex, as large as any medieval example, not least because it includes a 20,000 place parking lot.[132]

[edit] See also

^ Hammond, 58â ^59 characterizes disarticulated human skeletal remains packed in body bags and incorporated into Pre-Classic Mesoamerican mass burials (along with a set of primary remains) at Cuello, Belize as "human grave goods".

^ Depending on the interpretation of sites like the Shanidar Cave in Iraq.

Bogucki, 64â ^66 summarizes the debate. Gargett takes a hostile view but accepts (p. 29 etc.) that many or most scholars do not. See also Pettitt.

^ See for example the chapter "Tombs for the Living and the Dead", Insoll 176â ^87

^ See any well-regarded survey of the history of art or of architecture, such as Gardner's *Art Through the Ages* or the most recent edition of Sir Banister Fletcher's *A History of Architecture*.

^ Hoa Hakananai'a British Museum, accessed 26 April 2010

^ Toynbee, 47â ^48, on Ancient Rome. Stewart and Rawski's book is entirely devoted to Chinese ancestor portraits. See Chapter 1 etc.

^ Although the purpose of megalithic structures is not always clear, and of the very oldest, while Nevali Cori in Turkey contains burials, Göbekli Tepe appears not to.

^ Mohen, 70

^ Mohen, 87

^ Kipfer, "Menhir", 348

^ Stone Circles of Senegambia â ^ UNESCO World Heritage Centre, accessed 28 April 2010

^ Groenewegen-Frankfort, 80

^ Stone, 37

^ Kampen et al, 31

^ Maspero, 111â ^27, with serdabs 124â ^25

^ Robins, 51â ^55, 66â ^71, 218â ^19, and see index for other periods. Tomb styles changed considerably over the course of Egyptian history.

^ Späner, 23

^ Atiya and El Shawahy, 73

^ Boardman, Edwards et al, 688â ^89

^ James, 122

^ Robins, 74

^ Boardman, 212, 15

^ Oakes and Gahlin, 236

^ Boardman, 26 and passim

^ Richter, 57

^ Henderson, 135

^ Wright, 391

^ Boardman, 212â ^13

^ Boardman, 149â ^50

^ Boardman, 151â ^54, and throughout the section on the period

^ Boardman, 126â ^27. Apart from those at the Mausoleum of Halicarnassus article, there are several from Lethaby's 1908 work here, and one illustrated in Boardman.

^ Boardman, 126â ^27

^ Boardman, 172â ^73, 339â ^44

^ Holiday, 73

^ de Grummond 1997, 359

- ^ deÂ Grummond 2006, 231
- ^ deÂ GrummondÂ 1997,Â 93
- ^ Johnston,Â 489
- ^ a b c Davies, 632
- ^ Toynbee, Chapter I
- ^ Hall, 15
- ^ Toynbee, 39â ^40
- ^ Toynbee, Chapter IV; Hall, 53
- ^ Toynbee, 38
- ^ Toynbee, 31Â (illustration)
- ^ Hall, 15, 35, 78
- ^ Petersen, 95â ^105; see also Boardman, 240â ^41 on Eurysaces' tomb.
- ^ Boardman, 339
- ^ Boardman, 339â ^44; Hall, 78â ^80
- ^ Hall, 54â ^61
- ^ Hall, 77â ^82
- ^ See for example Merriman, 297
- ^ Sickman and Soper, 57â ^66; see also the diagram here
- ^ Sickman and Soper, 155
- ^ Evasdottir, 158â ^60
- ^ Wu Hung, *The Wu Liang Shrine: The Ideology of Early Chinese Pictorial Art* (Stanford UPP, 1989))
- ^ Sickman and Soper, 77â ^84
- ^ Sickman and Soper, 120â ^21
- ^ Dien, 214â ^15
- ^ Sickman and Soper, 376 (illustrated)
- ^ Jeehee Hong, "Virtual Theater of the Dead: Actor Figurines and Their Stage in Houma Tomb No.1,â " *Artibus Asiae* Vol. 71-1, 2011
- ^ Thorp & Vinograd, 144
- ^ Goldin, 548
- ^ Brown, 44
- ^ Brown, 77
- ^ UNESCO, *Preservation of the Koguryo Kingdom Tombs*, 24
- ^ Lee, 64
- ^ UNESCO, *Preservation of the Koguryo Kingdom Tombs*, 4
- ^ Park 33â ^34
- ^ Unesco *Royal Tombs of the Joseon Dynasty*.
- ^ Paine and Soper, 287â ^89
- ^ Paine and Soper, 24â ^26, 280â ^82
- ^ Paine and Soper, 289. See also *List of National Treasures of Japan* (archaeological materials)
- ^ Hall, John Whitney, 381â ^86
- ^ Smithsonian.
- ^ Chase and Chase, Chapter 3, especially p. 34
- ^ Muren.
- ^ Kubler, 266
- ^ See Taylor for discussion.
- ^ Coe et al., 103â ^104, or Mason, 182. In Richardson, 48â ^49 ("The dog, among the Maya, was considered to be connected with death, and to be the messenger to prepare the way to the hereafter.")
- ^ Coe, 45 ("The only domestic animals were dogsâ ~the principal source of meat for much of Preclassic Mesoamericaâ ~and turkeysâ ~understandably rare because that familiar bird consumes very large quantities of corn and is thus expensive to raise".)
- ^ Mason, 182. In Richardson, 48â ^49
- ^ Kubler, 163
- ^ Kubler, 164
- ^ Giammattei and Reichert, 3. Cited in the Introduction to *The Mimbres of the Mogollon culture: A people of mystery* by Andrew Gulliford
- ^ *Mounds & Mound Builders* Accessed 25 April 2010

^ Masks in West African Traditional Societies, Bonnefoy, pp. 133â ^37  
 ^ Davies, Serena (23 August 2004). "Viewfinder: Aboriginal burial poles". The Daily Telegraph (London).  
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 ^ Montillo, Roseanne (2009). Halloween and Commemorations of the Dead. New York: Infobase. pp.Â 41â ^42. ISBNÂ 978-1-60413-097-3.  
 ^ British Museum: Modern coffin in the shape of an eagle, from Ghana. Accessed 22 March 2010  
 ^ Groseclose, 23  
 ^ Le Phuoc, 140â ^42; 147â ^56 on Sanchi; 192â ^204, especially 196, on candi in Indonesia, and Borodudur (196â ^204)  
 ^ Dowman, 54â ^55 for the Potala, and see index for other locations.  
 ^ Syndicus, Chapter 1; Hall, 77â ^82  
 ^ Syndicus, 39, 72â ^90  
 ^ Toynbee, 48â ^49. An exception in the Classical World were the Lycians of Anatolia. There are also the Egyptian mortuary-temples, where the object of worship was the deified royal person entombed, but Egyptian temples to the major gods contained no burials. For an extreme example, see ancient Delos.  
 ^ It was allowed in times of plague however. See Cremation in the Christian World for more detailsâ ~the Orthodox churchs still forbid cremation.  
 ^ Board of Trustees for The Hofkirche in Innsbruck.  
 ^ Welch, 26  
 ^ Downey.  
 ^ Levey 1967, 57â ^59  
 ^ Though they are exceeded in scale by Gothic revival monuments like the Albert Memorial and the Scott Monument, neither containing a tomb.  
 ^ Hall, 325  
 ^ Cohen throughout, see Introduction  
 ^ Hall, 324â ^26  
 ^ Piponnier and Mane, 112â ^13  
 ^ Bloxham, Jim and Rose, Krisine; St. Cuthbert Gospel of St. John, Formerly Known as the Stonyhurst Gospel  
 ^ Piponnier and Mane, 34â ^35; 112â ^13  
 ^ "Brasses, Monumental"  
 ^ The corpse was in fact not always present. Bagliani, 158â ^59  
 ^ Piponnier and Mane, 113 for the origins of mourning clothes.  
 ^ See for example Michalski, xi. Here Michalski refers to this rejection of religious imagery within Calvinism as "iconophobia". See also GÃbler, 72, 76â ^77 and Potter, 130â ^31 regarding the religious disputations in ZÃ¼rich (1523) concerning (among other things) the removal of statues of saints and other icons. Participants included Leo Jud and Huldrych Zwingli.  
 ^ The Saltonstall Family is a well-known example. The Arnolfini Portrait has been claimed to be such a work  
 ^ Hall, 324â ^27  
 ^ Hall, 347â ^49; Berresford, 36â ^38  
 ^ "Cemetery"  
 ^ Berresford, throughout, and Prefaces  
 ^ Berresford, 13, and 58 on exhibitions  
 ^ Berresford, 77â ^78 on "Liberty" (Italian term for "Art Nouveau") and 99â ^104 on Art Deco.  
 ^ Mosse, Chapter 5  
 ^ Insoll, 172  
 ^ Insoll, 177â ^80  
 ^ Ruggles, 103  
 ^ Ruggles, 103â ^104  
 ^ Ruggles, Chapter 9  
 ^ Ruggles, 104

^ a b Insoll, 177  
 ^ Ruggles, 112 and 122. Her Chapter 10 includes a detailed description of the Taj with special reference to its gardens.  
 ^ An interesting contrast with the Taj Mahal, given they were both built by Shah Jahan.  
 ^ a b The New York Times, Khomeini's Tomb Attracts Pilgrims, Philip Shenon, Published: 8 July 1990, accessed 25 April 2010.  
 ^ Levey 1975, 29â ^33 on Bursa, 83â ^84 on Istanbul; all the leading Ottoman tombs are covered in the book.  
 ^ Tomb of Askia, UNESCO page with aerial view.  
 ^ See Fletcher and Cruickshank, 596. The madrasa is labeled "the ultimate achievement of architectural development in Cairo" and its tomb chamber described as "immense."  
 ^ Mosse, 103â ^106 on conservatism, and generally throughout Chapter 5 on war memorials.  
 ^ Mosse, 97â ^98; Carrier, 201  
 ^ Carrier, 19â ^22; Benton throughout, especially p. 194.  
 ^ Benton throughout, especially Chapter 1 on Soviet War Memorials (pp. 12â ^13 on Socialist Realism), but also noting deviations in the Warsaw Pact satellites, as on p. 194, and Chapter 7 on West Germany.  
 ^ Carrier, throughout, especially Chapter 8. See also the copious literature on the Washington Vietnam Veterans Memorial.

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[edit] External links

Wendell Ford

United States Senator

from Kentucky

In office

December 28, 1974 – January 3, 1999

Preceded by

Marlow Cook

Succeeded by

Jim Bunning

Senate Minority Whip

In office

January 3, 1995 – January 3, 1999

Leader

Tom Daschle

Preceded by

Alan Simpson

Succeeded by

Harry Reid

Senate Majority Whip

In office

January 3, 1991 – January 3, 1995

Leader

George Mitchell

Preceded by

Alan Cranston

Succeeded by

Trent Lott

Governor of Kentucky

In office

December 7, 1971 – December 28, 1974

Lieutenant

Julian Carroll

Preceded by

Louie Nunn

Succeeded by

Julian Carroll

Lieutenant Governor of Kentucky

In office

December 12, 1967 – December 7, 1971

Governor

Louie Nunn

Preceded by

Harry Waterfield

Succeeded by

Julian Carroll

Personal details

Born

(1924-09-08) September 8, 1924 (age 88)Owensboro, Kentucky, U.S.

Political party

Democratic Party

Spouse(s)

Jean Neel

Alma mater

University of KentuckyMaryland School of Insurance

Military service

Allegiance

United States

Service/branch

United States Army Kentucky Army National Guard

Years of service

1944 – 1946

1949 – 1962

Rank

Technical Sergeant First Lieutenant

Battles/wars

World War II

Awards

Expert Infantryman BadgeAmerican Campaign MedalGood Conduct MedalWorld War II

Victory Medal

Wendell Hampton Ford (born September 8, 1924) is a retired politician from the U.S. state of Kentucky. He served for twenty-four years in the U.S. Senate and was the 53rd Governor of Kentucky. He was the first person to be successively elected lieutenant governor, governor, and U.S. senator in Kentucky history.[1] The Senate Democratic whip from 1991 to 1999, he was considered the leader of the state's Democratic Party from his election to governor in 1971 until his retirement from the Senate in 1999.[2] At the time of his retirement, he was the longest-serving senator in Kentucky's history, a mark that was surpassed by Mitch McConnell in 2009.

Born in Daviess County, Kentucky, Ford attended the University of Kentucky, but his studies were interrupted by his service in World War II. After the war, he graduated from the Maryland School of Insurance and returned to Kentucky to help his father with the family insurance business. He also continued his military service in the Kentucky Army National Guard. He worked on the gubernatorial campaign of Bert T. Combs in 1959, and became Combs' executive assistant when Combs was elected governor. Encouraged to run for the Kentucky Senate by Combs' ally and successor, Ned Breathitt, Ford won the seat and served one four-year term before running for lieutenant governor in 1967. He

was elected on a split ticket with Republican Louie B. Nunn. Four years later, Ford defeated Combs in an upset in the Democratic primary en route to the governorship.

As governor, Ford made government more efficient by reorganizing and consolidating some departments in the executive branch. He raised revenue for the state through a severance tax on coal and enacted reforms to the educational system. He purged most of the Republicans from statewide office, including helping Walter "Dee" Huddleston win the Senate seat vacated by the retirement of Republican stalwart John Sherman Cooper. In 1974, Ford himself ousted the other incumbent senator, Republican Marlow Cook. Due to the rapid rise of Ford and many of his political allies, he and his lieutenant governor, Julian Carroll, were investigated on charges of political corruption, but a grand jury refused to indict them. As senator, Ford was a staunch defender of Kentucky's tobacco industry. He also formed the Senate National Guard Caucus with Missouri senator Kit Bond. Chosen as Democratic party whip in 1991, Ford considered running for floor leader in 1994 before throwing his support to Connecticut's Christopher Dodd. He retired from the Senate in 1999 and returned to Owensboro, where he teaches politics to youth at the Owensboro Museum of Science and History.

#### [edit] Early life

Wendell Ford was born near Owensboro in Daviess County, Kentucky on September 8, 1924.[3] He was the son of Ernest M. and Irene Woolfork (Schenk) Ford.[4] His father was a state senator and ally of Kentucky Governor Earle C. Clements.[2] Ford obtained his early education in the public schools of Daviess County and graduated from Daviess County High School.[5] From 1942 to 1943, he attended the University of Kentucky.[3]

On September 18, 1943, Ford married Jean Neel of Owensboro at the home of the bride's parents.[6] The couple had two children. Daughter Shirley (Ford) Dexter was born in 1950 and son Steven Ford was born in 1954.[2][6] The family attended First Baptist Church in Owensboro.[6]

In 1944, Ford left the University of Kentucky to join the army, enlisting for service in World War II on July 22, 1944.[7] He was trained as an administrative non-commissioned officer and promoted to the rank of technical sergeant on November 17, 1945.[7] Over the course of his service, he received the American Campaign Medal and the World War II Victory Medal and earned the Expert Infantryman Badge and Good Conduct Medal.[7] He was honorably discharged on June 18, 1946.[4]

Following the war, Ford returned home to work with his father in the family insurance business, and graduated from the Maryland School of Insurance in 1947.[3][4] On June 7, 1949, he enlisted in the Kentucky Army National Guard and was assigned to Company I of the 149th Infantry Regimental Combat Team in Owensboro.[7] On August 7, 1949, he was promoted to Second Lieutenant of Infantry.[7] In 1949, Ford's company was converted from infantry to tanks, and Ford served as a Company Commander in the 240th Tank Battalion.[7] Promoted to First Lieutenant of Armor, he transferred to the inactive Guard in 1956, before being discharged in 1962.[7]

#### [edit] Political career

Ford was very active in civic affairs, becoming the first Kentuckian to serve as president of the Jaycees in 1954.[2][4] He was a youth chairman of Bert T. Combs' 1959 gubernatorial campaign.[2] After Combs' election, Ford served as Combs' executive assistant from 1959 to 1963.[3] When his mother died in 1963, Ford returned to Owensboro to help his father with the family insurance agency.[2] Although it was speculated he would run for lieutenant governor that year, Ford later insisted he had decided not to re-enter politics until Governor Ned Breathitt asked him to run against Casper "Cap" Gardner, the state senate's majority leader and a major obstacle to Breathitt's progressive legislative agenda.[2] Ford won the 1965 election by only 305 votes but quickly became a key player in the state senate.[2] Representing the Eighth District, including Daviess and Hancock counties, Ford introduced 22 major pieces of legislation that became law during his single term in the senate.[4]

In 1967, Ford ran for lieutenant governor, this time against the wishes of Breathitt and Combs, whose pick was state attorney general Robert Matthews.[2] Ford defeated Matthews by 631 votes, 0.2% of the total vote count in the primary.[2] He ran an independent campaign and won in the general election even as Combs-Breathitt pick Henry Ward lost the race for governor to Republican Louie B. Nunn.[2] Republicans and Democrats split the state offices, with five going to Republicans and four going to Democrats.[4]

During his time as lieutenant governor, Ford rebuilt the state's Democratic machine, which would help elect him and others, including Senator Walter Huddleston and Governor Martha Layne Collins.[2] When Governor Nunn asked the legislature to increase the state sales tax in 1968 from 3 percent to 5 percent, Ford opposed the measure, saying it should only pass if food and medicine were exempted.[2] Ford lost this battle; the increase passed without exemptions.[2] From 1970 to 1971, Ford was a member of the Executive Committee of the National Conference of Lieutenant Governors.[8]

[edit] Governor of Kentucky

At the expiration of his term as lieutenant governor, Ford was one of eight candidates to enter the 1971 Democratic gubernatorial primary.[4] The favorite of the field was Ford's mentor, Combs.[4] During the campaign, Ford attacked Combs' age and the sales tax enacted during Combs' administration.[9] He also questioned why Combs would leave his better-paying federal judgeship to run for a second term as governor.[9] Ford garnered more votes than Combs and the other six candidates combined, and attributed his unlikely win over Combs in the primary to superior strategy and Combs' underestimation.[2][4] Following the election, Combs correctly predicted "This is the end of the road for me politically." [9]

Ford went on to win the governorship in a four-way general election that included another former Democratic governor, A. B. "Happy" Chandler, who ran as an independent.[4] Ford finished more than 58,000 votes ahead of his closest rival, Republican Tom Emberton.[4] With Combs and Chandler out of politics, factionalism in the Kentucky Democratic Party subsided for the only time in the 20th century.[9]

As governor, Ford raised revenue from a severance tax on coal, a two-cent-per-gallon tax on gasoline, and an increased corporate tax.[5] He balanced these increases by exempting food from the state sales tax.[5] The resulting large budget surplus allowed him to propose several construction projects.[5] His victory in the primary had been largely due to Jefferson County, and he returned the favor by approving funds to build the Commonwealth Convention Center and expand the Kentucky Fair and Exposition Center.[2] He also shepherded a package of reforms to the state's criminal justice system through the first legislative session of his term.[2]

Ford oversaw the transition of the University of Louisville from municipal to state funding.[2] He pushed for reforms to the state's education system, giving up his own chairmanship of the University of Kentucky board of trustees and extending voting rights to student and faculty members of university boards.[2] These changes generally shifted administration positions in the state's colleges from political rewards to professional appointments.[2] He increased funding to the state's education budget and gave expanded powers to the Council on Higher Education.[5] He vetoed a measure that would have allowed collective bargaining for teachers.[5]

Ford drew praise for his attention to the mundane task of improving the efficiency and organization of executive departments, creating several "super cabinets" under which many departments were consolidated.[5][10] During the 1972 legislative session, he created the Department of Finance and Administration, combining the functions of the Kentucky Program Development Office and the Department of Finance.[10] Constitutional limits sometimes prevented him from combining like functions, but Ford made the reorganization a top priority and realized some savings to the state.[10]

On March 21, 1972, the U.S. Supreme Court handed down its ruling in the case of *Dunn v. Blumstein*[11] that found that a citizen who had lived in a state for

30 days was resident in that state and thus eligible to vote there.[12] Kentucky's Constitution required residency of one year in the state, six months in the county, and sixty days in the precinct to establish voting eligibility.[13] This issue had to be resolved before the 1972 presidential election in November, so Ford called a special legislative session to enact the necessary corrections.[13] In addition, Ford added to the General Assembly's agenda the creation of a state environmental protection agency, a refinement of congressional districts in line with the latest census figures, and ratification of the recently-passed Equal Rights Amendment.[14] All of these measures passed.[15]

Despite surgery for a brain aneurysm in June 1972, Ford attended the 1972 Democratic National Convention in Miami Beach, Florida.[15] He supported Edmund Muskie for president, but later greeted nominee George McGovern when he visited Kentucky.[15] The convention was the beginning of Ford's role in national politics.[2] Offended by the McGovern campaign's treatment of Democratic finance chairman Robert Schwarz Strauss, he helped Strauss get elected chairman of the Democratic National Committee following McGovern's defeat.[2] As a result of his involvement in Strauss' election, Ford was elected chair of the Democratic Governors' Conference from 1973 to 1974.[8] He also served as vice-chair of the Conference's Natural Resources and Environmental Management Committee.[10]

During the 1974 legislative session, Ford proposed a six-year study of coal liquefaction and gasification in response to the 1973 oil crisis.[5] He also increased funding to human resources and continued his reorganization of the executive branch, creating cabinets for transportation, development, education and the arts, human resources, consumer protection and regulation, safety, and justice.[10] He was considered less ruthless than previous governors in firing state officials hired by the previous administration, and expanded the state merit system to cover some previously exempt state workers.[15] Despite the expansion, he was criticized for the replacements he made, particularly that of the state personnel commissioner appointed during the Nunn administration.[15] Critics also cited the fact that employees found qualified by the merit examination were still required to obtain political clearance before they were hired.[15]

Ford united the state's Democratic Party, allowing them to capture a seat in the U.S. Senate in 1972 for the first time since 1956.[4] The seat was vacated by the retirement of Republican John Sherman Cooper and won by Ford's campaign manager, Walter "Dee" Huddleston.[9] Ford's friends then began lobbying him to try and unseat Kentucky's other Republican senator, one-term legislator Marlow Cook.[2] Ford wanted lieutenant governor Julian Carroll to run for Cook's seat, but Carroll already had his eye on the governor's chair.[2] Ford's allies did not have a gubernatorial candidate stronger than Carroll, and when a poll showed that Ford was the only Democrat who could defeat Cook, he agreed to run, announcing his candidacy immediately following the 1974 legislative session.[2]

A primary issue during the election was the construction of a dam on the Red River.[16] Cook opposed the dam, but Ford supported it and allocated some of the state's budget surplus to its construction.[16] In the election, Ford defeated Cook by a vote of 399,406 to 328,982, completing his revitalization of the state's Democratic party by personally ousting the last Republican from major office.[2] Cook resigned his seat in December so that Ford would have a higher standing in seniority in the Senate.[16] Ford resigned as governor to accept the seat, leaving the governorship to Carroll.[4]

In the wake of the rapid ascent of Ford and members of his faction to the major political office, he and Carroll were investigated in a corruption probe.[2] The four-year investigation began in 1977 and focused on a state insurance kickback scheme alleged to have operated during Ford's tenure.[2] In June 1972, Ford had purchased insurance policies for state workers from some of his political backers without competitive bidding.[15] State law did not require competitive bidding, and earlier governors had engaged in similar practices.[15] Investigators believed there was an arrangement in which

insurance companies getting government contracts split commissions with party officials, although Ford was suspected of allowing the practice for political benefit rather than personal financial gain.[17] In 1981, prosecutors asked for indictments against Ford and Carroll on racketeering charges but a grand jury refused.[2] Because grand jury proceedings are secret, what exactly occurred has never been publicly revealed.[2] However, state Republicans maintained that Ford took the Fifth Amendment while on the stand, invoking his right against self-incrimination.[2] Ford refused to confirm or deny this report.[2]

[edit] United States Senate

Ford entered the Senate in 1974 and was reelected in 1980, 1986 and 1992.[3] In the 1980 primary, Ford received only token opposition from attorney Flora Stuart.[18] He was unopposed in the 1986 and 1992 Democratic primaries.[19][20] Republicans failed to put forward a viable challenger during any of Ford's re-election bids. In 1980, he defeated septuagenarian former state auditor Mary Louise Foust by 334,862 votes.[21] Ford's 720,891 votes represented 65 percent of the total votes cast in the election, a record for a statewide race in Kentucky.[21] Against Republican Jackson Andrews IV in 1986, Ford shattered that record, securing 74 percent of the votes cast and carrying all 120 Kentucky counties.[21] State senator David L. Williams fared little better in 1992, surrendering 477,002 votes to Ford (63 percent).[22]

Ford seriously considered leaving the Senate and running for governor again in 1983 and 1991, but decided against it both times.[2] In the 1983 contest, he would have faced sitting lieutenant governor Martha Layne Collins in the primary.[2] Collins was a factional ally of Ford's, which influenced his decision.[2] In 1991, Ford cited his seniority in the Senate and desire to become Democratic Senate whip as factors in his decision not to run for governor.[23]

Early in his career, Ford supported a constitutional amendment against desegregation busing.[2] He also floated a proposal to put the federal budget on a two-year cycle, believing too much time was spent annually on budget wrangling.[24] This idea, based on the model used in the Kentucky state budget, was never implemented.[24] During the Ninety-fifth Congress (1977â ^1979), he was chairman of the Committee on Aeronautical and Space Sciences.[3]

From 1977 to 1983, Ford was a member of the Democratic Senatorial Campaign Committee.[3] He first sought the post of Democratic whip in 1988, but lost to California's Alan Cranston, who had held the post since 1977.[25] Ford got a late start in the race, and a New York Times writer opined that he overestimated his chances of unseating Cranston.[25] Immediately after conceding his loss, he announced he would be a candidate for the position in the next election in 1990.[25] He again faced Cranston in the election, but Cranston withdrew from the race due to a battle with prostate cancer.[25] Ford maintained that he had enough commitments of support in the Democratic caucus to have won without Cranston's withdrawal.[25] When majority leader George J. Mitchell retired from the Senate in 1994, Ford showed some interest in the Democratic floor leader post.[2] Ultimately, he decided against it, choosing to focus instead on Kentucky issues.[2] He supported Christopher Dodd for majority leader.[2]

During the Ninety-eighth Congress (1983â ^1985), Ford served on the Select Committee to Study the Committee System, and he was a member of the Committee on Rules and Administration in the One Hundredth through One Hundred Third Congresses (1987â ^1995).[3] In 1989, he joined with Missouri senator Kit Bond to form the Senate National Guard Caucus, a coalition of senators committed to advancing National Guard capabilities and readiness.[26] Ford said he was motivated to form the caucus after seeing the work done by Mississippi Representative Sonny Montgomery with the National Guard Association and the National Guard Bureau.[26] Ford co-chaired the caucus with Bond until Ford's retirement from the Senate in 1999.[26] The Kentucky Army Guard dedicated the Wendell H. Ford Training Center in Muhlenberg County, Kentucky in 1998.[27] In 1999, the National Guard Bureau presented Ford with the Sonny Montgomery Award, its highest honor.[28]

Missouri senator Thomas Eagleton opined that Ford and Dee Huddleston made "probably the best one-two combination for any state in the Senate." [29] Both were defenders of tobacco, Kentucky's primary cash crop. [29] Ford sat on the Commerce Committee, influencing legislation affecting the manufacturing end of the tobacco industry, while Huddleston sat on the Agriculture Committee and protected programs that benefited tobacco farmers. [29] Both were instrumental in salvaging the Tobacco Price Support Program. [2] [29] Ford got tobacco exempted from the Consumer Product Safety Act and was a consistent opponent of cigarette tax increases. [2] He sponsored an amendment to the General Agreement on Tariffs and Trade that limited the amount of foreign tobacco that could be imported by the United States. [24]

Later in his career, Ford split with Huddleston's successor, Mitch McConnell, over a proposed settlement of lawsuits against tobacco companies. [2] Ford favored the package as presented to Congress, which would have protected the price support program, while McConnell favored a smaller aid package to tobacco farmers and an end to the price support program. [2] Both proposals were ultimately defeated, and the rift between Ford and McConnell never healed. [2]

As chairman of the Commerce Committee's aviation subcommittee, Ford secured funds to improve the airports in Louisville, northern Kentucky, and Glasgow. [2] [16] [24] The Wendell H. Ford Airport in Hazard, Kentucky is named for him. A 1990 bill aimed at reducing aircraft noise, improving airline safety measures, and requiring airlines to better inform consumers about their performance was dubbed the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century. [2] [24]

Of his career in the Senate, Ford said "I wasn't interested in national issues. I was interested in Kentucky issues." [2] Nevertheless, he influenced several important pieces of federal legislation. He sponsored an amendment to the Family Medical Leave Act exempting businesses with fewer than fifty employees. [24] He was a key player in securing passage of the motor voter law in 1993. [16] He supported increases to the federal minimum wage and a 1996 welfare reform bill. [24] A supporter of research into clean coal technology, he also worked with West Virginia senator Jay Rockefeller to secure better retirement benefits for coal miners. [24] Never known as a major player on international issues, Ford favored continued economic sanctions against Iraq as an alternative to the Gulf War. [24] He voted against the Panama Canal Treaty, which he perceived to be unpopular with Kentucky voters. [16] Despite having chaired Bill Clinton's inaugural committee in 1993, Ford broke with the administration by voting against the North American Free Trade Agreement. [2] [30]

As he had as governor of Kentucky, Ford gave attention to improving the efficiency of government. While serving on the Joint Committee on Printing during the One Hundred First and One Hundred Third Congresses, he saved the government millions of dollars in printing costs by printing in volume and using recycled paper. [3] [16] [24] In 1998, Virginia senator John Warner sponsored the Wendell H. Ford Government Publications Reform Act of 1998; Ford signed on as a co-sponsor. [31] The bill would have eliminated the Joint Committee on Printing, distributing its authority and functions among the Senate Rules Committee, the House Oversight Committee, and the administrator of the Government Printing Office. [31] It would also have centralized government printing services and penalized government agencies who did not make their documents available to the printing office to be printed. [31] Opponents of the bill cited the broad powers granted to the printing office and concerns about the erosion of copyright protection. [31] The bill was reported favorably out of committee, but was squeezed from the legislative calendar by issues related to the impending impeachment of Bill Clinton. [31] Warner did not return to his chairmanship of the Joint Committee on Printing in the next congress, Ford retired from the Senate, and the bill was not re-introduced. [31]

[edit] Later life

Ford chose not to seek a fifth term in 1998, and retired to Owensboro. [2] He worked for a time as a consultant to Washington lobbying and law firm Dickstein



Shapiro Morin & Oshinsky.[32] At the time of his retirement, Ford was the longest-serving senator in Kentucky history.[33] In January 2009, Mitch McConnell surpassed Ford's mark of 24 years in the Senate.[33]

In August 1978, the U.S. 60 Bypass around Owensboro was renamed the Wendell H. Ford Expressway.[34] The Western Kentucky Parkway was also renamed the Wendell H. Ford Western Kentucky Parkway during the administration of Governor Paul E. Patton.[35] In 2009, Ford was inducted into the Kentucky Transportation Hall of Fame.[36]

Ford currently teaches politics to the youth of Owensboro from the Owensboro Museum of Science and History, which houses a replica of his Senate office.[37]

[edit] Ancestors

Ancestors of Wendell H. Ford

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[edit] External links

Persondata

Name

Ford, Wendell Hampton

Alternative names

Short description

Kentucky politician

Date of birth

September 8, 1924

Place of birth

Owensboro, Kentucky, United States

Date of death

living

Place of death

Alzheimer's disease (AD), also known in medical literature as Alzheimer disease, is the most common form of dementia. There is no cure for the disease, which worsens as it progresses, and eventually leads to death. It was first described by German psychiatrist and neuropathologist Alois Alzheimer in 1906 and was named after him.[1] Most often, AD is diagnosed in people over 65 years of age,[2] although the less-prevalent early-onset Alzheimer's can occur much earlier. In 2006, there were 26.6 million sufferers worldwide. Alzheimer's is predicted to affect 1 in 85 people globally by 2050.[3]

Although Alzheimer's disease develops differently for every individual, there are many common symptoms.[4] Early symptoms are often mistakenly thought to be 'age-related' concerns, or manifestations of stress.[5] In the early stages, the most common symptom is difficulty in remembering recent events. When AD is suspected, the diagnosis is usually confirmed with tests that evaluate behaviour and thinking abilities, often followed by a brain scan if available.[6] As the disease advances, symptoms can include confusion, irritability and aggression, mood swings, trouble with language, and long-term memory loss. As the sufferer declines they often withdraw from family and society.[5][7] Gradually, bodily functions are lost, ultimately leading to death.[8] Since the disease is different for each individual, predicting how it will affect the person is difficult. AD develops for an unknown and variable amount of time before becoming fully apparent, and it can progress undiagnosed for years. On average, the life expectancy following diagnosis is approximately seven years.[9] Fewer than three percent of individuals live more than fourteen years after diagnosis.[10]

The cause and progression of Alzheimer's disease are not well understood. Research indicates that the disease is associated with plaques and tangles in the brain.[11] Current treatments only help with the symptoms of the disease. There are no available treatments that stop or reverse the progression of the disease. As of 2012[update], more than 1000 clinical trials have been or are being conducted to find ways to treat the disease, but it is unknown if any of the tested treatments will work.[12]Mental stimulation, exercise, and a balanced diet have been suggested as ways to delay cognitive symptoms (though not brain pathology) in healthy older individuals, but there is no conclusive

evidence supporting an effect.[13]

Because AD cannot be cured and is degenerative, the sufferer relies on others for assistance. The role of the main caregiver is often taken by the spouse or a close relative.[14] Alzheimer's disease is known for placing a great burden on caregivers; the pressures can be wide-ranging, involving social, psychological, physical, and economic elements of the caregiver's life.[15][16][17] In developed countries, AD is one of the most costly diseases to society.[18][19]

#### Characteristics

The disease course is divided into four stages, with progressive patterns of cognitive and functional impairments.

##### Pre-dementia

The first symptoms are often mistakenly attributed to ageing or stress.[5] Detailed neuropsychological testing can reveal mild cognitive difficulties up to eight years before a person fulfils the clinical criteria for diagnosis of AD.[20] These early symptoms can affect the most complex daily living activities.[21] The most noticeable deficit is memory loss, which shows up as difficulty in remembering recently learned facts and inability to acquire new information.[20][22]

Subtle problems with the executive functions of attentiveness, planning, flexibility, and abstract thinking, or impairments in semantic memory (memory of meanings, and concept relationships) can also be symptomatic of the early stages of AD.[20] Apathy can be observed at this stage, and remains the most persistent neuropsychiatric symptom throughout the course of the disease.[23] The preclinical stage of the disease has also been termed mild cognitive impairment,[22] but whether this term corresponds to a different diagnostic stage or identifies the first step of AD is a matter of dispute.[24]

##### Early

In people with AD the increasing impairment of learning and memory eventually leads to a definitive diagnosis. In a small portion of them, difficulties with language, executive functions, perception (agnosia), or execution of movements (apraxia) are more prominent than memory problems.[25] AD does not affect all memory capacities equally. Older memories of the person's life (episodic memory), facts learned (semantic memory), and implicit memory (the memory of the body on how to do things, such as using a fork to eat) are affected to a lesser degree than new facts or memories.[26][27]

Language problems are mainly characterised by a shrinking vocabulary and decreased word fluency, which lead to a general impoverishment of oral and written language.[25][28] In this stage, the person with Alzheimer's is usually capable of communicating basic ideas adequately.[25][28][29] While performing fine motor tasks such as writing, drawing or dressing, certain movement coordination and planning difficulties (apraxia) may be present but they are commonly unnoticed.[25] As the disease progresses, people with AD can often continue to perform many tasks independently, but may need assistance or supervision with the most cognitively demanding activities.[25]

##### Moderate

Progressive deterioration eventually hinders independence, with subjects being unable to perform most common activities of daily living.[25] Speech difficulties become evident due to an inability to recall vocabulary, which leads to frequent incorrect word substitutions (paraphasias). Reading and writing skills are also progressively lost.[25][29] Complex motor sequences become less coordinated as time passes and AD progresses, so the risk of falling increases.[25] During this phase, memory problems worsen, and the person may fail to recognise close relatives.[25] Long-term memory, which was previously intact, becomes impaired.[25]

Behavioural and neuropsychiatric changes become more prevalent. Common manifestations are wandering, irritability and labile affect, leading to crying, outbursts of unpremeditated aggression, or resistance to caregiving.[25] Sundowning can also appear.[30] Approximately 30% of people with AD develop illusory misidentifications and other delusional symptoms.[25]

Subjects also lose insight of their disease process and limitations (anosognosia).[25] Urinary incontinence can develop.[25] These symptoms create stress for relatives and caretakers, which can be reduced by moving the person from home care to other long-term care facilities.[25][31]

#### Advanced

During the final stage of AD, the person is completely dependent upon caregivers.[25] Language is reduced to simple phrases or even single words, eventually leading to complete loss of speech.[25][29] Despite the loss of verbal language abilities, people can often understand and return emotional signals.[25] Although aggressiveness can still be present, extreme apathy and exhaustion are much more common results.[25] People with AD will ultimately not be able to perform even the simplest tasks without assistance.[25] Muscle mass and mobility deteriorate to the point where they are bedridden, and they lose the ability to feed themselves.[25] AD is a terminal illness, with the cause of death typically being an external factor, such as infection of pressure ulcers or pneumonia, not the disease itself.[25]

#### Cause

The cause for most Alzheimer's cases is still essentially unknown[32][33] (except for 1% to 5% of cases where genetic differences have been identified). Several competing hypotheses exist trying to explain the cause of the disease:

##### Cholinergic hypothesis

The oldest, on which most currently available drug therapies are based, is the cholinergic hypothesis,[34] which proposes that AD is caused by reduced synthesis of the neurotransmitter acetylcholine. The cholinergic hypothesis has not maintained widespread support, largely because medications intended to treat acetylcholine deficiency have not been very effective. Other cholinergic effects have also been proposed, for example, initiation of large-scale aggregation of amyloid,[35] leading to generalised neuroinflammation.[36]

##### Amyloid hypothesis

In 1991, the amyloid hypothesis postulated that beta-amyloid ( $A\beta$ ) deposits are the fundamental cause of the disease.[37][38] Support for this postulate comes from the location of the gene for the amyloid precursor protein (APP) on chromosome 21, together with the fact that people with trisomy 21 (Down Syndrome) who have an extra gene copy almost universally exhibit AD by 40 years of age.[39][40] Also, a specific isoform of apolipoprotein, APOE4, is a major genetic risk factor for AD. Whilst apolipoproteins enhance the break down of beta amyloid, some isoforms are not very effective at this task (such as APOE4), leading to excess amyloid buildup in the brain.[41] Further evidence comes from the finding that transgenic mice that express a mutant form of the human APP gene develop fibrillar amyloid plaques and Alzheimer's-like brain pathology with spatial learning deficits.[42]

An experimental vaccine was found to clear the amyloid plaques in early human trials, but it did not have any significant effect on dementia.[43] Researchers have been led to suspect non-plaque  $A\beta$  oligomers (aggregates of many monomers) as the primary pathogenic form of  $A\beta$ . These toxic oligomers, also referred to as amyloid-derived diffusible ligands (ADDLs), bind to a surface receptor on neurons and change the structure of the synapse, thereby disrupting neuronal communication.[44] One receptor for  $A\beta$  oligomers may be the prion protein, the same protein that has been linked to mad cow disease and the related human condition, Creutzfeldt-Jakob disease, thus potentially linking the underlying mechanism of these neurodegenerative disorders with that of Alzheimer's disease.[45]

In 2009, this theory was updated, suggesting that a close relative of the beta-amyloid protein, and not necessarily the beta-amyloid itself, may be a major culprit in the disease. The theory holds that an amyloid-related mechanism that prunes neuronal connections in the brain in the fast-growth phase of early life may be triggered by ageing-related processes in later life to cause the neuronal withering of Alzheimer's disease.[46] N-APP, a fragment of APP from the peptide's N-terminus, is adjacent to beta-amyloid and is cleaved from APP by one of the same enzymes. N-APP triggers the self-destruct

pathway by binding to a neuronal receptor called death receptor 6 (DR6, also known as TNFRSF21).[46] DR6 is highly expressed in the human brain regions most affected by Alzheimer's, so it is possible that the N-APP/DR6 pathway might be hijacked in the ageing brain to cause damage. In this model, beta-amyloid plays a complementary role, by depressing synaptic function.

#### Tau hypothesis

The tau hypothesis is the idea that tau protein abnormalities initiate the disease cascade.[38] In this model, hyperphosphorylated tau begins to pair with other threads of tau. Eventually, they form neurofibrillary tangles inside nerve cell bodies.[47] When this occurs, the microtubules disintegrate, collapsing the neuron's transport system.[48] This may result first in malfunctions in biochemical communication between neurons and later in the death of the cells.[49]

#### Other hypotheses

Herpes simplex virus type 1 has also been proposed to play a causative role in people carrying the susceptible versions of the apoE gene.[50]

Another hypothesis asserts that the disease may be caused by age-related myelin breakdown in the brain. Iron released during myelin breakdown is hypothesised to cause further damage. Homeostatic myelin repair processes contribute to the development of proteinaceous deposits such as beta-amyloid and tau.[51][52][53]

Oxidative stress and dys-homeostasis of biometal (biology) metabolism may be significant in the formation of the pathology.[54][55]

AD individuals show 70% loss of locus coeruleus cells that provide norepinephrine (in addition to its neurotransmitter role) that locally diffuses from "varicosities" as an endogenous antiinflammatory agent in the microenvironment around the neurons, glial cells, and blood vessels in the neocortex and hippocampus.[56] It has been shown that norepinephrine stimulates mouse microglia to suppress  $\text{A}\beta$ -induced production of cytokines and their phagocytosis of  $\text{A}\beta$ . [56] This suggests that degeneration of the locus coeruleus might be responsible for increased  $\text{A}\beta$  deposition in AD brains.[56]

#### Pathophysiology

##### Neuropathology

Alzheimer's disease is characterised by loss of neurons and synapses in the cerebral cortex and certain subcortical regions. This loss results in gross atrophy of the affected regions, including degeneration in the temporal lobe and parietal lobe, and parts of the frontal cortex and cingulate gyrus.[36] Studies using MRI and PET have documented reductions in the size of specific brain regions in people with AD as they progressed from mild cognitive impairment to Alzheimer's disease, and in comparison with similar images from healthy older adults.[57][58]

Both amyloid plaques and neurofibrillary tangles are clearly visible by microscopy in brains of those afflicted by AD.[11] Plaques are dense, mostly insoluble deposits of beta-amyloid peptide and cellular material outside and around neurons. Tangles (neurofibrillary tangles) are aggregates of the microtubule-associated protein tau which has become hyperphosphorylated and accumulate inside the cells themselves. Although many older individuals develop some plaques and tangles as a consequence of ageing, the brains of people with AD have a greater number of them in specific brain regions such as the temporal lobe.[59] Lewy bodies are not rare in the brains of people with AD.[60]

##### Biochemistry

Alzheimer's disease has been identified as a protein misfolding disease (proteopathy), caused by accumulation of abnormally folded amyloid beta and amyloid tau proteins in the brain.[61] Plaques are made up of small peptides, 39-43 amino acids in length, called beta-amyloid ( $\text{A}\beta$ ). Beta-amyloid is a fragment from a larger protein called amyloid precursor protein (APP), a transmembrane protein that penetrates through the neuron's membrane. APP is critical to neuron growth, survival and post-injury repair.[62][63] In Alzheimer's disease, an unknown process causes APP to be divided into smaller fragments by enzymes through proteolysis.[64] One of these fragments gives rise

to fibrils of beta-amyloid, which form clumps that deposit outside neurons in dense formations known as senile plaques.[11][65]

AD is also considered a tauopathy due to abnormal aggregation of the tau protein. Every neuron has a cytoskeleton, an internal support structure partly made up of structures called microtubules. These microtubules act like tracks, guiding nutrients and molecules from the body of the cell to the ends of the axon and back. A protein called tau stabilises the microtubules when phosphorylated, and is therefore called a microtubule-associated protein. In AD, tau undergoes chemical changes, becoming hyperphosphorylated; it then begins to pair with other threads, creating neurofibrillary tangles and disintegrating the neuron's transport system.[66]

#### Disease mechanism

Exactly how disturbances of production and aggregation of the beta-amyloid peptide gives rise to the pathology of AD is not known.[67] The amyloid hypothesis traditionally points to the accumulation of beta-amyloid peptides as the central event triggering neuron degeneration. Accumulation of aggregated amyloid fibrils, which are believed to be the toxic form of the protein responsible for disrupting the cell's calcium ion homeostasis, induces programmed cell death (apoptosis).[68] It is also known that  $\text{A}\beta$  selectively builds up in the mitochondria in the cells of Alzheimer's-affected brains, and it also inhibits certain enzyme functions and the utilisation of glucose by neurons.[69]

Various inflammatory processes and cytokines may also have a role in the pathology of Alzheimer's disease. Inflammation is a general marker of tissue damage in any disease, and may be either secondary to tissue damage in AD or a marker of an immunological response.[70]

Alterations in the distribution of different neurotrophic factors and in the expression of their receptors such as the brain derived neurotrophic factor (BDNF) have been described in AD.[71][72]

#### Genetics

The vast majority of cases of Alzheimer's disease are sporadic, meaning that they are not genetically inherited although some genes may act as risk factors. On the other hand, around 0.1% of the cases are familial forms of autosomal dominant (not sex-linked) inheritance, which usually have an onset before age 65.[73] This form of the disease is known as early onset familial Alzheimer's disease.

Most of autosomal dominant familial AD can be attributed to mutations in one of three genes: amyloid precursor protein (APP) and presenilins 1 and 2.[74] Most mutations in the APP and presenilin genes increase the production of a small protein called  $\text{A}\beta_{42}$ , which is the main component of senile plaques.[75] Some of the mutations merely alter the ratio between  $\text{A}\beta_{42}$  and the other major forms—e.g.,  $\text{A}\beta_{40}$ —without increasing  $\text{A}\beta_{42}$  levels.[75][76] This suggests that presenilin mutations can cause disease even if they lower the total amount of  $\text{A}\beta$  produced and may point to other roles of presenilin or a role for alterations in the function of APP and/or its fragments other than  $\text{A}\beta$ .

Most cases of Alzheimer's disease do not exhibit autosomal-dominant inheritance and are termed sporadic AD. Nevertheless genetic differences may act as risk factors. The best known genetic risk factor is the inheritance of the  $\epsilon_4$  allele of the apolipoprotein E (APOE).[77][78] Between 40 and 80% of people with AD possess at least one APOE $\epsilon_4$  allele.[78] The APOE $\epsilon_4$  allele increases the risk of the disease by three times in heterozygotes and by 15 times in homozygotes.[73] However, this "genetic" effect is not necessarily purely genetic. For example, certain Nigerian populations have no relationship between presence or dose of APOE $\epsilon_4$  and incidence or age-of-onset for Alzheimer's disease.[79][80] Geneticists agree that numerous other genes also act as risk factors or have protective effects that influence the development of late onset Alzheimer's disease,[74] but results such as the Nigerian studies and the incomplete penetrance for all genetic risk factors associated with sporadic Alzheimers indicate a strong role for environmental effects. Over 400 genes have been tested for association with late-onset sporadic AD,[74] most

with null results.[73]

Mutation in the TREM2 gene have been associated with a 3 to 5 times higher risk of developing Alzheimer's disease.[81][82] A suggested mechanism of action is that when TREM2 is mutated, white blood cells in the brain are no longer able to control the amount of beta amyloid present.

#### Diagnosis

Alzheimer's disease is usually diagnosed clinically from the patient history, collateral history from relatives, and clinical observations, based on the presence of characteristic neurological and neuropsychological features and the absence of alternative conditions.[83][84] Advanced medical imaging with computed tomography (CT) or magnetic resonance imaging (MRI), and with single photon emission computed tomography (SPECT) or positron emission tomography (PET) can be used to help exclude other cerebral pathology or subtypes of dementia.[85] Moreover, it may predict conversion from prodromal stages (mild cognitive impairment) to Alzheimer's disease.[86]

Assessment of intellectual functioning including memory testing can further characterise the state of the disease.[5] Medical organisations have created diagnostic criteria to ease and standardise the diagnostic process for practicing physicians. The diagnosis can be confirmed with very high accuracy post-mortem when brain material is available and can be examined histologically.[87]

#### Criteria

The National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) and the Alzheimer's Disease and Related Disorders Association (ADRDA, now known as the Alzheimer's Association) established the most commonly used NINCDS-ADRDA Alzheimer's Criteria for diagnosis in 1984,[87] extensively updated in 2007.[88] These criteria require that the presence of cognitive impairment, and a suspected dementia syndrome, be confirmed by neuropsychological testing for a clinical diagnosis of possible or probable AD. A histopathologic confirmation including a microscopic examination of brain tissue is required for a definitive diagnosis. Good statistical reliability and validity have been shown between the diagnostic criteria and definitive histopathological confirmation.[89] Eight cognitive domains are most commonly impaired in AD: memory, language, perceptual skills, attention, constructive abilities, orientation, problem solving and functional abilities. These domains are equivalent to the NINCDS-ADRDA Alzheimer's Criteria as listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) published by the American Psychiatric Association.[90][91]

#### Techniques

Neuropsychological tests such as the mini-mental state examination (MMSE) are widely used to evaluate the cognitive impairments needed for diagnosis. More comprehensive test arrays are necessary for high reliability of results, particularly in the earliest stages of the disease.[92][93] Neurological examination in early AD will usually provide normal results, except for obvious cognitive impairment, which may not differ from that resulting from other diseases processes, including other causes of dementia.

Further neurological examinations are crucial in the differential diagnosis of AD and other diseases.[5] Interviews with family members are also utilised in the assessment of the disease. Caregivers can supply important information on the daily living abilities, as well as on the decrease, over time, of the person's mental function.[86] A caregiver's viewpoint is particularly important, since a person with AD is commonly unaware of his own deficits.[94] Many times, families also have difficulties in the detection of initial dementia symptoms and may not communicate accurate information to a physician.[95]

Another recent objective marker of the disease is the analysis of cerebrospinal fluid for beta-amyloid or tau proteins,[96] both total tau protein and phosphorylated tau181P protein concentrations.[97] Searching for these proteins using a spinal tap can predict the onset of Alzheimer's with a sensitivity of between 94% and 100%.[97] When used in conjunction with existing

neuroimaging techniques, doctors can identify people with significant memory loss who are already developing the disease.[97] Spinal fluid tests are commercially available, unlike the latest neuroimaging technology.[98] Alzheimer's was diagnosed in one-third of the people who did not have any symptoms in a 2010 study, meaning that disease progression occurs well before symptoms occur.[99]

Supplemental testing provides extra information on some features of the disease or is used to rule out other diagnoses. Blood tests can identify other causes for dementia than AD[5]~causes which may, in rare cases, be reversible.[100] It is common to perform thyroid function tests, assess B12, rule out syphilis, rule out metabolic problems (including tests for kidney function, electrolyte levels and for diabetes), assess levels of heavy metals (e.g. lead, mercury) and anaemia. (See differential diagnosis for Dementia). (It is also necessary to rule out delirium).

Psychological tests for depression are employed, since depression can either be concurrent with AD (see Depression of Alzheimer disease), an early sign of cognitive impairment,[101] or even the cause.[102][103]

#### Imaging

When available as a diagnostic tool, single photon emission computed tomography (SPECT) and positron emission tomography (PET) neuroimaging are used to confirm a diagnosis of Alzheimer's in conjunction with evaluations involving mental status examination.[104] In a person already having dementia, SPECT appears to be superior in differentiating Alzheimer's disease from other possible causes, compared with the usual attempts employing mental testing and medical history analysis.[105] Advances have led to the proposal of new diagnostic criteria.[5][88]

A new technique known as PiB PET has been developed for directly and clearly imaging beta-amyloid deposits in vivo using a tracer that binds selectively to the A-beta deposits.[106] The PiB-PET compound uses carbon-11 PET scanning. Recent studies suggest that PiB-PET is 86% accurate in predicting which people with mild cognitive impairment will develop Alzheimer's disease within two years, and 92% accurate in ruling out the likelihood of developing Alzheimer's.[107]

PiB PET remains investigational, however a similar PET scanning radiopharmaceutical called florbetapir, containing the longer-lasting radionuclide fluorine-18, has recently been tested as a diagnostic tool in Alzheimer's disease, and given FDA approval for this use.[108][109][110][111] Florbetapir, like PiB, binds to beta-amyloid, but due to its use of fluorine-18 has a half-life of 110 minutes, in contrast to PiB's radioactive half life of 20 minutes. Wong et al. found that the longer life allowed the tracer to accumulate significantly more in the brains of people with AD, particularly in the regions known to be associated with beta-amyloid deposits.[111]

One review predicted that amyloid imaging is likely to be used in conjunction with other markers rather than as an alternative.[112]

Volumetric MRI can detect changes in the size of brain regions. Measuring those regions that atrophy during the progress of Alzheimer's disease is showing promise as a diagnostic indicator. It may prove less expensive than other imaging methods currently under study.[113]

#### Non-Imaging biomarkers

Recent studies have shown that people with AD had decreased glutamate (Glu) as well as decreased Glu/creatine (Cr), Glu/myo-inositol (mI), Glu/N-acetylaspartate (NAA), and NAA/Cr ratios compared to normal people. Both decreased NAA/Cr and decreased hippocampal glutamate may be an early indicator of AD.[114]

Early research in mouse models may have identified markers for AD. The applicability of these markers is unknown.[115]

A small human study in 2011 found that monitoring blood dehydroepiandrosterone (DHEA) variations in response to an oxidative stress could be a useful proxy test: the subjects with MCI did not have a DHEA variation, while the healthy controls did.[116]

## Prevention

At present, there is no definitive evidence to support that any particular measure is effective in preventing AD.[117] Global studies of measures to prevent or delay the onset of AD have often produced inconsistent results. However, epidemiological studies have proposed relationships between certain modifiable factors, such as diet, cardiovascular risk, pharmaceutical products, or intellectual activities among others, and a population's likelihood of developing AD. Only further research, including clinical trials, will reveal whether these factors can help to prevent AD.[118]

Although cardiovascular risk factors, such as hypercholesterolaemia, hypertension, diabetes, and smoking, are associated with a higher risk of onset and course of AD,[119][120] statins, which are cholesterol lowering drugs, have not been effective in preventing or improving the course of the disease.[121][122] The components of a Mediterranean diet, which include fruit and vegetables, bread, wheat and other cereals, olive oil, fish, and red wine, may all individually or together reduce the risk and course of Alzheimer's disease.[123] The diet's beneficial cardiovascular effect has been proposed as the mechanism of action.[123] There is limited evidence that light to moderate use of alcohol, particularly red wine, is associated with lower risk of AD.[124]

Reviews on the use of vitamins have not found enough evidence of efficacy to recommend vitamin C,[125] E,[125][126] or folic acid with or without vitamin B12,[127] as preventive or treatment agents in AD. Additionally vitamin E is associated with important health risks.[125] Trials examining folic acid (B9) and other B vitamins failed to show any significant association with cognitive decline.[128] Docosahexaenoic acid, an Omega 3 fatty acid, has not been found to slow decline.[129]

Long-term usage of non-steroidal anti-inflammatory drug (NSAIDs) is associated with a reduced likelihood of developing AD.[130] Human postmortem studies, in animal models, or in vitro investigations also support the notion that NSAIDs can reduce inflammation related to amyloid plaques.[130] However trials investigating their use as palliative treatment have failed to show positive results while no prevention trial has been completed.[130] Curcumin from the curry spice turmeric has shown some effectiveness in preventing brain damage in mouse models due to its anti-inflammatory properties.[131][132] Hormone replacement therapy, although previously used, is no longer thought to prevent dementia and in some cases may even be related to it.[133][134] There is inconsistent and unconvincing evidence that ginkgo has any positive effect on cognitive impairment and dementia,[135] and a recent study concludes that it has no effect in reducing the rate of AD incidence.[136] A 21-year study found that coffee drinkers of 3 to 5 cups per day at midlife had a 65% reduction in risk of dementia in late-life.[137]

People who engage in intellectual activities such as reading, playing board games, completing crossword puzzles, playing musical instruments, or regular social interaction show a reduced risk for Alzheimer's disease.[138] This is compatible with the cognitive reserve theory, which states that some life experiences result in more efficient neural functioning providing the individual a cognitive reserve that delays the onset of dementia manifestations.[138] Education delays the onset of AD syndrome, but is not related to earlier death after diagnosis.[139] Learning a second language even later in life seems to delay getting Alzheimer disease.[140] Physical activity is also associated with a reduced risk of AD.[139]

Two studies have shown that medical cannabis may be effective in inhibiting the progress of AD. The active ingredient in marijuana, THC, may prevent the formation of deposits in the brain associated with Alzheimer's disease. THC was found to inhibit acetylcholinesterase more effectively than commercially marketed drugs.[141][142][143] One review of the clinical research found no evidence that cannabinoids are effective in the improvement of disturbed behavior or in the treatment of other symptoms of AD or dementia, and concluded that more randomized double-blind placebo controlled trials would be needed to



determine whether cannabinoids are clinically effective in treating the disease.[144] A 2012 review from the Philosophical Transactions of a Royal Society B suggested that activating the cannabinoid system may trigger an "anti-oxidant cleanse" in the brain by removing damaged cells and improving the efficiency of the mitochondria. The review found cannabinoids may slow decline in cognitive functioning.[145][146]

Some studies have shown an increased risk of developing AD with environmental factors such as the intake of metals, particularly aluminium,[147][148] or exposure to solvents.[149] The quality of some of these studies has been criticised,[150] and other studies have concluded that there is no relationship between these environmental factors and the development of AD.[151][152][153][154]

While some studies suggest that extremely low frequency electromagnetic fields may increase the risk for Alzheimer's disease,[citation needed] reviewers found that further epidemiological and laboratory investigations of this hypothesis are needed.[155] Smoking is a significant AD risk factor.[156] Systemic markers of the innate immune system are risk factors for late-onset AD.[157]

#### Management

There is no cure for Alzheimer's disease; available treatments offer relatively small symptomatic benefit but remain palliative in nature. Current treatments can be divided into pharmaceutical, psychosocial and caregiving.

#### Pharmaceutical

Five medications are currently used to treat the cognitive manifestations of AD: four are acetylcholinesterase inhibitors (tacrine, rivastigmine, galantamine and donepezil) and the other (memantine) is an NMDA receptor antagonist.[158] No drug has an indication for delaying or halting the progression of the disease.

Reduction in the activity of the cholinergic neurons is a well-known feature of Alzheimer's disease.[159] Acetylcholinesterase inhibitors are employed to reduce the rate at which acetylcholine (ACh) is broken down, thereby increasing the concentration of ACh in the brain and combating the loss of ACh caused by the death of cholinergic neurons.[160] Cholinesterase inhibitors approved for the management of AD symptoms are donepezil (brand name Aricept),[161] galantamine (Razadyne),[162] and rivastigmine (branded as Exelon[163]). There is evidence for the efficacy of these medications in mild to moderate Alzheimer's disease,[164][165] and some evidence for their use in the advanced stage. Only donepezil is approved for treatment of advanced AD dementia.[166] The use of these drugs in mild cognitive impairment has not shown any effect in a delay of the onset of AD.[167] The most common side effects are nausea and vomiting, both of which are linked to cholinergic excess. These side effects arise in approximately 10–20% of users and are mild to moderate in severity. Less common secondary effects include muscle cramps, decreased heart rate (bradycardia), decreased appetite and weight, and increased gastric acid production.[168]

Glutamate is a useful excitatory neurotransmitter of the nervous system, although excessive amounts in the brain can lead to cell death through a process called excitotoxicity which consists of the overstimulation of glutamate receptors. Excitotoxicity occurs not only in Alzheimer's disease, but also in other neurological diseases such as Parkinson's disease and multiple sclerosis.[169] Memantine (brand names Akatinol)[170] is a noncompetitive NMDA receptor antagonist first used as an anti-influenza agent. It acts on the glutamatergic system by blocking NMDA receptors and inhibiting their overstimulation by glutamate.[169] Memantine has been shown to be moderately efficacious in the treatment of moderate to severe Alzheimer's disease. Its effects in the initial stages of AD are unknown.[171] Reported adverse events with memantine are infrequent and mild, including hallucinations, confusion, dizziness, headache and fatigue.[172] The combination of memantine and donepezil has been shown to be "of statistically significant but clinically marginal effectiveness".[173]

Antipsychotic drugs are modestly useful in reducing aggression and psychosis

in Alzheimer's disease with behavioural problems, but are associated with serious adverse effects, such as cerebrovascular events, movement difficulties or cognitive decline, that do not permit their routine use.[174][175] When used in the long-term, they have been shown to associate with increased mortality.[175]

Huperzine A while promising, requires further evidence before its use can be recommended.[176]

#### Psychosocial intervention

Psychosocial interventions are used as an adjunct to pharmaceutical treatment and can be classified within behaviour-, emotion-, cognition- or stimulation-oriented approaches. Research on efficacy is unavailable and rarely specific to AD, focusing instead on dementia in general.[177]

Behavioural interventions attempt to identify and reduce the antecedents and consequences of problem behaviours. This approach has not shown success in improving overall functioning,[178] but can help to reduce some specific problem behaviours, such as incontinence.[179] There is a lack of high quality data on the effectiveness of these techniques in other behaviour problems such as wandering.[180][181]

Emotion-oriented interventions include reminiscence therapy, validation therapy, supportive psychotherapy, sensory integration, also called snoezelen, and simulated presence therapy. Supportive psychotherapy has received little or no formal scientific study, but some clinicians find it useful in helping mildly impaired people adjust to their illness.[177] Reminiscence therapy (RT) involves the discussion of past experiences individually or in group, many times with the aid of photographs, household items, music and sound recordings, or other familiar items from the past. Although there are few quality studies on the effectiveness of RT, it may be beneficial for cognition and mood.[182] Simulated presence therapy (SPT) is based on attachment theories and involves playing a recording with voices of the closest relatives of the person with Alzheimer's disease. There is partial evidence indicating that SPT may reduce challenging behaviours.[183] Finally, validation therapy is based on acceptance of the reality and personal truth of another's experience, while sensory integration is based on exercises aimed to stimulate senses. There is little evidence to support the usefulness of these therapies.[184][185]

The aim of cognition-oriented treatments, which include reality orientation and cognitive retraining, is the reduction of cognitive deficits. Reality orientation consists in the presentation of information about time, place or person in order to ease the understanding of the person about its surroundings and his or her place in them. On the other hand cognitive retraining tries to improve impaired capacities by exercitation of mental abilities. Both have shown some efficacy improving cognitive capacities,[186][187] although in some studies these effects were transient and negative effects, such as frustration, have also been reported.[177]

Stimulation-oriented treatments include art, music and pet therapies, exercise, and any other kind of recreational activities. Stimulation has modest support for improving behaviour, mood, and, to a lesser extent, function. Nevertheless, as important as these effects are, the main support for the use of stimulation therapies is the change in the person's routine.[177]

#### Caregiving

Since Alzheimer's has no cure and it gradually renders people incapable of tending for their own needs, caregiving essentially is the treatment and must be carefully managed over the course of the disease.

During the early and moderate stages, modifications to the living environment and lifestyle can increase patient safety and reduce caretaker burden.[188][189] Examples of such modifications are the adherence to simplified routines, the placing of safety locks, the labelling of household items to cue the person with the disease or the use of modified daily life objects.[177][190][191] The patient may also become incapable of feeding themselves, so they require food in smaller pieces or pureed.[192] When swallowing difficulties arise, the use of feeding tubes may be required. In

such cases, the medical efficacy and ethics of continuing feeding is an important consideration of the caregivers and family members.[193][194] The use of physical restraints is rarely indicated in any stage of the disease, although there are situations when they are necessary to prevent harm to the person with AD or their caregivers.[177]

As the disease progresses, different medical issues can appear, such as oral and dental disease, pressure ulcers, malnutrition, hygiene problems, or respiratory, skin, or eye infections. Careful management can prevent them, while professional treatment is needed when they do arise.[195][196] During the final stages of the disease, treatment is centred on relieving discomfort until death.[197]

A small recent study in the US concluded that people whose caregivers had a realistic understanding of the prognosis and clinical complications of late dementia were less likely to receive aggressive treatment near the end of life.[198]

#### Feeding tubes

There is strong evidence that feeding tubes do not help people with advanced Alzheimer's dementia gain weight, regain strength or function, prevent aspiration pneumonias, or improve quality of life.[199][200][201][202]

#### Prognosis

Disability-adjusted life year for Alzheimer and other dementias per 100,000 inhabitants in 2004.

Â Â no data  
Â Â â ¤Â 50  
Â Â 50â ^70  
Â Â 70â ^90  
Â Â 90â ^110  
Â Â 110â ^130  
Â Â 130â ^150  
Â Â 150â ^170  
Â Â 170â ^190  
Â Â 190â ^210  
Â Â 210â ^230  
Â Â 230â ^250  
Â Â â ¥Â 250

The early stages of Alzheimer's disease are difficult to diagnose. A definitive diagnosis is usually made once cognitive impairment compromises daily living activities, although the person may still be living independently. The symptoms will progress from mild cognitive problems, such as memory loss through increasing stages of cognitive and non-cognitive disturbances, eliminating any possibility of independent living, especially in the late stages of the disease.[25]

Life expectancy of the population with the disease is reduced.[9][203][204] The mean life expectancy following diagnosis is approximately seven years.[9] Fewer than 3% of people live more than fourteen years.[10] Disease features significantly associated with reduced survival are an increased severity of cognitive impairment, decreased functional level, history of falls, and disturbances in the neurological examination. Other coincident diseases such as heart problems, diabetes or history of alcohol abuse are also related with shortened survival.[203][205][206] While the earlier the age at onset the higher the total survival years, life expectancy is particularly reduced when compared to the healthy population among those who are younger.[204] Men have a

less favourable survival prognosis than women.[10][207]

The disease is the underlying cause of death in 70% of all cases.[9]Pneumonia and dehydration are the most frequent immediate causes of death, while cancer is a less frequent cause of death than in the general population.[9][207]

#### Epidemiology

Incidence rates

after age 65[208]

Age

New affected

per thousand

personâ ^years

65â ^69

Â 3

70â ^74

Â 6

75â ^79

Â 9

80â ^84

23

85â ^89

40

90â ^Â Â Â Â

69

Two main measures are used in epidemiological studies: incidence and prevalence. Incidence is the number of new cases per unit of personâ ^time at risk (usually number of new cases per thousand personâ ^years); while prevalence is the total number of cases of the disease in the population at any given time.

Regarding incidence, cohort longitudinal studies (studies where a disease-free population is followed over the years) provide rates between 10 and 15 per thousand personâ ^years for all dementias and 5â ^8 for AD,[208][209] which means that half of new dementia cases each year are AD. Advancing age is a primary risk factor for the disease and incidence rates are not equal for all ages: every five years after the age of 65, the risk of acquiring the disease approximately doubles, increasing from 3 to as much as 69 per thousand person years.[208][209] There are also sex differences in the incidence rates, women having a higher risk of developing AD particularly in the population older than 85.[209][210]

Prevalence of AD in populations is dependent upon different factors including incidence and survival. Since the incidence of AD increases with age, it is particularly important to include the mean age of the population of interest. In the United States, Alzheimer prevalence was estimated to be 1.6% in 2000 both overall and in the 65â ^74 age group, with the rate increasing to 19% in the 75â ^84 group and to 42% in the greater than 84 group.[211] Prevalence rates in less developed regions are lower.[212] The World Health Organization estimated that in 2005, 0.379% of people worldwide had dementia, and that the prevalence would increase to 0.441% in 2015 and to 0.556% in 2030.[213] Other studies have reached similar conclusions.[212] Another study estimated that in 2006, 0.40% of the world population (range 0.17â ^0.89%; absolute number 26.6 million, range 11.4â ^59.4 million) were afflicted by AD, and that the prevalence rate would triple and the absolute number would quadruple by 2050.[3]

#### History

The ancient Greek and Roman philosophers and physicians associated old age with increasing dementia.[1] It was not until 1901 that German psychiatrist Alois Alzheimer identified the first case of what became known as Alzheimer's disease in a fifty-year-old woman he called Auguste D. He followed her case until she died in 1906, when he first reported publicly on it.[214] During the next five years, eleven similar cases were reported in the medical literature, some of them already using the term Alzheimer's disease.[1] The disease was first described as a distinctive disease by Emil Kraepelin after suppressing

some of the clinical (delusions and hallucinations) and pathological features (arteriosclerotic changes) contained in the original report of Auguste D.[215] He included Alzheimer's disease, also named presenile dementia by Kraepelin, as a subtype of senile dementia in the eighth edition of his Textbook of Psychiatry, published on July 15, 1910.[216]

For most of the 20th century, the diagnosis of Alzheimer's disease was reserved for individuals between the ages of 45 and 65 who developed symptoms of dementia. The terminology changed after 1977 when a conference on AD concluded that the clinical and pathological manifestations of presenile and senile dementia were almost identical, although the authors also added that this did not rule out the possibility that they had different causes.[217] This eventually led to the diagnosis of Alzheimer's disease independently of age.[218] The term senile dementia of the Alzheimer type (SDAT) was used for a time to describe the condition in those over 65, with classical Alzheimer's disease being used for those younger. Eventually, the term Alzheimer's disease was formally adopted in medical nomenclature to describe individuals of all ages with a characteristic common symptom pattern, disease course, and neuropathology.[219]

Society and culture

Social costs

Dementia, and specifically Alzheimer's disease, may be among the most costly diseases for society in Europe and the United States,[18][19] while their cost in other countries such as Argentina,[220] or South Korea,[221] is also high and rising. These costs will probably increase with the ageing of society, becoming an important social problem. AD-associated costs include direct medical costs such as nursing home care, direct nonmedical costs such as in-home day care, and indirect costs such as lost productivity of both patient and caregiver.[19] Numbers vary between studies but dementia costs worldwide have been calculated around \$160Â billion,[222] while costs of Alzheimer's disease in the United States may be \$100Â billion each year.[19]

The greatest origin of costs for society is the long-term care by health care professionals and particularly institutionalisation, which corresponds to 2/3 of the total costs for society.[18]The cost of living at home is also very high,[18] especially when informal costs for the family, such as caregiving time and caregiver's lost earnings, are taken into account.[223]

Costs increase with dementia severity and the presence of behavioural disturbances,[224] and are related to the increased caregiving time required for the provision of physical care.[223] Therefore any treatment that slows cognitive decline, delays institutionalisation or reduces caregivers' hours will have economic benefits. Economic evaluations of current treatments have shown positive results.[19]

Caregiving burden

The role of the main caregiver is often taken by the spouse or a close relative.[14] Alzheimer's disease is known for placing a great burden on caregivers which includes social, psychological, physical or economic aspects.[15][16][17] Home care is usually preferred by people with AD and their families.[225] This option also delays or eliminates the need for more professional and costly levels of care.[225][226] Nevertheless two-thirds of nursing home residents have dementias.[177]

Dementia caregivers are subject to high rates of physical and mental disorders.[227] Factors associated with greater psychosocial problems of the primary caregivers include having an affected person at home, the carer being a spouse, demanding behaviours of the cared person such as depression, behavioural disturbances, hallucinations, sleep problems or walking disruptions and social isolation.[228][229] Regarding economic problems, family caregivers often give up time from work to spend 47Â hours per week on average with the person with AD, while the costs of caring for them are high. Direct and indirect costs of caring for an Alzheimer's patient average between \$18,000 and \$77,500 per year in the United States, depending on the study.[14][223]

Cognitive behavioural therapy and the teaching of coping strategies either

individually or in group have demonstrated their efficacy in improving caregivers' psychological health.[15][230]

#### Notable cases

As Alzheimer's disease is highly prevalent, many notable people have developed it. Well-known examples are former United States President Ronald Reagan and Irish writer Iris Murdoch, both of whom were the subjects of scientific articles examining how their cognitive capacities deteriorated with the disease.[231][232][233] Other cases include the retired footballer Ferenc Puskas,[234] the former Prime Ministers Harold Wilson (United Kingdom) and Adolfo Suárez (Spain),[235][236] the actress Rita Hayworth,[237] the actor Charlton Heston,[238] the novelist Terry Pratchett,[239] Indian politician George Fernandes,[240] and the 2009 Nobel Prize in Physics recipient Charles K. Kao.[241]

AD has also been portrayed in films such as: *Iris* (2001), based on John Bayley's memoir of his wife Iris Murdoch;[242] *The Notebook* (2004), based on Nicholas Sparks' 1996 novel of the same name;[243] *A Moment to Remember* (2004); *Thanmathra* (2005);[244] *Memories of Tomorrow* (*Ashita no Kioku*) (2006), based on Hiroshi Ogiwara's novel of the same name;[245] *Away from Her* (2006), based on Alice Munro's short story "The Bear Came over the Mountain".[246] Documentaries on Alzheimer's disease include *Malcolm and Barbara: A Love Story* (1999) and *Malcolm and Barbara: Love's Farewell* (2007), both featuring Malcolm Pointon.[247]

#### Research directions

As of 2012[update], the safety and efficacy of more than 400 pharmaceutical treatments had been or were being investigated in 1012 clinical trials worldwide, and approximately a quarter of these compounds are in Phase III trials, the last step prior to review by regulatory agencies.[12]

One area of clinical research is focused on treating the underlying disease pathology. Reduction of beta-amyloid levels is a common target of compounds[248] (such as apomorphine) under investigation. Immunotherapy or vaccination for the amyloid protein is one treatment modality under study.[249] Unlike preventative vaccination, the putative therapy would be used to treat people already diagnosed. It is based upon the concept of training the immune system to recognise, attack, and reverse deposition of amyloid, thereby altering the course of the disease.[250] An example of such a vaccine under investigation was ACC-001,[251][252] although the trials were suspended in 2008.[253] Another similar agent is bapineuzumab, an antibody designed as identical to the naturally induced anti-amyloid antibody.[254] Other approaches are neuroprotective agents, such as AL-108,[255] and metal-protein interaction attenuation agents, such as PBT2.[256] A TNF $\alpha$  receptor fusion protein, etanercept has showed encouraging results.[257]

In 2008, two separate clinical trials showed positive results in modifying the course of disease in mild to moderate AD with methylthioninium chloride (trade name rember), a drug that inhibits tau aggregation,[258][259] and dimebon, an antihistamine.[260] The consecutive phase-III trial of dimebon failed to show positive effects in the primary and secondary endpoints.[261][262][263]

The common herpes simplex virus HSV-1 has been found to colocate with amyloid plaques.[264] This suggested the possibility that AD could be treated or prevented with antiviral medication.[264][265]

Preliminary research on the effects of meditation on retrieving memory and cognitive functions have been encouraging. Limitations of this research can be addressed in future studies with more detailed analyses.[266]

An FDA panel voted unanimously to recommend approval of florbetapir, which is currently used in an investigational study. The imaging agent can help to detect Alzheimer's brain plaques, but will require additional clinical research before it can be made available commercially.[267]

On December 31, 2012, a NASA-supported study reported that manned spaceflight may harm the brain of astronauts and accelerate the onset of Alzheimer's disease.[268][269][270]

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#### External links

Quatermass and the Pit is a British television science-fiction serial, originally transmitted live by BBC Television in December 1958 and January 1959. It was the third and last of the BBC's Quatermass serials, although the character would reappear in a 1979 ITV production simply entitled Quatermass. Like its predecessors, Quatermass and the Pit was written by Nigel Kneale.

The series continues the loose chronology of the Quatermass adventures, and begins with Professor Bernard Quatermass being forced out of his role at the British Experimental Rocket Group, with the organisation being passed into military control by the British Government. Quatermass and his new colleague Colonel Breen become involved in the discovery of a bizarre object at an archaeological dig in Knightsbridge, London. As the serial progresses, Quatermass and his associates find that the contents of the object have a horrific influence over many of those who come into contact with it. As this influence increases, affecting Quatermass himself, darker implications are revealed about the entire nature and origins of mankind.

The serial has been cited as an influence on the writer Stephen King[1] and the film director John Carpenter.[2] It featured in a list of the 100 Greatest British Television Programmes compiled by the British Film Institute in 2000, where it was described as "completely gripping",[3] and in 2005 the BBC's own

website declared it "simply the first finest thing the BBC ever made. It justifies licence fees to this day." [4]

[edit] Production

The Quatermass Experiment (1953) and Quatermass II (1955) had been critical and popular successes for the BBC, [5] [6] and in early 1957 the corporation decided that they would like a third serial. [7] Nigel Kneale had left the staff of the BBC towards the end of 1956, but on 2 May 1957 was contracted to write the new scripts on a freelance basis. [7] The director assigned to the project was Rudolph Cartier, with whom Kneale particularly enjoyed working; [8] the two men had collaborated on both of the previous Quatermass serials, as well as the literary adaptations *Wuthering Heights* (1953) and *Nineteen Eighty-Four* (1954). [9] Quatermass and the Pit had a larger budget than the previous Quatermass productions, with £17,500 being allocated to the serial. [10] Kneale was keen to write a story that would work as an allegory for the racial tensions that had recently been seen in the United Kingdom, which eventually culminated with the Notting Hill race riots of August and September 1958. [11]

Pre-production work began in September 1958, while Cartier was still working on productions of *A Tale of Two Cities* and *A Midsummer Night's Dream* for the BBC. [7] As the two previous Quatermass serials had been scheduled in half-hour slots but, performed live, had often overrun, Cartier requested thirty-five minute slots for the six episodes of Quatermass and the Pit. [7] This was agreed to by the BBC drama department management in November 1958, just prior to the start of production proper on 24 November. [7] The six episodes – "The Halfmen", "The Ghosts", "Imps and Demons", "The Enchanted", "The Wild Hunt" and "Hob" – were broadcast on Monday nights at 8pm from 22 December 1958 to 26 January 1959. [7]

Each episode of Quatermass and the Pit was predominantly performed live from Studio 1 of the BBC's Riverside Studios complex in Hammersmith, London. [7] The episodes were rehearsed from Tuesday to Saturday before broadcast, usually at the Mary Wood Settlement in Tavistock Place, London, with camera rehearsals taking place in studio on the morning and afternoon of transmission. [7] Not every scene was live – a significant amount of material was pre-filmed on 35 mm film and inserted during the performance as required. [7] Most of the pre-filming involved either scenes set on location or those that were too technically complex or expansive to achieve live. [7] The latter were shot at Ealing Studios, which had been acquired by the BBC in 1955, [12] with Cartier working with the experienced cinematographer A. A. Englander. [13] Pre-filming was also used to show the passage of time in the second episode, with the archaeological dig set at Ealing shown to have dug deeper into the ground than the equivalent set at Riverside, enabling a sense of timescale that would not have been possible in an all-live production. [7]

Special effects requirements were handled by the BBC Visual Effects Department, which had been formed by Bernard Wilkie and Jack Kine in 1954. [14] Usually either Kine or Wilkie individually would oversee effects work on a production; due to the number of effects required, both worked on Quatermass and the Pit. [15] The team pre-filmed most of their effects for use during the live broadcasts. [10] They also oversaw practical effects for the Ealing filming and Riverside transmission, [7] and constructed the bodies of the Martian creatures. [16]

The music for the serial was credited to 'Trevor Duncan' a pseudonym used by composer Leonard Treblico, whose music was obtained from stock discs. [7] Quatermass and the Pit also made extensive use of sound effects and electronic music to create an eerie, disturbing atmosphere. [17] These tracks were created especially for the serial by the BBC Radiophonic Workshop, overseen by Desmond Briscoe; their work on Quatermass and the Pit was one of the productions for which Briscoe and the Workshop became most renowned. [18] [19] It was the first time that electronic music had been used in a science-fiction television production. [19]

After Quatermass and the Pit, Kneale felt that it was time to rest the character. "I didn't want to go on repeating because Professor Quatermass had

already saved the world from ultimate destruction three times, and that seemed to me to be quite enough", he told an interviewer in 1986.[20] By the early 1970s however, Kneale decided there were some new avenues to explore with the character,[20] and the BBC announced plans to produce a fourth Quatermass serial in 1972.[21] This was not in the event made by the BBC, but Kneale's scripts did eventually see production in 1979, as a four-part serial for Thames Television called Quatermass.[22]

Made just prior to the introduction of early videotape machines into general use at the BBC, all six episodes of Quatermass and the Pit were preserved for a possible repeat by being telerecorded onto 35 mm film.[7] Although this effectively worked by pointing a synchronised film camera at a television monitor and filming the output, the process had been refined throughout the 1950s and the recordings made of Quatermass and the Pit were of a high technical quality.[23] The serial was repeated in edited form as two 90-minute episodes titled "5 Million Years Old" and "Hob" on 26 December 1959 and 2 January 1960.[7] The third episode, "Imps and Demons", was re-shown on BBC Two on 7 November 1986 as part of the "TV50" season, celebrating fifty years of BBC television.[7]

A pre-human skull is discovered while building works are taking place in the fictional Hobbs Lane (formerly Hob's Lane, from an old name for the Devil) in Knightsbridge. Dr Matthew Roney, a paleontologist, examines the recovered remains, which are many thousands of years old, and reconstructs a dwarf-like humanoid with an unusually large brain volume, which he believes to be a form of primitive man. As further excavation is undertaken on the site, something that looks like a missile is unearthed; further work by Roney's group is halted as the military believe it to be an unexploded bomb left over from World War II.

Roney calls in his old friend Professor Bernard Quatermass of the British Rocket Group, an expert on matters of unusual scientific background, to stop the military from disturbing what he believes to be an archaeological find. Quatermass and Colonel Breen, who has been placed in charge of the Rocket Group over Quatermass's objections, become intrigued by the site. More and more of the artefact is uncovered, and additional fossils are found inside which Roney dates to five million years in age suggesting that the object is at least that old as well. The interior is empty, but a symbol consisting of five intersecting circles, which Roney identifies as the occult pentagram, is found etched on an interior wall which appears to hide an inner chamber.

The shell of the object is so hard that even a borazon drill makes no impression, and when the attempt is made, strange vibrations cause severe distress in the people around the object. Quatermass interviews the local residents and discovers that sightings of ghosts and other poltergeist activity have been common in the area for decades. Meanwhile, a soldier is carried out of the object in hysterics he claims to have seen a dwarf-like apparition walk through the wall of the artefact, a description which matches a 1927 newspaper account of a ghost sighting.

Following the drilling attempt, a hole has somehow opened up in the wall which allows Quatermass and the others access to the interior chamber. There they find the remains of insect-like aliens resembling giant three-legged locusts, with stubby antennae on their heads giving the impression of horns. As Quatermass and Roney examine the remains, they theorise that the aliens might have come from a nearby planet which was habitable five million years ago Mars.

Meanwhile, the borazon drill operator clearing his equipment from the craft triggers off more poltergeist activity. The operator is forced to run through the streets in a dazed panic until he finds sanctuary inside a local church. Quatermass and Roney find him there, and he describes visions of the insect aliens killing each other. As Quatermass investigates deeper into the history of the area, he finds accounts dating back to medieval times about devils and ghosts, all tending to be centred on incidents where the ground was disturbed. He suspects that somehow a psychic projection of these beings has remained



behind on the alien ship and is being seen by certain people who come in contact with it.

Quatermass plans to use an invention of Roney's, an "optic-encephalogram", to see these visions. The device will record impressions from the optical centres of the brain, in effect showing whatever the subject is seeing, hallucinatory or not. He wears the device and goes into the craft, but it is Roney's assistant, Barbara Judd, who is affected most. Placing the device on her, they record what she "sees"â ~a violent, bloody purge of the Martian hive, to root out unwanted mutations.

Quatermass begins to have a working theory as to what is going on. He believes that in its most primitive phase mankind was visited by this race. Some humans were taken away and genetically altered to have special abilities such as telepathy, telekinesis and other psychic powers. They were then brought back to Earth â ~ the buried artefact was one of the return ships that had crashed. The idea was that, with their home world dying, the aliens had tried to change humanity's ancestors to have minds and abilities like theirs, created in their own mental image, but with a bodily form adapted to Earth. In effect, humanity are the Martians.

However, the plan was a partial failure: the aliens died out before completing their work, and as the human race bred and further evolved, only a percentage of it retained these abilities, with even these only surfacing sporadically. For centuries the buried ship itself had been occasionally triggering these dormant abilities. This explained the reports of poltergeists, people were unknowingly using their own telekinesis to move objects around them, the ghost sightings being traces of a race memory. It also explained the history of witchcraft and why people attributed it to a being they identified as the devil; the pentagram would have been the symbol for this alien race.

The government authorities, and Breen in particular, find this explanation preposterous despite being shown the recording of Barbara's vision. They believe that the craft is actually a Nazi propaganda weapon and the alien bodies fakes designed to create exactly the impressions that Quatermass has come to. They attribute the vision to an overactive imagination, and intend to hold a media event to halt the rumours that are already flitting through the population. However, Quatermass realises that if these implanted psychic powers survive in the human race, there could also still be ingrained in us a compulsion to enact the "Wild Hunt" of a race purge. Quatermass is concerned that the memories encoded inside the ship, which have already been picked up by sensitive people near it, will trigger that impulse and that those affected will begin to slaughter their own.

Despite his warnings, the media event occurs, and the power cables that string into the craft fully activate it for the first time. Glowing and humming like a living thing, it starts drawing upon this energy source and awakening the ancient racial programming. Those people of London in whom the alien admixture remains strong fall under the ship's influence; they merge into a group mind and begin a telekinetic mass murder of those without the alien genes, an 'ethnic cleansing' of those that the alien race mind considers impure and weak.

Breen stands transfixed and is eventually consumed by the energies from the craft as it slowly melts away and a holographic image of a Martian "devil" floats in the sky above London. Fires and riots spread, and even a passing aircraft is affected and crashes into the city. Quatermass himself almost succumbs to the mass psychosis, attempting to kill Roney, who does not have the alien gene and is immune to the influence. Roney manages to shake Quatermass out of his trance, and together they realise that the floating image is the source of the mass psychosis. Even without the craft and electricity, it is now draining the combined psychic energy of London.

Remembering the legends of demons and their aversion to iron and water, Roney deduces that a sufficient mass of iron connected to wet earth may be enough to short the apparition out. Quatermass (via another soldier, Captain Potter) gets a length of iron chain and tries to reach the "devil" but succumbs to the psychic pressure. Roney manages to walk up to the "devil" and hurls the chain,

but both he and the craft are reduced to ashes.

Some time later Quatermass holds a television broadcast, in which he praises Roney's sacrifice, saying that they now are armed with knowledge that will allow them to deal with any more Martian artefacts. He also warns that now that we are aware of the dark urges implanted within us all, we have to be careful about wars, witch-hunts and other communal violence â ~ lest we Martians turn the Earth into a second dead planet.

[edit] Cast and crew

For the third time in as many serials the title role was played by a different actor, with Andr  Morell being cast. The part had initially been offered to Alec Clunes, who declined the role.[24] Morell had a reputation for playing authority figures, such as Colonel Green in *The Bridge on the River Kwai* (1957),[25] and had previously worked with Kneale and Cartier when he appeared as O'Brien in their BBC television adaptation of *Nineteen Eighty-Four* (1954).[26] He had also been the first actor ever offered the part of Quatermass, for the original serial *The Quatermass Experiment* in 1953, but on that occasion he had turned the part down.[27] Morell's portrayal of Quatermass has been described as the definitive interpretation of the character.[28] The actor found that it became the role for which he was best remembered by the public in later years.[7]

Colonel Breen was played by Anthony Bushell, who was known for various similar military roles â ~ including, another bomb disposal officer in *The Small Back Room* (1949) â ~ and preferred to be addressed as "Major Bushell", the rank he held during World War II.[29] He had also worked as Laurence Olivier's manager and as a television producer.[29] Before Quatermass and the Pit he had most recently been seen as Arthur Rostron in the film version of *A Night to Remember* (1958).[30]

Roney was played by Canadian actor Cec Linder. Linder had appeared in various American television series, such as *Studio One*, and later appeared in *Lolita* (1962) and the James Bond film *Goldfinger* (1964).[31] John Stratton played Captain Potter; later he became a regular guest actor in a number of British television series.[32] Christine Finn played the other main character, Barbara Judd; she later voiced various characters in the popular 1960s children's television series *Thunderbirds*. [33]

For the first time, Kneale used a character from a previous serial other than Quatermass himself. He brought back the journalist James Fullalove from *The Quatermass Experiment*, and the production team had hoped that actor Paul Whitsun-Jones would be able to reprise the part.[7] Whitsun-Jones was unavailable to appear, so Brian Worth was cast instead.[7] Appearing as an army sergeant was Michael Ripper; Ripper had been in Hammer Film Productions' adaptation of the second Quatermass serial, *Quatermass 2*, the previous year.[34] He had the distinction of appearing in more Hammer films than any other actor.[35]

Nigel Kneale continued his successful career writing for film and television after Quatermass and the Pit. He wrote feature film screenplays for *The Entertainer* (1960), *H.M.S. Defiant* (1962) and *The First Men in the Moon* (1964).[36] He returned to the Quatermass character for a final time with Quatermass (1979), a serial for the ITV network.[37] He continued writing for television until the 1990s,[36][38] and Quatermass and the Pit was often cited as the most successful work of his long career.[2][39]

Quatermass and the Pit was the last original production upon which Kneale collaborated with Rudolph Cartier, although Cartier did direct a new version of Kneale's 1953 adaptation of *Wuthering Heights* for the BBC in 1962.[40] Other later successes for Cartier were *Anna Karenina* (1961) and *Lee Oswald: Assassin* (1966).[41]

[edit] Reception and influence

According to the BBC's research figures, Quatermass and the Pit gained an audience of 7.6 million people for its opening episode, jumping to 9.1 million for the second and increasing sequentially each week, with the exception of episode four, until it concluded with a viewing figure of 11 million for

episode six, just under 30% of the potential audience.[7] The overall average figure for the serial was 9.75 million; this was the best figure the BBC had obtained since the programme *Opportunity Murder* in 1956, the corporation not having managed to beat the rival ITV network in the ratings since the other channel had launched in 1955.[7] However, the trade paper *Variety* reported that according to the Nielsen Company's ratings data, the final episode of *Quatermass and the Pit* had lost out to the quiz show *Keep it in the Family* on ITV, being viewed in 2,560,000 households as opposed to 2,996,000 for the commercial channel's programme, and failing to feature in the week's top ten shows.[7] The same paper did also state that on the night of episode six's broadcast, British cinemas reported their worst evening's takings in "a long, long time." [42]

The *Times* newspaper reported the day after the final episode that members of Hereford City Council had "rejected last night a proposal that they should suspend standing orders to adjourn so that members could watch the final instalment of *Quatermass and the Pit*, the BBC television serial." [43] BBC radio and television journalist John Humphrys recalled being frightened by the serial as a child in a feature on television memories published by *The Guardian* in 2006.[44] Recalling the frightening qualities of the *Quatermass* serials in 1981, journalist Geoffrey Wansell wrote that "when the third series, *Quatermass and the Pit* was shown, three of my school friends insisted on leaving the room whenever it started." [45]

The *Times*'s television reviewer praised the opening episode the day after its transmission. Pointing out that "Professor Bernard Quatermass ... like all science fiction heroes, has to keep running hard if he is not to be overtaken by the world of fact," [46] the anonymous reviewer went on to state how much he had enjoyed the episode.

This expository episode was an excellent example of Mr. Kneale's ability to hold an audience with promises alone; smooth, leisurely, and without any sensational incident, it was imbued in Mr. Rudolph Cartier's production with unearthly echoes of horrors to come. Sharing them for the next six weeks with Mr. Andre Morell and Mr. Cec Linder is an unnerving prospect.[46]

Criticism of the serial was also expressed. Although Kneale would go on to use the Martian "Wild Hunt" as a deliberate allegory for the recent Notting Hill race riots,[47][48] some Black British leaders were upset with the depiction of racial tensions in the first episode. "Leaders of coloured minorities here to-day criticized the BBC for allowing a report that 'race riots are continuing in Birmingham,' to be included in a fictional news bulletin during the first instalment of the new *Quatermass* television play last night," reported *The Times*'s Birmingham correspondent.[49] The report quoted Dr. W. C. Pilgrim of the city's West Indian community as saying, "I do not agree with this sort of thing, fiction or not. No trouble of this kind has happened in Birmingham, where our problems do not find expression in violence." [49] The BBC replied to the criticisms with the assurance that:

This was a completely imaginary news bulletin in a fictional programme set in the indeterminate future that contained such items as a rocket landing on the moon. It was all Jules Verne sort of stuff. No slur on Birmingham was implied and no reference to past events nor prophecy of the future was intended.[49]

These themes and subtexts were highlighted by the British Film Institute's review of the serial, when it was included in their "TV 100" list in 2000, in 75th position ~20th out of the dramas featured.[3] "In a story which mined mythology and folklore ... under the guise of genre it tackled serious themes of man's hostile nature and the military's perversion of science for its own ends." [3] The theme of military takeover of peaceful scientific research was also praised and compared to the contemporary outlook by Patrick Stoddart, writing for *The Sunday Times* in 1988.

Last week I watched a BBC drama in which a scientist fought against smirking government ministers and power-crazed army officers to stop his peaceful rocket research group being turned into a Star Wars vehicle to put missiles on the moon. They won. If you are wondering how you missed the ritual complaints which now follow every programme like this from offstage right, it is because the play was Quatermass and the Pit, which the BBC has just released on video. It was made in 1957, when the Macmillan government presumably believed that defence policy was a reasonable thing for the BBC to debate, even in drama. You seriously wonder how much internal angst would be generated if the BBC was offered the same plot now.[50]

The serial has also been an influence on other television science-fiction productions. Mark Gatiss wrote in The Guardian in 2006 that "What sci-fi piece of the past 50 years doesn't owe Kneale a huge debt? ... The "ancient invasion" of Quatermass and the Pit cast a huge shadow ... its brilliant blending of superstition, witchcraft and ghosts into the story of a five-million-year-old Martian invasion is copper-bottomed genius." [51] Gatiss was a scriptwriter for Doctor Who, a programme that had been particularly strongly influenced by the Quatermass serials throughout its history. [52][53] Derrick Sherwin, the producer of Doctor Who in 1969, acknowledged Quatermass and the Pit as an influence on changing the format of the programme.

What the producers had been trying to do and what ultimately they achieved in Quatermass and the Pit was to get some reality into it. So I said that this was the solution: that what we had to do with Doctor Who was to forget wobbly jellies in outer space and create some reason for bringing the stories down to Earth. [54]

More specifically, the 1971 & 1977 Doctor Who serials The Dæmons and Image of the Fendahl contain many very similar elements and themes to Quatermass and the Pit. Comparing The Pit to The Daemons, many people have noted the similarities between this story's plot and that of the 1958 BBC serial and 1967 Hammer film. Both involve the unearthing of an extraterrestrial spaceship, an alien race that has interfered with human evolution and is the basis for legends of devils, demons and witchcraft, and places with "devilish" names - Devil's End in The Daemons, and Hob's Lane in Pit. Similar themes also appear in Image of the Fendahl [55] which deals with beings, the Fendahl of the title, that after the destruction of their homeworld came to Earth and influenced the evolution of humans to possess psychic powers. When its "skull", marked with a pentagram, is discovered in an archaeological dig, it proceeds to take over the descendants of the engineered humans in an effort to colonise the Earth. [55]

The writer and critic Kim Newman, speaking about Kneale's career in a 2003 television documentary, cited Quatermass and the Pit as perfecting "the notion of the science-fictional detective story". [56] Newman also discussed the programme as an influence on the horror fiction writer Stephen King, claiming that King had "more or less rewritten Quatermass and the Pit in The Tommyknockers". [56]

[edit] Other media

As with the previous two Quatermass serials, the rights to adapt Quatermass and the Pit for the cinema were purchased by Hammer Film Productions. Their adaptation of the serial was released with the same title as the original in 1967, directed by Roy Ward Baker and scripted by Kneale. [57] Scottish actor Andrew Keir starred as Quatermass, becoming the role for which he was best remembered, being regarded particularly highly in comparison to the previous film Quatermass, Brian Donlevy. [58][59][60] The film, made in colour, is regarded by many commentators as a classic of the genre. [2][61][62] The film has been released in DVD and Blu-ray formats. In the United States the film was retitled Five Million Years to Earth. [57]

A script book of Quatermass and the Pit was released by Penguin Books in April

1960, with a cover by Kneale's artist brother Bryan Kneale.[7] In 1979 this was re-published by Arrow Books to coincide with the transmission of the fourth and final Quatermass serial on ITV; this edition featured a new introduction by Kneale.[7] The theatrical company Creation Productions staged a live adaptation of Quatermass and the Pit in a quarry near Nottingham in August 1997.[28][53]

The BBC made Quatermass and the Pit available to buy on VHS videotape in the 1980s, edited into a two-part compilation format. This was a new compilation made from the episodic film recordings, which had optical sound and telecined film inserts; for unknown reasons the BBC chose not to master it from the existing 1959â ^60 compilation, which had magnetic sound and film inserts reinserted from the original shoot (see information on box set remastering below).[23] This version was re-released on VHS by budget label Paradox Video in 1995,[63] and later put out again, this time by Revelation Films, on DVD.[23] The full, unedited, episodic version of the serial was released on DVD by BBC Worldwide in 2005, as part of The Quatermass Collection box set. Also included were the existing first two episodes of The Quatermass Experiment, all of Quatermass II and various extra features.[4]

For the box set release, Quatermass and the Pit was extensively restored.[4] A process called VidFIRE was applied to all of the scenes originally broadcast live, restoring the fluid interlaced video look they would have had on transmission, but which was lost during the telerecording process.[23] For the pre-filmed scenes, most of the high-quality original 35Â mm film inserts still existed, as they had been spliced into the 1959â ^60 compilation repeat version in place of the lower-quality telerecorded versions of the same sequences.[23] As this compilation also survived in the BBC archives, these film sequences were able to be digitally remastered and inserted into the newly-restored episodic version for the DVD release. The compilation used a separate magnetic soundtrack, and although the original had decayed a safety copy had survived. This yielded better sound quality than the optical soundtracks accompanying the original episodes, and was therefore the main source for the audio remastering except in the case of scenes that were not in the compilation, and in a few cases where faults on the magnetic tracks necessitated their replacement by the optical versions.[23]

[edit] Parodies

A 1959 episode of The Goon Show, a BBC radio comedy series, parodied Quatermass and the Pit.[7] The episode, "The Scarlet Capsule", was written by Spike Milligan, and used the original BBC Radiophonic Workshop sound effects made for the television serial.[7] In the episode, some workmen employed by the government's Dig Up the Roads Plan for Congesting Traffic Scheme unearth an ancient skull ("Must be a womanÂ ... the mouth's open."). Professor Ned Quartermess, a.k.a. Neddie Seagoon (Harry Secombe), sceptical of claims that the remains might be unexploded German skulls from World War II, discovers a fossilized Irish stew, and then uncovers a strange scarlet capsule containing the fossilized remains of three serge suits and the bones of a bowler hat. William "Mate" Cobblers hears a voice saying "Minardor". Several people are struck down by flying Irish stews, and Quartermess becomes convinced there is a poltergeist at work, and starts evacuating the local populationâ ~including Peter Sellers as a woman whose seductive voice causes the script (according to announcer Wallace Greenslade) to be heavily censored.[citation needed] Eventually the scheming Hercules Grytpype-Thynne (Sellers) persuades Quartermess to blow up the capsule â ~ with his sidekick Count Jim Moriarty (Milligan), whose life he has coincidentally insured for a large sum, tied up inside. But the blast blows everyone up â ~ at least until the next episode â ~ and a BBC announcer (Andrew Timothy) reports that the capsule was actually a London Underground train containing three striking Tube workers that had been shunted into a siding and forgotten. "The Mystic word 'Minardor' was in fact 'Mind the doors'. Not a very good ending, but at least it's tidy, don't you think?" He is then struck down by an Irish stew ("And there's more where that came from, Tim!" remarks Major Bloodnok (Sellers) ). The episode has been released on several LP and CD compilations by EMI, but due to copyright restrictions the

show's musical interludes have been removed and the closing playout heavily abridged. A more complete version has been broadcast a number of times on BBC Radio 4 Extra (formerly BBC7).

The serial was also parodied by the BBC television comedy series Hancock's Half Hour, in an episode entitled "The Horror Serial", transmitted the week following the final episode. In it, Tony Hancock has just finished watching the final episode of Quatermass and the Pit, and becomes convinced that there is a crashed Martian space ship buried at the end of his garden. This episode no longer exists in the BBC's archives but a private collector's audio-only recording has been discovered.[7]

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[edit] External links

Tropical Depression Ten was a short-lived tropical cyclone that made landfall on the Florida Panhandle in September 2007. The system developed as a subtropical depression on September 21 in the northeastern Gulf of Mexico from the interaction of a tropical wave, the tail end of a cold front, and an upper-level low. Initially containing a poorly defined circulation and intermittent thunderstorm activity, the system transitioned into a tropical



depression after convection increased over the center. Tracking northwestward, the depression moved ashore near Fort Walton Beach early on September 22, and shortly thereafter it dissipated over southeastern Alabama.

Initially the depression was forecast to move ashore as a minimal tropical storm, and the threat of the depression prompted state of emergency declarations in Mississippi and Louisiana. It was the first tropical cyclone to threaten the New Orleans area since Hurricane Katrina and the destructive 2005 hurricane season. Overall impact from the cyclone was minor and largely limited to light rainfall. However, the precursor system spawned a damaging tornado in Eustis, Florida, where 20 houses were destroyed and 30 more were damaged.

[edit] Meteorological history

Tropical Depression Ten formed from the complex interaction between an upper-level low, a tropical wave that produced Tropical Storm Ingrid, and the tail end of a cold front. By September 17, the system produced widespread thunderstorm activity over the Bahamas and western Atlantic Ocean.[1] The upper-level low over the Florida Panhandle increased convection across the area, and on September 18 the system began crossing Florida.[2] Initially very disorganized, surface pressures gradually decreased across the region, with a weak low pressure area developing on September 19.[3]

A reconnaissance aircraft flight into the system on September 20 reported a well-defined low and strong wind gusts in squalls as the system tracked into the northeastern Gulf of Mexico, along with limited and disorganized thunderstorm activity.[4] Convection gradually became better organized, with a well-defined band in its eastern semicircle and intermittent thunderstorm activity near the center. Despite an overall disorganized structure, with a poorly defined circulation and an upper-level low aloft, the National Hurricane Center initiated advisories on Subtropical Depression Ten at 1500 UTC on September 21 while it was located about 40 miles (60 km) south of St. Vincent Island, Florida, citing "the potential for additional development right along the coastline." [5] In post-analysis, it was classified a subtropical cyclone three hours earlier.[1]

With a mid-level ridge to its northwest, the subtropical depression was anticipated to parallel the coastline of the Gulf Coast of the United States. As a result, it was forecast to attain winds of 45 mph (75 km/h) and move ashore along southern Mississippi.[5] The circulation became better defined as convection modestly increased over the center, and within six hours of its development the system transitioned into a tropical depression. The cyclone continued tracking northwestward,[6] making landfall around 0000 UTC on September 22 near Fort Walton Beach, Florida with winds of 35 mph (55 km/h).[7] The cloud pattern deteriorated as it tracked inland, and 3 hours after it moved ashore the National Hurricane Center issued its last advisory on the depression.[8] As the depression tracked into Alabama, it became increasingly disorganized,[9] and the system dissipated as a tropical cyclone early on September 22.[1] Its remnant surface low continued west-northwest before dissipating near the Louisiana/Texas border early on September 23.[10]

[edit] Preparations and impact

The combination of wind shear and low-level helicity produced moderate convection across central Florida in association with the precursor low pressure system. Late on September 20, a supercell developed near Lake Apopka, and tracking quickly northward it spawned an EF1 tornado near Eustis; the tornado tracked about 2 miles (3 km) and reached winds of about 100 mph (160 km/h).[11] The tornado destroyed 20 homes, left 30 others severely damaged, injured one person, and caused power outages for about 300 people.[12] Damage totaled \$6.2 million (2007 USD).[13] Tornadoes were also reported near Marianna and Chipley.[14] The precursor low pressure system also generated lightning that struck and killed a man in Hendry County, Florida.[15]

Outer rainbands began affecting coastal sections of the Florida Panhandle by about 12 hours prior to the formation of the depression.[16] Coinciding with the first advisory on the depression, the National Hurricane Center issued a tropical storm warning from Apalachicola, Florida westward to the mouth of the

Mississippi River.[17] Shortly thereafter, an inland tropical storm warning was issued for Pearl River, Walthall, and Pike counties in Mississippi and Washington Parish in Louisiana. Additionally, the New Orleans National Weather Service issued a coastal flood watch for four parishes in southeastern Louisiana.[18] In Mississippi, Governor Haley Barbour declared a state of emergency. Officials ordered a mandatory evacuation for residents in shallow areas and in mobile homes for Jackson, Harrison, and Hancock counties.[19] Officials in New Orleans opened three emergency shelters,[20] citing the potential need of shelter for citizens in about 17,000 FEMA trailers after Hurricane Katrina. Due to the threat of the cyclone, Louisiana governor Kathleen Blanco declared a state of emergency and placed the state's National Guard and other disaster services on reserve.[21]

Waves of about 5 feet (1.5 m) and rip currents were reported along the west coast of Florida.[22] However, no beach erosion was reported.[15] Rainfall associated with the system peaked at 7.29 inches (185 mm) at Hastings.[10] Elsewhere, rainfall totals reached 1.46 inches (37.1 mm) in Albany, Georgia and 0.51 inches (13 mm) in Dothan, Alabama.[9] Wind gusts from the storm peaked at 46 mph (74 km/h) in Milton, Florida, which blew down a few trees in Escambia County.[23] Overall damage from the depression was minimal.[1] Storm surge ranged from 2.5 to 4.1 feet (0.76 to 1.2 m) along the Panhandle.[15]

Prior to its development, several oil and gas companies removed unneeded workers from offshore oil platforms in the northern Gulf of Mexico; Shell Oil Company evacuated about 700 employees, while Noble Energy removed its workforce of about 300 people from two oil rigs.[24] Exxon Mobil cut its output by about 1,000 barrels of oil and 55,000 cubic feet (1,600 m<sup>3</sup>).[25] With 27.7% of the daily crude oil production halted due to the depression, oil prices rose further after days of increasing levels, and on September 20 reached a record rate of over \$84 per barrel.[26]

[edit] Tornadoes

List of confirmed tornadoes ^ Thursday, September 20, 2007

EF#

Location

County

Coord.

Time (UTC)

Path length

Damage

Florida

EF1

Eustis area

Lake

28°50′N 81°41′W﻿ / ﻿28.84°N 81.68°W﻿ / 28.84; -81.68

0257

1.8 miles (2.9 km)

Brief touchdown, with the tornado destroying 20 homes, causing serious damage to 30 others, and minor damage to an additional 81 homes. Left \$6.2 million in damages.

EF1

W of Mayo

Lafayette

30°03′N 83°15′W﻿ / ﻿30.05°N 83.25°W﻿ / 30.05; -83.25

0420

0.3 miles (0.5 km)

Brief touchdown; the tornado uprooted large oak trees with debris on State Highway 53 and County Road 351. Caused \$2,000 in damages.

List of confirmed tornadoes ^ Friday, September 21, 2007

Georgia

EF0

ENE of Waresboro

Ware

31°15′N 82°28′W﻿ / ﻿31.25°N 82.47°W﻿ / 31.25; -82.47

0845

0.6 miles (1.0 km)

Brief touchdown, with 12 structures suffering slight to moderate damage to roofs and skirting. Most damaged structures were mobile homes and outbuildings. A few trees and power lines were also blown down.

Alabama

EF0

W of Blue Springs

Barbour

31°40′N 85°34′W﻿ / ﻿31.66°N 85.57°W﻿ / 31.66; -85.57

2234

0.4 miles (0.6 km)

Brief touchdown, a Sheriff's Deputy reported a tornado near the intersection of County Route 23 and County Route 8, just southeast of Clio. The Deputy observed debris, but there was no subsequent damage found.

Sources:

NCDC Tornado database files

[edit] See also

[edit] References

*No Line on the Horizon* is the twelfth studio album by rock band U2. Released on 27 February 2009, it was the band's first record since *How to Dismantle an Atomic Bomb* (2004), marking the longest gap between studio albums of U2's career. The band originally intended to release the songs as two EPs, but later combined the material into a single record. Photographer Anton Corbijn shot a companion film, *Linear*, which was released alongside the album and included with several special editions.

U2 began work on the album in 2006 with record producer Rick Rubin but shelved most of the material from those sessions. From May 2007 to December 2008, the band collaborated with Brian Eno and Daniel Lanois, who produced and co-wrote many of the new songs. Writing and recording took place in the United States, United Kingdom, Ireland and Morocco. The group intended to release *No Line on the Horizon* in November 2008; after composing 50 to 60 songs, they postponed the release because they wanted to continue writing.

Prior to the album's release, U2 indicated that Eno's and Lanois' involvement, as well as the band's time in Fez, Morocco, had resulted in a more experimental record than their previous two albums. The band compared the shift in style to that seen between *The Joshua Tree* (1987) and *Achtung Baby* (1991). Upon its release, *No Line on the Horizon* received generally favourable reviews, although many critics noted that it was not as experimental as previously suggested. The album debuted at number one in 30 countries but did not sell as well as anticipated; the band expressed disappointment over the relatively low sales, compared to previous albums, of five million copies. By contrast, the supporting U2 360 Tour, spanning 2009 to 2011, was the highest-grossing concert tour in history, with ticket sales over \$736 million.

[edit] Recording and production

[edit] Aborted sessions with Rick Rubin

In 2006, U2 started work on the follow-up to *How to Dismantle an Atomic Bomb* (2004), collaborating with producer Rick Rubin in southern France and at Abbey Road Studios in London.[1][2] Later that year, the band released two songs from these sessions on the compilation album *U218 Singles*: a cover of the Skids' "The Saints Are Coming" with Green Day, and "Window in the Skies". In January 2007, lead singer Bono said U2 intended to take their next album in a different musical direction from their previous few releases. He said, "We're gonna continue to be a band, but maybe the rock will have to go; maybe the rock has to get a lot harder. But whatever it is, it's not gonna stay where it is." [3]

Rubin encouraged a "back to basics" approach and wanted the group to bring finished songs to the studio. This approach conflicted with U2's "free-form" recording style, by which they improvised material in the studio.[4] They

ultimately decided to end recording with Rubin; though the material from these sessions was shelved, the band expressed interest in revisiting it in the future.[5] They subsequently employed Brian Eno and Daniel Lanois as principal producers and co-writers. Steve Lillywhite was also brought in to produce a few tracks.[4][6]

[edit] Sessions with Brian Eno and Daniel Lanois

U2 began work with Eno and Lanois in May 2007.[7] Bono had accepted an invitation to the World Sacred Music Festival in Fez, Morocco, and he invited his bandmates, as well as Eno and Lanois, to attend.[8] They rented the riad of hotel Riad Yacout and turned it into a makeshift recording studio,[9][10][11] intending to create "future hymns"â ~songs that would be played forever.[8]

The group spent two weeks in Fez, occasionally recording with an oud player and local percussionists.[7] Recording during the festival exposed the group to Hindu and Jewish music, Sufi singing and Joujouka drums. The exotic influences inspired them to pursue a more experimental sound.[8][10][12] Bassist Adam Clayton said the music they heard in Fez "had a primitivismÂ ... but there was an other-worldly feel, there was that connection with that Arabic scale." [8] Eno insisted that drummer Larry Mullen,Â Jr. use an electronic drum kit.[13] The band described many of the tracks conceived in these sessions as unsuitable for radio airplay or for playing live.[8] The open-air riad allowed the group to hear birdsong, as captured in the introduction to "Unknown Caller".[14] The songs "Moment of Surrender", "White as Snow", "No Line on the Horizon" and "Unknown Caller" were written at this time; each track was recorded in one take.[11] In total, the band recorded approximately 10 songs during the two weeks.[7] After leaving Fez, the band recorded in Hanover Quay Studios in Dublin, Platinum Sound Recording Studios in New York City, and Olympic Studios in London.[10][15][16]

"... none of that [experimental music] really appeared on the recordÂ ... because it sounded kind of synthetic. It sounded kind of like 'world music' add-on. I'm sure it would have got a few people saying, oh, how interesting, they've broken out into North African music, but actually it just didn't sound convincing. We were very impressed by the music while we were there, but there was no realistic or emotionally satisfying way of marrying it using the music that we were doing, so in the end not very much of it at all showed through."

In pre-release interviews, U2 compared the extent of their expected shift in musical style to that of Achtung Baby.[13][18] The band scaled back these experimental pursuits, however; Mullen,Â Jr. noted, "at a certain stage, reality hits, and you go, 'What are we gonna do with this stuff?' Are we going to release this sort of meandering experimentation, or are we gonna knock some songs out of this?" [8] Bono shared this opinion, stating, "We went so far out on the Sufi singing and the sort of ecstatic-music front, that we had to ground it and find a counterpoint." [8] Eno commented that many of "the more contemplative and sonically adventurous songs" had been dropped, attributing the lack of African-inspired music to its sounding "synthetic" and unconvincing when paired with other songs.[4][17][19][20]

Clayton filmed the band's progress during the album's production; these videos were added to the subscribers' section of U2.com.[21] On 16Â August 2008, an eavesdropping fan recorded several songs playing from Bono's beach house in Â ze, France. These "beach clips" were uploaded to YouTube, but removed at Universal Music's request.[22] In November 2008, U2 guitarist The Edge confirmed the album's working title as No Line on the Horizon and noted that the band had to move quickly to complete mixing to meet the new February release date.[23] In an interview with Q, the group revealed that rapper will.i.am had worked with them on the track "I'll Go Crazy If I Don't Go Crazy

Tonight".[24]

In December 2008, U2 recorded at Olympic Studios in London, putting the finishing touches to the album[10] and making several changes to its content. The group had planned to release the material as two extended plays, titled Daylight and Darkness, but during these sessions decided to compile the best songs onto one album.[25] The band struggled to complete "Stand Up Comedy", a song they had been working on since the Fez sessions 16 months previously. The song had been through multiple iterations and titles, including "For Your Love" and "Stand Up".[10] U2 cut "Winter", a song Eno had urged them to complete, and "Every Breaking Wave", which they cut to reduce the album's running time.[8][26] "Winter" appears in the accompanying Anton Corbijn film Linear and the 2009 war film Brothers.[27][28] Both songs had been mentioned in pre-release album reviews.[10][24][29]

The band changed many of the tracks' names during recording, retitling "French Disco" to "Magnificent" and "Crazy Tonight" to "I'll Go Crazy If I Don't Go Crazy Tonight". "Chromium Chords" became "Tripoli", and finally "FezÂ â ^ Being Born".[10][30][31] The band considered "FezÂ â ^ Being Born" and "Get on your Boots" as album openers, but ultimately decided on "No Line on the Horizon".[30][32] At the end of the sessions, the band chose to include "White as Snow", a quiet song about a dying soldier in Afghanistan, to balance out the earlier, rockier tunes.[26] With the exception of this track, U2 had tried to keep the theme of war out of the album.[33] In early December 2008, Clayton stated, "this is definitely the last week of recording. But then again, last week was definitely the last week of recording, and the week before that." [10] The final sessions ended later that month.[20] No Line on the Horizon is dedicated to Rob Partridge, who signed the band's first record deal in 1979 and died of cancer in late 2008.[33][34]

[edit] Linear

Linear, a film directed by Anton Corbijn, is included with the digipak, magazine, box, and deluxe iTunes editions of the album.[35][36][37] The idea for the film originated from a U2 video shoot in June 2007, during which Corbijn asked the band to remain still while he filmed them to create a "photograph on film"; the band did not move but the objects around them did.[38] Impressed, the band believed that the online album listening experience could be enhanced with moving imagery. In May 2008, they commissioned Corbijn to create the film.[38] Corbijn has claimed that Linear is not a music video but "a new way to listen to a record" and "a new way to use film to connect to music".[39]

The film is based on a story by Corbijn and Bono, and includes several of the characters Bono created for the album. The plot focuses on a Parisian motorcycle officer, played by Saïd Taghmaoui; the character has become disillusioned with his life and the conflict between immigrants and the police in the city, causing him to leave to see his girlfriend in Tripoli.[27][38] The song order in the film is representative of No Line on the Horizon's as it was in May 2008.[27]

[edit] Following album

In February 2009, Bono stated that by the end of the year U2 would release an album consisting of unused material from the No Line on the Horizon sessions. Bono labelled it "a more meditative album on the theme of pilgrimage".[10] Provisionally titled Songs of Ascent, it would be a sister release to No Line on the Horizon, similar to Zooropa's relationship to Achtung Baby.[40] In June 2009, Bono said that although nine tracks had been completed, the album would only be released if its quality surpassed that of No Line on the Horizon.[5] A December 2009 report stated that U2 had been working in the studio with the goal of a mid-2010 release.[41] The band revealed that the first single was intended to be "Every Breaking Wave".[40][42]

In April 2010, U2's manager Paul McGuinness confirmed that the album would not be finished by June, but indicated that a release "before the end of the year is increasingly likely." [43] In October 2010, Bono stated that the new album would be produced by Danger Mouse, and that 12 songs had been completed. He

also noted that U2 were working on a potential album of club music in the spirit of "U2's remixes in the 1990s".[44] McGuinness said the next album was slated for an early 2011 release.[45][46] In February 2011, McGuinness stated that the album was almost complete, giving it a tentative release date of May 2011, although he noted that Songs of Ascent was no longer the likely title.[47] In June 2011, Bono indicated that the next U2 album would be released "next fall." Asked if this album would be Songs of Ascent, Bono answered in the negative, saying the band "felt that the next thing that people need to hear from U2 is not an art project, that it has a rock 'n' roll heart, even if it's not rock 'n' roll music." [48]

[edit] Composition

"... it's a very personal album. These are very personal stories even though they are written in character and, in a way, they couldn't be further from my own politics. But, in the sense of the peripheral vision, there's a world out there. As the old blues song goes, a world gone wrong. You can feel it just at the edgesâ ~the war in Iraq, the dark clouds on the horizon. But there is also a deliberate shutting out of that in order to focus on more personal epiphanies."

During the Hanover Quay sessions in 2008, Bono indicated that he had become "tired of [writing in] the first-person", leading him to write songs from the perspective of different characters. He invented "a traffic cop, a junkie [and] a soldier serving in Afghanistan." [10] Although each character tells a personal story, the underlying theme of the album is peripheral vision, events taking place in the wider world, "just at the edges". [10] Bono described it as "central to the understanding of this album". [10] Nevertheless, as the characters narrate there is an intentional "shutting out" of the wider world, so that the focus remains on their "personal epiphanies". The narrative the group originally planned for the album was broken up in the sessions' final weeks with their changes to the track listing. [10] In January 2008, Bono revealed that numbers were significant in many of the songs. [49] In February 2009, he noted that the album was split into thirds; he described the first section as "a whole world unto itself, and you get to a very ecstatic place", and the second as "a load of singles". The final third is composed of songs that are "unusual territory" for the band. [50]

"No Line on the Horizon" stemmed from Mullen's experiments with different drum beats; Eno sampled and manipulated the patterns, and the rest of the band began to play over the beats. The lyrical idea of a place "where the sea meets the sky and you can't tell the difference between the two" and the vocal delivery were both present from the start. [13] Bono noted that the theme behind the song was infinity, and that the track was inherently optimistic. [10] "Magnificent" is an up-tempo song that begins with a synthesizer line by Eno. The band wanted a track that felt euphoric, and the melody, created from a series of chord changes during a jam, was worked on continuously by Bono. [13][33] The setting in the lyrics was described by Lanois as "New York in the 50s", written from the perspective of "a Charlie Parker kind of figure". [13] The song has been described as "echo[ing] The Unforgettable Fire's opening track 'A Sort of Homecoming' in its atmospheric sweep". [24]

The drug addict character appears in the songs "Moment of Surrender" and "Unknown Caller". "Moment of Surrender", improvised and recorded by U2, Eno, and Lanois in a single take, demonstrates gospel influences. Eno and Lanois said the song is the closest to the group's original concept for an album of future hymns. [8] Eno noted, "Apart from some editing and the addition of the short cello piece that introduces it, the song appears on the album exactly as it was the first and only time we played it." [10] In the song, the addict is having a crisis of faith. In "Unknown Caller", the character is suicidal and,

while using his phone to buy drugs, begins receiving cryptic text messages with technology-inspired directions.[33] The track was developed early in the Fez sessions. The guitar solo at the song's conclusion was taken from the backing track.[13]

Eno developed "I'll Go Crazy If I Don't Go Crazy Tonight" during the Fez sessions, under the working title "Diorama".[13] U2 reworked it with Steve Lillywhite during a break from recording with Eno and Lanois.[13] Some of the lyrics were influenced by Barack Obama's presidential campaign, while others referenced Bono.[10] Album reviews described the song as a joyous pop rock composition. "Get on Your Boots" stemmed from a guitar riff The Edge created and recorded at his home.[13] At 150 beats per minute, the song is one of the fastest the band have recorded.[20] Rolling Stone called it a "blazing, fuzzed-out rocker that picks up where 'Vertigo' left off." [29] Thematically, the song is about Bono taking his family on vacation to France and witnessing warplanes flying overhead at the start of the Iraq War.[4] The chant "let me in the sound" was developed late in the recording sessions and became a theme throughout parts of the album.[13]

"Stand Up Comedy" went through numerous iterations; at one point, Lanois noted, "that song was about six different songs".[13] In its original concept, the track featured mandolins playing in a Middle Eastern beat. The riff was altered and a chorus of "for your love" was introduced. This version was discarded as the band came up with a new riff and lyrics, only retaining the "for your love" vocal.[8] U2 liked the result at the end of the sessions, but felt that the song would appear too "crafted"; they instead chose an older mix for inclusion on the album.[13] Several of the song's lyrics, including the line, "Be careful of small men with big ideas", relate to Bono's self-mockery.[10] The guitar sound from the experimental "Fez" portion of "Fez" "Being Born" was developed while the band recorded "The Saints Are Coming" during the Rick Rubin sessions.[33] Lanois edited the part, adding a beat developed by Eno, before playing it for the group. The sounds of a Moroccan marketplace were also added. The faster section of the song, "Being Born", was altered into the same key as "Fez" and Lanois placed the two sections together, creating the one song.[13] The "let me in the sound" chant from "Get on Your Boots" is included at the beginning of the track.[33]

"White as Snow" focuses on the soldier character's last thoughts as he dies from the wounds suffered from an improvised explosive device.[4] The song is based on the traditional hymn "Veni, veni, Emmanuel"; the idea to base the song on a public domain melody was suggested to Lanois by Newfoundland musician Lori Anna Reid.[4] "Breathe" is set on 16 June, an intentional reference to James Joyce's novel Ulysses.[8] U2 worked on an earlier version of the song for a long time before they scrapped it and re-recorded it with Lillywhite.[13] Two sets of lyrics were also present; one about Nelson Mandela, and the other "more surreal and personal".[8] The band decided to use the latter.[8] "Cedars of Lebanon", written from the perspective of a journalist covering a war overseas, was created in a similar manner to "Fez" "Being Born". The song's melody was based on a sample of "Against the Sky", a track Eno and Lanois had collaborated on with Harold Budd for the 1984 album The Pearl; the group noted that the ambience of the song was "like a direct throwback to the early 80s".[13][33] The final verse is a condemnation of the Iraq War.[8]

[edit] Release

At the music industry trade fair Midem in 2008, Paul McGuinness said No Line on the Horizon would be ready for release in October 2008.[51] Lanois corroborated that in June 2008, stating the album should be ready in 3–4 weeks. He said, "We're just finishing the vocals. Bono's in great form, singing fantastic." On 3 September 2008, U2.com posted an article in which Bono revealed that the new album would be out "in early 2009", also noting that "around 50–60 songs" had been recorded in the sessions.[18] It was later confirmed the album would be released on 27 February 2009 in Ireland, 2 March in the UK, and 3 March in North America. The gap between How to Dismantle an Atomic Bomb and No Line on the Horizon's release was the longest in the band's

career.[25]

Universal Music Group took extreme measures to prevent the album from leaking, offering pre-release listening sessions for critics instead of sending out review copies. However, Universal Music Australia's online music store, getmusic.com.au, accidentally released the album for digital sale on 18Â February 2009, almost two weeks before the scheduled release date. The complete album appeared on the website for a short time before it was removed, and the accidental sale led to the album's being leaked and shared across the Internet.[52] U2 reacted to the leak with some positivity. The Edge stated, "The one good thing about that is a lot of our fans have already given us their thumbs up. Even though it was fans getting it for free." [53]

[edit] Cover art

The cover art for No Line on the Horizon is a photograph of Lake Constance, taken by Japanese photographer Hiroshi Sugimoto; titled Boden Sea, it is one of 200 pictures in his Seascapes collection.[54] The image was the inspiration for Bono's lyrics on the track "No Line on the Horizon".[54] Sugimoto and U2 struck a deal in which the band could use the photograph as the cover art and Sugimoto could use "No Line on the Horizon" in his future projects; Sugimoto's only stipulation was that no text could be placed on top of the image.[54] Original releases had an equals sign superimposed in the middle of the album cover, but later releases featured only the image.[55]

Boden Sea had previously been used by Richard Chartier and Taylor Deupree for their 2006 album Specification.Fifteen. The album covers are similar, though No Line on the Horizon has a white border around the image, and Specification.Fifteen has a box at the top of the cover with the names of the artists and the album.[56] Deupree called U2's cover "nearly an exact rip-off" and stated that for the band to obtain the rights to the image it was "simply a phone call and a check." [54][57] Sugimoto refuted both of these claims, calling the use of the same photograph a coincidence and stating that no money was involved in the deal with U2.[54]

[edit] Formats

No Line on the Horizon was released in five physical formats, three of whichâ ~the digipak, magazine, and box formatsâ ~were limited editions.[35][58] The standard jewel case release contained a 24-page booklet.[35] The LP vinyl release was pressed on two black discs and contained a 16-page booklet.[35] The digipak release had a 36-page booklet and a poster, which was also included in the box release. A 60-page magazine was included in the magazine release.[35]Linear was a downloadable feature in the digipak and magazine formats, and was a bonus DVD in the box release, which also contained a 64-page hardcover book.[35]

The album was made available for pre-order on the iTunes Store on 19Â January 2009, the day "Get on Your Boots" premiered on radio. iTunes album pre-orders contained bonus tracks unavailable with any other version.[36] Digital versions were available from Amazon.com in MP3 format, and from U2.com in MP3 and FLAC formats.

[edit] Promotion and singles

To promote No Line on the Horizon, U2 performed "Get on Your Boots" at the 51st Grammy Awards, the 2009 BRIT Awards, and the 2009 Echo Awards, although the album was not eligible for awards at any of the ceremonies.[4][59][60] The band later appeared on French television and radio on 23Â February 2009, and on 26Â February they taped a segment for Friday Night with Jonathan Ross, which was aired the next day.[30][61][62] On 27Â February, U2 made an appearance on a Live Lounge session for BBC Radio 1, followed by a mini-concert on the roof of Broadcasting House.[63][64] On the week of 2Â March 2009, U2 appeared on CBS-TV's Late Show with David Letterman for five consecutive nights, the first time a musical guest had performed for an entire week on the show.[55] The group performed "Breathe", "Magnificent", "I'll Go Crazy If I Don't Go Crazy Tonight", "Beautiful Day", and "Get on Your Boots". On 3Â March, Michael Bloomberg, Mayor of New York City, added a street sign reading "U2 Way" at 53rd Street in Manhattan, for the week that U2 performed on the Late Show.[65] U2



also performed at Fordham University on 6<sup>th</sup> March 2009 for an appearance on ABC-TV's Good Morning America.[66] From 9 to 11 March, the band participated in "U2<sup>3</sup> Nights Live", a series of radio interviews and performances that were broadcast across North America and streamed live on U2.com.[67]

From 11 to 17<sup>th</sup> February 2009, U2.com hosted a promotion where 4,000 fans could win a 7-inch single collector's edition box set that contained all four of the singles released from *No Line on the Horizon*. [68] An alternate version of the title track, "No Line on the Horizon 2", debuted on RT<sup>2</sup> 2XM on 12<sup>th</sup> February 2009; it was later used as the B-side for the first single, "Get on Your Boots". [69] The full album began streaming on the group's MySpace page on 20<sup>th</sup> February 2009, and on U2.com a few days later. [52]

Four singles were planned from the album, [68] although only three were released. The first single, "Get on Your Boots", was released as a digital download on 19<sup>th</sup> January 2009, and in a physical format on 16<sup>th</sup> February 2009. [36][70] The iTunes store held the exclusive digital download rights to the single for the first 24<sup>h</sup> hours. [36] The second single, "Magnificent", was released on 4<sup>th</sup> May 2009. [71] The third single, "I'll Go Crazy If I Don't Go Crazy Tonight", was released on 7<sup>th</sup> September 2009. [72]

[edit] Reception

[edit] Critical response

*No Line on the Horizon* received generally favourable reviews. At Metacritic, which assigns a weighted average rating out of 100 to reviews from mainstream critics, the album received an average score of 72 based on 30 reviews, three of which gave it a perfect score. [73] David Fricke of *Rolling Stone* gave a perfect score of five stars, labelling it "[U2's] best, in its textural exploration and tenacious melodic grip, since 1991's *Achtung Baby*." [79] Blender and Q also gave it a perfect score. [75][78] In his review for Blender, Rob Sheffield stated "The days are gone when U2 were trying to keep it simpleâat this point, the lads have realized that over-the-top romantic grandiosity is the style that suits them, so they come on like the cosmic guitar supplicants they were born to be." [75] Mojo and Uncut gave the album four stars; Uncut reviewer Andrew Mueller commented, "It's U2's least immediate albumâbut there's something about it that suggests it may be one of their most enduring." [76][83] Jeff Jensen of *Entertainment Weekly* graded it A<sup>+</sup> and called the album "an eclectic and electrifying winner, one that speaks to the zeitgeist the way only U2 can and dare to do." [84] BBC Music reviewer Chris Jones said, "There's plenty to rejoice about here" while noting that the "symbiotic relationship with Brian Eno (and Daniel Lanois) seems to have reached the point of imperceptibility." [85] NME contributor Ben Patashnik rated the album seven out of ten, calling it "a grand, sweeping, brave record that, while not quite the reinvention they pegged it as, suggests they've got the chops to retain their relevance well into their fourth decade as a band." [19]

Time Out Sydney gave *No Line on the Horizon* two stars out of five, stating, "U2 return with a new album. Sadly, it's Brian Eno'sâ... for all that's new, there's no way that you'll mistake it for another band." [81] Pitchfork Media reviewer Ryan Dombal gave a score of 4.2 out of 10, stating, "the album's ballyhooed experimentation is either terribly misguided or hidden underneath a wash of shameless U2-isms." [86] Cameron Adams of the *Herald Sun* gave a rating of three and a half stars, comparing it to the 1990s albums *Zooropa*, *Pop*, and *Original Soundtracks 1* while stating "This is no blockbusterâ... It's the least immediate U2 album in years, but one that diehard fans will enjoy living with". [87] Madeleine Chong of MTV Asia also gave the album seven out of ten, concluding that "Although U2 should be lauded for their efforts at constant reinvention and pushing the envelope in the rock genre, [No Line on the Horizon] possesses neither the iconic qualities of *The Joshua Tree* or the radical yet relevant magnetism of *Achtung Baby*." [77] Toronto Star music critic Ben Rayner called the songs boring, adding that the ambience introduced by Eno and Lanois was "often all these vague, hook-deficient songs have going for them." [82] Rob Harvilla of *The Village Voice* gave the album a mixed review and wrote that its songs "will remind you of other, much better songs, but in a way

that only makes you want to go and listen to those other songs instead." [88] Time also gave it an unfavourable review, calling the effort "unsatisfied" and "mostly restless, tentative and confused." [89]

[edit] Commercial performance

No Line on the Horizon opened with strong sales, although these quickly declined. The album debuted at number one in thirty countries, including Australia, Belgium, Canada, France, Ireland, Japan, the Netherlands, Portugal, the United Kingdom, and the United States. [90] [91] By June 2009, over five million copies had been sold worldwide. [92] Within one week of release, the album was certified platinum in Brazil, a record for the country. [93] In the United Kingdom, the album became U2's tenth number-one album, making them the fifth-most-successful act on the UK Albums Chart. [94] In the United States, it was U2's seventh number-one album; first-week sales exceeded 484,000, the band's second-highest figures after How to Dismantle an Atomic Bomb. [90] By October 2009, sales in the US had exceeded just over one million copies, the group's lowest in more than a decade. [95] Global sales of the album remained at five million copies through September 2010. [96]

Eight months after No Line on the Horizon's release, Bono said he was disappointed with the album's sales. [97] In the UK, it sold less than a third of How to Dismantle an Atomic Bomb's figures – a quarter of All That You Can't Leave Behind's – and it did not generate a hit single. [97] ABC noted that sales of How to Dismantle an Atomic Bomb had been propelled by the track "Vertigo" which, although not a chart success, had become well-known to the public from its use in iPod commercials. [98] Regarding the lack of commercial appeal, Bono said, "We weren't really in that mindset. We felt that the 'album' is almost an extinct species, and we [tried to] create a mood and feeling, and a beginning, middle and an end. And I suppose we've made a work that is a bit challenging for people who have grown up on a diet of pop stars." [97] Clayton agreed that the album's commercial reception must be "challenged" but said, "the more interesting challenge is, 'What is rock 'n' roll in this changing world?' Because, to some extent, the concept of the music fan – the concept of the person who buys music and listens to music for the pleasure of music itself – is an outdated idea." [95] The Edge predicted that, despite its lack of a big hit, No Line on the Horizon would grow on listeners over time. [97] He noted that the reaction to the songs in the live setting made U2 believe that the material was connecting with the fans, adding, "There's a lot of records that make great first impressions. There might be one song that gets to be big on the radio, but they're not albums that people ... play a lot. This is one that I gather from talking to people. ... Four months later, they're saying, 'I'm really getting into the album now.'" [99] Lillywhite believed that the African influence had not translated well onto the album, remarking "It's a pity because the whole idea of Morocco as a big idea was great. When the big idea for U2 is good, that is when they succeed the most, but I don't think the spirit of what they set out to achieve was translated. Something happened that meant it did not come across on the record." [100] McGuinness believed that the conditions of the music market were more responsible for the low sales than any decline in U2's popularity. [101] Despite the comparatively low sales, globally it was the seventh-highest-selling album of 2009. [102]

[edit] Accolades

No Line on the Horizon was nominated in the Best Rock Album category at the 52nd Grammy Awards in 2010. [103] The song "I'll Go Crazy If I Don't Go Crazy Tonight" was nominated for Best Rock Performance by a Duo or Group With Vocals and Best Rock Song. [103] The cut song "Winter" was nominated for Best Original Song at the 67th Golden Globe Awards for its role in the film Brothers. [28] Rolling Stone ranked No Line on the Horizon the best album of the year and the 36th-best album of the decade, and "Moment of Surrender" as the best song of the year and the 36th-best song of the decade. [104] The Irish Independent placed it fourth on their list of the year's top Irish albums, while Time listed the song "No Line on the Horizon" as the third-best of 2009. [105] [106]

[edit] U2 360° Tour

Following the release of *No Line on the Horizon*, U2 staged a worldwide stadium tour, titled the U2 360° Tour. Beginning on 30 June 2009 in Barcelona, the tour visited Europe, North America, Oceania, Africa and South America from 2009 to 2011.[107][108] The concerts featured a 360-degree stage that the audience surrounded.[109] To accommodate this, a large four-legged structure nicknamed "The Claw" was built above the stage. At 50 meters (165 feet) tall, it was the largest stage ever constructed and twice the size of the previous largest set, which was used on The Rolling Stones' *A Bigger Bang* Tour.[110] The idea for the stage had been proposed to the group by the set designer Willie Williams at the end of the *Vertigo* Tour in 2006.[110] The design was intended to overcome the staid traditional appearance of outdoor concerts where the stage was dominated by speaker stacks on either side.[111] By the conclusion of the second leg, the tour had grossed over US\$311 million from 44 shows, making it the highest-grossing tour of the year;[112] despite this, the high production costs, approximately US\$750,000 per day,[113] meant the tour was barely breaking even.[114] In 2011, the U2 360° Tour became the highest-grossing concert tour, with ticket sales totaling over US\$736 million.[115]

During the first leg of the tour in Europe, the band typically played songs from *No Line on the Horizon* early in the set. "Breathe", "No Line on the Horizon", "Get on Your Boots" and "Magnificent" were played as the opening quartet, while "Unknown Caller" and a remixed arrangement of "I'll Go Crazy If I Don't Go Crazy Tonight" appeared close to the halfway point. "Moment of Surrender" closed every show.[116] U2 made minor changes to the setlists for the second leg of the tour. "No Line on the Horizon" was performed later in the concerts, while "Unknown Caller" was dropped for several weeks before being revived towards the end of the leg. The band did not play "Stand Up Comedy", "Fez" ^ Being Born", "White as Snow", or "Cedars of Lebanon" at any point in 2009.[116] The 25 October 2009 concert at the Rose Bowl in Pasadena, California, U2's penultimate concert of 2009,[116] was filmed and streamed live over YouTube.[117] The shoot used 27 high definition cameras; the concert was released on DVD and Blu-ray as *U2 360° at the Rose Bowl* on 3 June 2010.[118] "Get on Your Boots", "Magnificent", "No Line on the Horizon", "Unknown Caller", "I'll Go Crazy If I Don't Go Crazy Tonight", and "Moment of Surrender" are on the release. "Breathe" is included as a bonus track.[118]

[edit] Track listing

1.  
"No Line on the Horizon" ^  
Bono  
U2, Brian Eno, Daniel Lanois  
Eno, Lanois, Steve Lillywhite (add.)  
4:12
2.  
"Magnificent" ^  
Bono, The Edge  
U2, Eno, Lanois  
Eno, Lanois, Lillywhite (add.)  
5:24
3.  
"Moment of Surrender" ^  
Bono  
U2, Eno, Lanois  
Eno, Lanois  
7:24
4.  
"Unknown Caller" ^  
U2, Eno, Lanois  
U2, Eno, Lanois  
Eno, Lanois, Lillywhite (add.)  
6:03

5.  
"I'll Go Crazy If I Don't Go Crazy Tonight" Â  
Bono  
U2  
Lillywhite, will.i.am (add.)  
4:14

6.  
"Get on Your Boots" Â  
Bono  
U2  
Eno, Lanois, Declan Gaffney (add.)  
3:25

7.  
"Stand Up Comedy" Â  
Bono  
U2  
Eno, Lanois, Lillywhite (add.)  
3:50

8.  
"FezÂ â ^ Being Born" Â  
Bono  
U2, Eno, Lanois  
Eno, Lanois  
5:17

9.  
"White as Snow" Â  
U2, with Eno, Lanois  
Traditional, arr. U2, with Eno, Lanois  
Eno, Lanois  
4:41

10.  
"Breathe" Â  
Bono  
U2  
Lillywhite, Lanois (add.), Eno (add.)  
5:00

11.  
"Cedars of Lebanon" Â  
Bono  
U2, Eno, Lanois  
Lanois  
4:13

Total length:  
53:43  
Â â ¢ (add.) Additional production

12.  
"No Line on the Horizon 2" Â  
Bono  
U2, Eno, Lanois  
U2  
4:07

13.  
"Get on Your Boots" (Crookers remix)  
Bono  
U2  
Eno, Lanois, Gaffney  
4:27

#### Notes

"Cedars of Lebanon" features a sample from "Against The Sky" by Harold Budd and Brian Eno from the album The Pearl (1984).

[edit] Personnel

U2[33]

Additional[33]

[edit] Charts

[edit] Weekly albums charts

[edit] Year-end albums charts

[edit] Weekly singles charts

Song

Peak (2009)

IRE[146]

BE (Wal)[147]

CAN[148][149]

NL[147]

UK[150]

US[148]

"Get on Your Boots"

1

13

3

5

12

37

"Magnificent"

5

14

9

6

42

79

"I'll Go Crazy If I Don't Go Crazy Tonight"

7

18

5

14

32

â ^

"Moment of Surrender"

â ^

35

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"No Line on the Horizon"

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38

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"â ^" denotes a release that did not chart.

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Footnotes

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Calvin Coolidge  
30th President of the United States  
In office  
August 2, 1923Â â ^ March 4, 1929  
Vice President  
None (1923Â ^1925)Charles G. Dawes (1925Â ^1929)  
Preceded by  
Warren G. Harding  
Succeeded by  
Herbert Hoover  
29th Vice President of the United States  
In office  
March 4, 1921Â â ^ August 2, 1923  
President  
Warren G. Harding  
Preceded by  
Thomas R. Marshall  
Succeeded by  
Charles G. Dawes  
48th Governor of Massachusetts  
In office  
January 2, 1919Â â ^ January 6, 1921  
Lieutenant  
Channing Cox  
Preceded by  
Samuel W. McCall  
Succeeded by  
Channing H. Cox  
46th Lieutenant Governor of Massachusetts  
In office  
January 6, 1916Â â ^ January 2, 1919  
Governor  
Samuel W. McCall  
Preceded by  
Grafton D. Cushing  
Succeeded by  
Channing H. Cox  
Personal details  
Born  
John Calvin Coolidge, Jr.(1872-07-04)July 4, 1872Plymouth Notch, Vermont,  
United States  
Died  
January 5, 1933(1933-01-05) (agedÂ 60)Northampton, Massachusetts, United States  
Resting place  
Plymouth Notch CemeteryPlymouth Notch, Vermont  
Political party  
Republican



Spouse(s)

Grace Goodhue

Children

John Coolidge Calvin Coolidge, Jr.

Alma mater

Amherst College

Profession

Lawyer

Religion

Congregationalism

Signature

John Calvin Coolidge, Jr. (July 4, 1872 – January 5, 1933) was the 30th President of the United States (1923 – 1929). A Republican lawyer from Vermont, Coolidge worked his way up the ladder of Massachusetts state politics, eventually becoming governor of that state. His conduct during the Boston Police Strike of 1919 thrust him into the national spotlight and gave him a reputation as a man of decisive action. Soon after, he was elected as the 29th Vice President in 1920 and succeeded to the Presidency upon the sudden death of Warren G. Harding in 1923. Elected in his own right in 1924, he gained a reputation as a small-government conservative, and also as a man who said very little.

Coolidge restored public confidence in the White House after the scandals of his predecessor's administration, and left office with considerable popularity.[1] As a Coolidge biographer put it, "He embodied the spirit and hopes of the middle class, could interpret their longings and express their opinions. That he did represent the genius of the average is the most convincing proof of his strength." [2] Coolidge praised the achievement of widespread prosperity in 1928, saying: "The requirements of existence have passed beyond the standard of necessity into the region of luxury." [3] Some later criticized Coolidge as part of a general criticism of laissez-faire government. [4] His reputation underwent a renaissance during the Ronald Reagan Administration, [5] but the ultimate assessment of his presidency is still divided between those who approve of his reduction of the size of government programs and those who believe the federal government should be more involved in regulating and controlling the economy. [6]

[edit] Birth and family history

John Calvin Coolidge, Jr., was born in Plymouth Notch, Windsor County, Vermont, on July 4, 1872, the only U.S. President to be born on Independence Day. He was the elder of the two children of John Calvin Coolidge, Sr. (1845 – 1926) and Victoria Josephine Moor (1846 – 1885). Coolidge Senior engaged in many occupations, and ultimately enjoyed a statewide reputation as a prosperous farmer, storekeeper and public servant; he farmed, taught school, ran a local store, served in the Vermont House of Representatives and the Vermont Senate, and held various local offices including justice of the peace and tax collector. [7] Coolidge's mother was the daughter of a Plymouth Notch farmer. [8] Coolidge's chronically ill mother died, perhaps from tuberculosis, when he was twelve years old. His sister, Abigail Grace Coolidge (1875 – 1900), died at the age of fifteen, when Coolidge was eighteen. Coolidge's father remarried in 1891, to a schoolteacher, and lived to the age of eighty.

Coolidge's family had deep roots in New England. His earliest American ancestor, John Coolidge, emigrated from Cottenham, Cambridgeshire, England, around 1630 and settled in Watertown, Massachusetts. [9] Another ancestor, Edmund Rice, arrived at Watertown in 1638. [10] Coolidge's great-great-grandfather, also named John Coolidge, was an American military officer in the Revolutionary War and one of the first selectmen of the town of Plymouth Notch. [11] Most of Coolidge's ancestors were farmers. Other well-known Coolidges, architect Charles Allerton Coolidge, General Charles Austin Coolidge, and diplomat Archibald Cary Coolidge among them, were descended from branches of the family that had remained in Massachusetts. [9] Coolidge's grandmother Sarah Almeda Brewer had two famous first cousins: Arthur Brown, a

United States Senator, and Olympia Brown, a women's suffragist. It is through Sarah Brewer that Coolidge believed that he inherited American Indian blood, but this descent has never been established by modern genealogists.[12] Marcus A. Coolidge, a U.S. Senator from Massachusetts, was also a distant relative.[13]

[edit] Early career and marriage

[edit] Western Massachusetts lawyer

Coolidge attended Black River Academy and then Amherst College, where he joined the fraternity of Phi Gamma Delta.[14] At his father's urging, Coolidge moved to Northampton, Massachusetts, after graduating to take up the practice of law. Avoiding the costly alternative of attending a law school, Coolidge followed the more common practice of the time, apprenticing with a local law firm, Hammond & Field, and reading law with them. John C. Hammond and Henry P. Field, both Amherst graduates, introduced Coolidge to the law practice in the county seat of Hampshire County. In 1897, Coolidge was admitted to the bar, becoming a country lawyer. With his savings and a small inheritance from his grandfather, Coolidge was able to open his own law office in Northampton in 1898. He practiced transactional law, believing that he served his clients best by staying out of court. As his reputation as a hard-working and diligent attorney grew, local banks and other businesses began to retain his services.[15]

[edit] Marriage and family

In 1905, Coolidge met and married the daughter of a Vermont steamboat inspector,[16] Grace Anna Goodhue, who was working as a teacher at the Clarke School for the Deaf. While Grace was watering flowers outside the school one day in 1903, she happened to look up at the open window of Robert N. Weir's boardinghouse and caught a glimpse of Calvin Coolidge shaving in front of a mirror with nothing on but long underwear and a hat.[17] Coolidge later explained that he wore the hat to keep his unruly red hair out of his eyes while shaving.[18] After a more formal introduction sometime later, the two were quickly attracted to each other.[17] They were married on October 4, 1905, in the parlor of her parents' home in Burlington, Vermont.

They were opposites in personality: she was talkative and fun-loving, while he was quiet and serious.[19] Not long after their marriage, Coolidge handed her a bag with fifty-two pairs of socks in it, all of them full of holes. Grace's reply was "Did you marry me to darn your socks?" Without cracking a smile and with his usual seriousness, Calvin answered, "No, but I find it mighty handy." [20] They had two sons: John, born in 1906, and Calvin, Jr., born in 1908.[21] The marriage was, by most accounts, a happy one.[22] As Coolidge wrote in his Autobiography, "We thought we were made for each other. For almost a quarter of a century she has borne with my infirmities, and I have rejoiced in her graces." [23]

[edit] Local political office

[edit] City offices

The Republican Party was dominant in New England in Coolidge's time, and he followed Hammond's and Field's example by becoming active in local politics.[24] Coolidge campaigned locally for Republican presidential candidate William McKinley in 1896, and the next year he was selected to be a member of the Republican City Committee.[25] In 1898, he won election to the City Council of Northampton, placing second in a ward where the top three candidates were elected.[25] The position offered no salary, but it gave Coolidge experience in the political world.[26] In 1899, he declined renomination, running instead for City Solicitor, a position elected by the City Council. He was elected for a one-year term in 1900, and reelected in 1901.[27] This position gave Coolidge more experience as a lawyer, and paid a salary of \$600.[27] In 1902, the city council selected a Democrat for city solicitor, and Coolidge returned to an exclusively private practice.[28] Soon thereafter, however, the clerk of courts for the county died, and Coolidge was chosen to replace him. The position paid well, but it barred him from practicing law, so he only remained at the job for one year.[28] The next year, 1904, Coolidge met with his only defeat before the

voters, losing an election to the Northampton school board. When told that some of his neighbors voted against him because he had no children in the schools he would govern, Coolidge replied "Might give me time!"[28]

[edit] State legislator and mayor

In 1906 the local Republican committee nominated Coolidge for election to the state House of Representatives. He won a close victory over the incumbent Democrat, and reported to Boston for the 1907 session of the Massachusetts General Court.[29] In his freshman term, Coolidge served on minor committees and, although he usually voted with the party, was known as a Progressive Republican, voting in favor of such measures as women's suffrage and the direct election of Senators.[30] Throughout his time in Boston, Coolidge found himself allied primarily with the western Winthrop Murray Crane faction of the state Republican Party, as against the Henry Cabot Lodge-dominated eastern faction.[31] In 1907, he was elected to a second term. In the 1908 session, Coolidge was more outspoken, but he was still not one of the leaders in the legislature.[32]

Instead of vying for another term in the State House, Coolidge returned home to his growing family and ran for mayor of Northampton when the incumbent Democrat retired. He was well liked in the town, and defeated his challenger by a vote of 1,597 to 1,409.[33] During his first term (1910 to 1911), he increased teachers' salaries and retired some of the city's debt while still managing to effect a slight tax decrease.[34] He was renominated in 1911, and defeated the same opponent by a slightly larger margin.[35]

In 1911, the State Senator for the Hampshire County area retired and encouraged Coolidge to run for his seat for the 1912 session. He defeated his Democratic opponent by a large margin.[36] At the start of that term, Coolidge was selected to be chairman of a committee to arbitrate the "Bread and Roses" strike by the workers of the American Woolen Company in Lawrence, Massachusetts.[37] After two tense months, the company agreed to the workers' demands in a settlement the committee proposed.[38] The other major issue for Republicans that year was the party split between the progressive wing, which favored Theodore Roosevelt, and the conservative wing, which favored William Howard Taft. Although he favored some progressive measures, Coolidge refused to leave the Republican party.[39] When the new Progressive Party declined to run a candidate in his state senate district, Coolidge won reelection against his Democratic opponent by an increased margin.[39]

The 1913 session was less eventful, and Coolidge's time was mostly spent on the railroad committee, of which he was the chairman.[40] Coolidge intended to retire after the 1913 session, as two terms were the norm, but when the President of the State Senate, Levi H. Greenwood, considered running for Lieutenant Governor, Coolidge decided to run again for the Senate in the hopes of being elected as its presiding officer.[41] Although Greenwood later decided to run for reelection to the Senate, he was defeated and Coolidge was elected, with Crane's help, as the President of a closely divided Senate.[42] After his election in January 1914, Coolidge delivered a speech entitled Have Faith in Massachusetts, which summarized his philosophy of government. It was later published in a book, and frequently quoted.[43]

Do the day's work. If it be to protect the rights of the weak, whoever objects, do it. If it be to help a powerful corporation better to serve the people, whatever the opposition, do that. Expect to be called a stand-patter, but don't be a stand-patter. Expect to be called a demagogue, but don't be a demagogue. Don't hesitate to be as revolutionary as science. Don't hesitate to be as reactionary as the multiplication table. Don't expect to build up the weak by pulling down the strong. Don't hurry to legislate. Give administration a chance to catch up with legislation.

Have Faith in Massachusetts as delivered by Calvin Coolidge to the Massachusetts State Senate, 1914.[44]

Coolidge's speech was well received, and he attracted some admirers on its account.[45] Towards the end of the term, many of them were proposing his name for nomination to lieutenant governor. After winning reelection to the Senate

by an increased margin in the 1914 elections, Coolidge was reelected unanimously to be President of the Senate.[46] As the 1915 session ended, Coolidge's supporters, led by fellow Amherst alumnus Frank Stearns, encouraged him again to run for lieutenant governor. This time, he accepted their advice.[47]

[edit] Lieutenant Governor

Coolidge entered the primary election for lieutenant governor and was nominated to run alongside gubernatorial candidate Samuel W. McCall. Coolidge was the leading vote-getter in the Republican primary, and balanced the Republican ticket by adding a western presence to McCall's eastern base of support.[48] McCall and Coolidge won the 1915 election, with Coolidge defeating his opponent by more than 50,000 votes.[49]

Coolidge's duties as lieutenant governor were few; in Massachusetts, the lieutenant governor does not preside over the state Senate, although Coolidge did become an ex officio member of the governor's cabinet.[50] As a full-time elected official, Coolidge no longer practiced law after 1916, though his family continued to live in Northampton.[51] McCall and Coolidge were both reelected in 1916 and again in 1917 (At the time, both offices were held for one-year terms). When McCall decided that he would not stand for a fourth term, Coolidge announced his intention to run for governor.[52]

[edit] Governor of Massachusetts

[edit] 1918 election

Coolidge was unopposed for the Republican nomination for Governor of Massachusetts in 1918. He and his running mate, Channing Cox, a Boston lawyer and Speaker of the Massachusetts House of Representatives, ran on the previous administration's record: fiscal conservatism, a vague opposition to Prohibition, support for women's suffrage, and support for American involvement in World War I.[53] The issue of the war proved divisive, especially among Irish- and German-Americans.[54] Coolidge was elected by a margin of 16,773 votes over his opponent, Richard H. Long, in the smallest margin of victory of any of his state-wide campaigns.[55]

[edit] Boston police strike

In 1919, in response to rumors that policemen of the Boston Police Department planned to form a union, Police Commissioner Edwin U. Curtis issued a statement saying that such a move would not be tolerated. In August of that year, the American Federation of Labor issued a charter to the Boston Police Union.[56] Curtis said the union's leaders were insubordinate and planned to relieve them of duty, but he said that he would suspend the sentence if the union was dissolved by September 4.[57] The mayor of Boston, Andrew Peters, convinced Curtis to delay his action for a few days, but Curtis ultimately suspended the union leaders on September 8.[58]

"Your assertion that the Commissioner was wrong cannot justify the wrong of leaving the city unguarded. That furnished the opportunity; the criminal element furnished the action. There is no right to strike against the public safety by anyone, anywhere, any time. ... I am equally determined to defend the sovereignty of Massachusetts and to maintain the authority and jurisdiction over her public officers where it has been placed by the Constitution and laws of her people." (emphasis added)

Telegram from Governor Calvin Coolidge to Samuel Gompers September 14, 1919.[59]

The following day, about three-quarters of the policemen in Boston went on strike.{{Refn group = "lower-alpha" | The exact total was 1,117 out of 1,544[60] Coolidge had observed the situation throughout the conflict, but he had not yet intervened. That night and the next, there was sporadic violence and rioting in the lawless city.[61] Peters, concerned about sympathy strikes, had called up some units of the Massachusetts National Guard stationed in the Boston area and relieved Curtis of duty.[62] Coolidge, furious that the mayor had called out state guard units, finally acted.[63] He called up more units of the National Guard, restored Curtis to office, and took personal control of the police force.[64] Curtis proclaimed that all of the strikers were fired from their jobs, and Coolidge called for a new police force to be recruited.[65]

That night Coolidge received a telegram from AFL leader Samuel Gompers. "Whatever disorder has occurred", Gompers wrote, "is due to Curtis's order in which the right of the policemen has been deniedâ [66] Coolidge publicly answered Gompers's telegram with the response that would launch him into the national consciousness (quoted, above left).[66] Newspapers across the nation picked up on Coolidge's statement and he became the newest hero to opponents of the strike. In the midst of the First Red Scare, many Americans were terrified of the spread of communist revolution, like those that had taken place in Russia, Hungary, and Germany. While Coolidge had lost some friends among organized labor, conservatives across the nation had seen a rising star. Although he usually acted with deliberation, the Boston police strike gave him a national reputation as a man who would take decisive action.

[edit] 1919 election

Coolidge and Cox were renominated for their respective offices in 1919. By this time Coolidge's supporters (especially Stearns) had publicized his actions in the Police Strike around the state and the nation and some of Coolidge's speeches were published in book form.[43] He faced the same opponent as in 1918, Richard Long, but this time Coolidge defeated him by 125,101 votes, more than seven times his margin of victory from a year earlier.[67] His actions in the police strike, combined with the massive electoral victory, led to suggestions that Coolidge run for President in 1920.[68]

[edit] Legislation and vetoes as governor

By the time Coolidge was inaugurated on January 2, 1919, the First World War had ended, and Coolidge pushed the legislature to give a \$100 bonus to Massachusetts veterans. He also signed a bill reducing the work week for women and children from fifty-four hours to forty-eight, saying, "We must humanize the industry, or the system will break down." [69] He signed into law a budget that kept the tax rates the same, while trimming four million dollars from expenditures, thus allowing the state to retire some of its debt.[70]

Coolidge also wielded the veto pen as governor. His most publicized veto was of a bill that would have increased legislators' pay by 50%.[71] Although Coolidge was personally opposed to Prohibition, he vetoed a bill in May 1920 that would have allowed the sale of beer or wine of 2.75% alcohol or less, in Massachusetts in violation of the Eighteenth Amendment to the United States Constitution. "Opinions and instructions do not outmatch the Constitution," he said in his veto message, "Against it, they are void." [72]

[edit] Vice Presidency

[edit] 1920 election

At the 1920 Republican National Convention most of the delegates were selected by state party conventions, not primaries. As such, the field was divided among many local favorites.[73] Coolidge was one such candidate, and while he placed as high as sixth in the voting, the powerful party bosses never considered him a serious candidate. After ten ballots, the delegates settled on Senator Warren G. Harding of Ohio as their nominee for President.[74] When the time came to select a Vice Presidential nominee, the party bosses had also made a decision on who they would nominate: Senator Irvine Lenroot of Wisconsin.[75] A delegate from Oregon, Wallace McCamant, having read *Have Faith* in Massachusetts, proposed Coolidge for Vice President instead.[75] The suggestion caught on quickly, and Coolidge found himself unexpectedly nominated.[76]

The Democrats nominated another Ohioan, James M. Cox, for President and the Assistant Secretary of the Navy, Franklin D. Roosevelt, for Vice President. The question of the United States joining the League of Nations was a major issue in the campaign, as was the unfinished legacy of Progressivism.[77] Harding ran a "front-porch" campaign from his home in Marion, Ohio, but Coolidge took to the campaign trail in the Upper South, New York, and New England.[78] On November 2, 1920, Harding and Coolidge were victorious in a landslide, winning every state outside the South.[79] They also won in Tennessee, the first time a Republican ticket had won a Southern state since Reconstruction.[79]

[edit] "Silent Cal"

The Vice-Presidency did not carry many official duties, but Coolidge was

invited by President Harding to attend cabinet meetings, making him the first Vice President to do so.[80] He gave speeches around the country, but none were especially noteworthy.[81]

As Vice-President, Coolidge and his vivacious wife Grace were invited to quite a few parties, where the legend of "Silent Cal" was born. It is from this time that most of the jokes and anecdotes involving Coolidge originate. Although Coolidge was known to be a skilled and effective public speaker, in private he was a man of few words and was therefore commonly referred to as "Silent Cal." A possibly apocryphal story has it that Dorothy Parker, seated next to him at a dinner, said to him, "Mr. Coolidge, I've made a bet against a fellow who said it was impossible to get more than two words out of you." His famous reply: "You lose." [82] It was also Parker who, upon learning that Coolidge had died, reportedly remarked, "How can they tell?" [83] Coolidge often seemed uncomfortable among fashionable Washington society; when asked why he continued to attend so many of their dinner parties, he replied, "Got to eat somewhere." [84] Alice Roosevelt Longworth, a leading Republican wit, underscored Coolidge's silence and his dour personality: "When he wished he were elsewhere, he pursed his lips, folded his arms, and said nothing. He looked then precisely as though he had been weaned on a pickle." [85]

As President, Coolidge's reputation as a quiet man continued. "The words of a President have an enormous weight," he would later write, "and ought not to be used indiscriminately." [86] Coolidge was aware of his stiff reputation; indeed, he cultivated it. "I think the American people want a solemn ass as a President," he once told Ethel Barrymore, "and I think I will go along with them." [87] However, he did hold a then-record number of presidential press conferences, 520 during his presidency. [88] Some historians would later suggest that Coolidge's image was created deliberately as a campaign tactic, [89] while others believe his withdrawn and quiet behavior to be natural, deepening after the death of his son in 1924. [90]

[edit] Presidency 1923â ^1929

[edit] Succession to the Presidency

On August 2, 1923, President Harding died suddenly while on a speaking tour of the western United States. [91] Vice-President Coolidge was in Vermont visiting his family home, which had neither electricity nor a telephone, when he received word by messenger of Harding's death. [92] Coolidge dressed, said a prayer, and came downstairs to greet the reporters who had assembled. [92] His father, a notary public, administered the oath of office in the family's parlor by the light of a kerosene lamp at 2:47Â am on August 3, 1923; Coolidge then went back to bed. He returned to Washington the next day, and was re-sworn in by Justice Adolph A. Hoehling, Jr. of the Supreme Court of the District of Columbia, as there was some confusion over whether a state notary public had the authority to administer the presidential oath. [93] [94]

[edit] Finishing Harding's term

The nation did not know what to make of its new President; Coolidge had not stood out in the Harding administration and many had expected him to be replaced on the ballot in 1924. [95] He appointed C. Bascom Sless, a Virginia Congressman and experienced federal politician [96] to work jointly with Edward T. Clark, a Massachusetts Republican organizer whom he retained from his vice presidential staff, as Secretaries to the President (a position equivalent to the modern White House Chief of Staff). [97] Although a few of Harding's cabinet appointees were scandal-tarred, Coolidge announced that he would not demand any of their resignations, believing that since the people had elected Harding, he should carry on Harding's presidency, at least until the next election. [97]

He addressed Congress when it reconvened on December 6, 1923, giving a speech that echoed many of Harding's themes, including immigration restriction and the need for the government to arbitrate the coal strikes then ongoing in Pennsylvania. [98] Coolidge's speech was the first Presidential speech to be broadcast to the nation over the radio. [99] The Washington Naval Treaty was proclaimed just one month into Coolidge's term, and was generally well received in the country. [97] In May 1924, the World War I veterans' World War Adjusted

Compensation Act or "Bonus Bill" was passed over his veto.[100] Coolidge signed the Immigration Act later that year, which was aimed at restricting southern and eastern European immigration, though he appended a signing statement expressing his unhappiness with the bill's specific exclusion of Japanese immigrants.[101] Just before the Republican Convention began, Coolidge signed into law the Revenue Act of 1924, which decreased personal income tax rates while increasing the estate tax, and creating a gift tax to reinforce the transfer tax system.[102]

[edit] 1924 election

The Republican Convention was held from June 10<sup>th</sup> to 12, 1924 in Cleveland, Ohio; President Coolidge was nominated on the first ballot.[103] The convention nominated Frank Lowden of Illinois for Vice President on the second ballot, but he declined by telegram.[104] Former Brigadier General Charles G. Dawes, who would win the Nobel Peace Prize in 1925, was nominated on the third ballot; he accepted.[104]

The Democrats held their convention from June 24 to July 9 in New York City. The convention soon deadlocked, and after 103 ballots, the delegates finally agreed on a compromise candidate, John W. Davis, with Charles W. Bryan nominated for Vice President. The Democrats' hopes were buoyed when Robert M. La Follette, Sr., a Republican Senator from Wisconsin, split from his party to form a new Progressive Party. Many believed that the split in the Republican party, like the one in 1912, would allow a Democrat to win the Presidency.[105]

Shortly after the conventions Coolidge experienced a personal tragedy. Coolidge's younger son, Calvin, Jr., developed a blister from playing tennis on the White House courts. The blister became infected, and within days Calvin, Jr. developed sepsis and died. After that Coolidge became withdrawn. He later said that "when he died, the power and glory of the Presidency went with him." [106] In spite of his sadness, Coolidge ran his conventional campaign; he never maligned his opponents (or even mentioned them by name) and delivered speeches on his theory of government, including several that were broadcast over radio.[107] It was easily the most subdued campaign since 1896, partly because the President was grieving for his son, but partly because Coolidge's style was naturally non-confrontational.[108] The other candidates campaigned in a more modern fashion, but despite the split in the Republican party, the results were very similar to those of 1920. Coolidge and Dawes won every state outside the South except for Wisconsin, La Follette's home state. Coolidge had a popular vote majority of 2.5<sup>million</sup> over his opponents' combined total.[109]

[edit] Industry and trade

... it is probable that a press which maintains an intimate touch with the business currents of the nation is likely to be more reliable than it would be if it were a stranger to these influences. After all, the chief business of the American people is business. They are profoundly concerned with buying, selling, investing and prospering in the world. (emphasis added)  
President Calvin Coolidge's address to the American Society of Newspaper Editors, Washington D.C., January 25, 1925.[110]

During Coolidge's presidency the United States experienced the period of rapid economic growth known as the "Roaring Twenties". He left the administration's industrial policy in the hands of his activist Secretary of Commerce, Herbert Hoover, who energetically used government auspices to promote business efficiency and develop airlines and radio.[111] With the exception of favoring increased tariffs, Coolidge disdained regulation, and carried about this belief by appointing commissioners to the Federal Trade Commission and the Interstate Commerce Commission who did little to restrict the activities of businesses under their jurisdiction.[112] The regulatory state under Coolidge was, as one biographer described it, "thin to the point of invisibility." [113]

Coolidge's economic policy has often been misquoted as "generally speaking, the business of the American people is business" (full quotation at right). Some have criticized Coolidge as an adherent of the laissez-faire ideology, which they claim led to the Great Depression.[114] On the other hand, historian

Robert Sobel offers some context based on Coolidge's sense of federalism: "As Governor of Massachusetts, Coolidge supported wages and hours legislation, opposed child labor, imposed economic controls during World War I, favored safety measures in factories, and even worker representation on corporate boards. Did he support these measures while president? No, because in the 1920s, such matters were considered the responsibilities of state and local governments." [115]

[edit] Taxation

Coolidge's taxation policy was that of his Secretary of the Treasury, Andrew Mellon: taxes should be lower and fewer people should have to pay them. [116] Congress agreed, and the taxes were reduced in Coolidge's term. [116] In addition to these tax cuts, Coolidge proposed reductions in federal expenditures and retiring some of the federal debt. [116] Coolidge's ideas were shared by the Republicans in Congress, and in 1924 Congress passed the Revenue Act of 1924, which reduced income tax rates and eliminated all income taxation for some two million people. [116] They reduced taxes again by passing the Revenue Acts of 1926 and 1928, all the while continuing to keep spending down so as to reduce the overall federal debt. [117] By 1927, only the richest 2% of taxpayers paid any federal income tax. [117] Although federal spending remained flat during Coolidge's administration, allowing one-fourth of the federal debt to be retired, state and local governments saw considerable growth, surpassing the federal budget in 1927. [118]

[edit] Farm subsidies

Perhaps the most contentious issue of Coolidge's presidency was that of relief for farmers. Some in Congress proposed a bill designed to fight falling agricultural prices by allowing the federal government to purchase crops to sell abroad at lowered prices. [119] Agriculture Secretary Henry C. Wallace and other administration officials favored the bill when it was introduced in 1924, but rising prices convinced many in Congress that the bill was unnecessary, and it was defeated just before the elections that year. [120] In 1926, with farm prices falling once more, Senator Charles L. McNary and Representative Gilbert N. Haugen—both Republicans—proposed the McNary-Haugen Farm Relief Bill. The bill proposed a federal farm board that would purchase surplus production in high-yield years and hold it (when feasible) for later sale, or sell it abroad. [121] Coolidge opposed McNary-Haugen, declaring that agriculture must stand "on an independent business basis," and said that "government control cannot be divorced from political control." [121] He favored instead Herbert Hoover's proposal to modernize agriculture to create profits, instead of manipulating prices. Secretary Mellon wrote a letter denouncing the McNary-Haugen measure as unsound and likely to cause inflation, and it was defeated. [122]

After McNary-Haugen's defeat, Coolidge supported a less radical measure, the Curtis-Crisp Act, which would have created a federal board to lend money to farm co-operatives in times of surplus; the bill did not pass. [122] In February 1927, Congress took up the McNary-Haugen bill again, this time narrowly passing it. [123] Coolidge vetoed it. [123] In his veto message, he expressed the belief that the bill would do nothing to help farmers, benefitting only exporters and expanding the federal bureaucracy. [124] Congress did not override the veto, but it passed the bill again in May 1928 by an increased majority; again, Coolidge vetoed it. [123] "Farmers never have made much money," said Coolidge, the Vermont farmer's son, "I do not believe we can do much about it." [125]

[edit] Flood control

Coolidge has often been criticized for his actions during the Great Mississippi Flood of 1927, the worst natural disaster to hit the Gulf Coast until Hurricane Katrina in 2005. [126] Although he did eventually name Secretary Hoover to a commission in charge of flood relief, Coolidge's lack of interest in federal flood control has been criticized. [126] Coolidge did not believe that personally visiting the region after the floods would accomplish anything, but it would be seen only as political grandstanding. He also did not want to incur the federal spending that flood control would require; he believed



property owners should bear much of the cost.[127] On the other hand, Congress wanted a bill that would place the federal government completely in charge of flood mitigation.[128] When Congress passed a compromise measure in 1928, Coolidge declined to take credit for it and signed the bill in private on May 15.[129]

[edit] Civil rights

Coolidge spoke out in favor of the civil rights of African Americans and Catholics.[130] He appointed no known members of the Ku Klux Klan to office; indeed the Klan lost most of its influence during his term.[131]

In 1924, Coolidge responded to a letter that claimed the United States was a "white man's country":

....I was amazed to receive such a letter. During the war 500,000 colored men and boys were called up under the draft, not one of whom sought to evade it. [As president, I am] one who feels a responsibility for living up to the traditions and maintaining the principles of the Republican Party. Our Constitution guarantees equal rights to all our citizens, without discrimination on account of race or color. I have taken my oath to support that Constitution....[132]

On June 2, 1924, Coolidge signed the Indian Citizenship Act, which granted full U.S. citizenship to all American Indians, while permitting them to retain tribal land and cultural rights. However, the act was unclear on whether the federal government or the tribal leaders retained tribal sovereignty.[133] Coolidge repeatedly called for anti-lynching laws to be enacted, but most Congressional attempts to pass this legislation were filibustered by Southern Democrats. Coolidge appointed some African Americans to federal office. He retained Harding's choice of Walter L. Cohen of New Orleans, Louisiana, as the comptroller of customs and offered Cohen the post of minister to Liberia, which the businessman declined.[134]

[edit] Foreign policy

Although not an isolationist, Coolidge was reluctant to enter into foreign alliances.[135] Coolidge saw the landslide Republican victory of 1920 as a rejection of the Wilsonian idea that the United States should join the League of Nations.[136] While not completely opposed to the idea, Coolidge believed the League, as then constituted, did not serve American interests, and he did not advocate membership in it.[136] He spoke in favor of the United States joining the Permanent Court of International Justice, provided that the nation would not be bound by advisory decisions.[137] The Senate eventually approved joining the Court (with reservations) in 1926.[138] The League of Nations accepted the reservations, but it suggested some modifications of their own.[139] The Senate failed to act; the United States never joined the World Court.[139]

Coolidge's best-known initiative was the Kellogg-Briand Pact of 1928, named for Coolidge's Secretary of State, Frank B. Kellogg, and French foreign minister Aristide Briand. The treaty, ratified in 1929, committed signatories including the U.S., the United Kingdom, France, Germany, Italy, and Japan to "renounce war, as an instrument of national policy in their relations with one another." [140] The treaty did not achieve its intended result—the outlawry of war—but it did provide the founding principle for international law after World War II.[141]

Coolidge continued the previous administration's policy not to recognize the Soviet Union.[142] He also continued the United States' support for the elected government of Mexico against the rebels there, lifting the arms embargo on that country.[143] He sent his close friend Dwight Morrow to Mexico as the American ambassador.[144] Coolidge represented the U.S. at the Pan American Conference in Havana, Cuba, making him the only sitting U.S. President to visit the country. The United States' occupation of Nicaragua and Haiti continued under his administration, but Coolidge withdrew American troops from the Dominican Republic in 1924.[145]

[edit] 1928 election

In the summer of 1927, Coolidge vacationed in the Black Hills of South Dakota, where he engaged in horseback riding and fly fishing and attended rodeos. He made Custer State Park his "summer White House". News coverage of Coolidge's time in the Black Hills soon increased tourism in the general region and promoted the popularity of Wind Cave National Park.[146] While on vacation, Coolidge surprisingly issued his terse statement that he would not seek a second full term as President in 1928: "I do not choose to run for President in 1928." [147] After allowing the reporters to take that in, Coolidge elaborated. "If I take another term, I will be in the White House till 1933ââ | Ten years in Washington is longer than any other man has had itâ too long!" [148] In his memoirs, Coolidge explained his decision not to run: "The Presidential office takes a heavy toll of those who occupy it and those who are dear to them. While we should not refuse to spend and be spent in the service of our country, it is hazardous to attempt what we feel is beyond our strength to accomplish." [149] After leaving office, he and Grace returned to Northampton, where he wrote his memoirs. The Republicans retained the White House in 1928 in the person of Coolidge's Secretary of Commerce, Herbert Hoover.

Coolidge had been reluctant to choose Hoover as his successor; on one occasion he remarked that "for six years that man has given me unsolicited adviceâ all of it bad." [150] Even so, Coolidge had no desire to split the party by publicly opposing the popular Commerce Secretary's nomination. [151] The delegates did consider nominating Vice President Charles Dawes to be Hoover's running mate. But Coolidge (who hated Dawes) remarked that this would be "a personal affront" to him, and the convention selected Senator Charles Curtis instead. [152]

[edit] Cabinet

Coolidge's cabinet in 1924, outside the White House

Front row, left to right: Harry Stewart New, John W. Weeks, Charles Evans Hughes, Coolidge, Andrew Mellon, Harlan F. Stone, Curtis D. Wilbur  
Back row, left to right, James J. Davis, Henry C. Wallace, Herbert Hoover, Hubert Work

[edit] Judicial appointments

[edit] Supreme Court

Coolidge appointed one Justice to the Supreme Court of the United States, Harlan Fiske Stone in 1925. Stone was Coolidge's fellow Amherst alumnus, a Wall Street lawyer and conservative Republican. Stone was serving as dean of Columbia Law School when Coolidge appointed him to be Attorney General in 1924 to restore the reputation tarnished by Harding's Attorney General, Harry M. Daugherty. Coolidge named Stone to the Supreme Court in 1925. [153] Stone proved to be a firm believer in judicial restraint [154] and was regarded as one of the court's three liberal justices who would often vote to uphold New Deal legislation. [155] Stone was later appointed Chief Justice by President Franklin D. Roosevelt.

[edit] Other courts

Along with his Supreme Court appointment, Coolidge successfully nominated 17 judges to the United States Courts of Appeals, and 61 judges to the United States district courts. He appointed judges to various specialty courts as well, including Genevieve R. Cline, who became the first woman named to the Federal judiciary when Coolidge placed her on the United States Customs Court in 1928. [156] Coolidge also signed the Judiciary Act of 1925 into law, allowing the Supreme Court more discretion over its workload.

[edit] Retirement and death

After his presidency, Coolidge retired to the modest rented house on residential Massasoit Street in Northampton before moving to a more spacious mansion, "The Beeches." He kept a Hacker runabout boat on the Connecticut River

and was often observed on the water by local boating enthusiasts. During this period he also served as chairman of the non-partisan Railroad Commission, as honorary president of the American Foundation for the Blind, as a director of New York Life Insurance Company, as president of the American Antiquarian Society, and as a trustee of Amherst College.[157] Coolidge received an honorary Doctor of Laws from Bates College in Lewiston, Maine.

Coolidge published his autobiography in 1929 and wrote a syndicated newspaper column, "Calvin Coolidge Says," from 1930 to 1931.[158] Faced with looming defeat in 1932, some Republicans spoke of rejecting Herbert Hoover as their party's nominee, and instead drafting Coolidge to run, but the former President made it clear that he was not interested in running again, and that he would publicly repudiate any effort to draft him, should it come about.[159] Hoover was renominated, and Coolidge made several radio addresses in support of him.[160]

He died suddenly of a heart attack at "The Beeches," at 12:45Â pm, January 5, 1933.[161] Shortly before his death, Coolidge confided to an old friend: "I feel I no longer fit in with these times." [162]

Coolidge is buried beneath a simple headstone in Notch Cemetery, Plymouth Notch, Vermont, where the family home is maintained as one of the original buildings on the site, all of which comprise the Calvin Coolidge Homestead District. The State of Vermont dedicated a new visitors' center nearby to mark Coolidge's 100th birthday on July 4, 1972.[163] Calvin Coolidge's "Brave Little State of Vermont speech" is memorialized in the Hall of Inscriptions at the Vermont State House in Montpelier, Vermont.

[edit] Radio, film, and commemorations

Despite his reputation as a quiet and even reclusive politician, Coolidge made use of the new medium of radio and made radio history several times while President. He made himself available to reporters, giving 529 press conferences, meeting with reporters more regularly than any President before or since.[164]

Coolidge's inauguration was the first presidential inauguration broadcast on radio. On December 6, 1923, he was the first President whose address to Congress was broadcast on radio.[165] On February 22, 1924, he became the first President of the United States to deliver a political speech on radio.[166] Coolidge signed the Radio Act of 1927, which assigned regulation of radio to the newly created Federal Radio Commission.

On August 11, 1924, Lee De Forest filmed Coolidge on the White House lawn with DeForest's Phonofilm sound-on-film process, becoming the first President to appear in a sound film. The title of the DeForest film was President Coolidge, Taken on the White House Grounds.[167] Coolidge was the only president to have his portrait on a coin during his lifetime, the Sesquicentennial of American Independence Half Dollar, minted in 1926. After his death he also appeared on a postage stamp, pictured below.

Coolidge and Washington on the Sesquicentennial of American Independence  
commemorative half-dollar

Coolidge on a 1938 postage stamp

[edit] See also

- ^ McCoy, 420â ^421; Greenberg, 49â ^53
- ^ Fuess, 500
- ^ Woodhead, Lindy, "War Paint: Madame Rubinstein and Miss Elizabeth Arden, Their Lives, Their Times, Their Rivalry," Wiley, 2004, p. 201
- ^ McCoy, 418; Greenberg, 146â ^150; Ferrell, 66â ^72
- ^ Sobel, 12â ^13; Greenberg, 2â ^3
- ^ Greenberg, 1â ^7
- ^ "Death of Colonel John Coolidge", Time Magazine,  
<http://www.time.com/time/magazine/article/0,9171,729059,00.html>.
- ^ Fuess, 17; McCoy, 5; White, 11
- ^ a b Fuess, 12

^ Edmund Rice (1638) Association, 2007. Descendants of Edmund Rice: The First Nine Generations. (CD-ROM)  
 ^ Fuess, 7  
 ^ McCoy, 5  
 ^ "Marcus A., Candidate in Massachusetts, Distant Kin to Calvin". October 12, 1930.  
[http://pqasb.pqarchiver.com/washingtonpost\\_historical/access/226416702.html?dids=226416702:226416702&FMT=ABS&FMTS=ABS:FT&date=OCT+12%2C+1930&author=&pub=The+Washington+Post&desc=Marcus+A.%2C+Candidate+in+Massachusetts%2C+Distant+Kin+to+Calvin.&pgatl=google](http://pqasb.pqarchiver.com/washingtonpost_historical/access/226416702.html?dids=226416702:226416702&FMT=ABS&FMTS=ABS:FT&date=OCT+12%2C+1930&author=&pub=The+Washington+Post&desc=Marcus+A.%2C+Candidate+in+Massachusetts%2C+Distant+Kin+to+Calvin.&pgatl=google).  
 ^ Greenberg, 16-20  
 ^ Fuess, 74â ^81; McCoy 22â ^26  
 ^ Gilbert, Robert E. (1998). *The Mortal Presidency: Illness and Anguish in the White House* (2 ed.). Fordham University Press. pp.Â 23. ISBNÂ 978-0823218370.  
 ^ a b Sobel, 55  
 ^ Gould, Lewis L. (2001). *American First Ladies: Their Lives and Their Legacy* (2 ed.). Taylor & Francis. ISBNÂ 978-0415930215.  
 ^ Greenberg, 58â ^59  
 ^ Teleen, Maurice (Autumn, 2001). "75 Years Ago Today". *The Draft Horse Journal*. Archived from the original on May 18, 2006.  
<http://web.archive.org/web/20060518031030/http://www.drafthorsejournal.com/daysbeforeyesterday/autumn01/75yearsago/75yearsago.htm>.  
 ^ White, 65â ^66  
 ^ Fuess, 89â ^92; Sobel, 57â ^58. Some biographers disagree with this rosy portrait, see Ferrell, 21â ^23  
 ^ Coolidge, Calvin (1929). "Law and Politics". *The Autobiography of Calvin Coolidge*. Cosmopolitan Book Corp. p.Â 93.  
<http://www.archive.org/stream/autobiographycal011459mbp#page/n113/mode/2up>.  
 ^ Sobel, 49â ^51  
 ^ a b Sobel, 51  
 ^ Fuess, 83  
 ^ a b Fuess, 84â ^85  
 ^ a b c McCoy, 29  
 ^ Sobel, 61  
 ^ Sobel, 62; Fuess, 99  
 ^ Sobel, 63â ^66  
 ^ Sobel, 68â ^69  
 ^ Sobel, 72  
 ^ Fuess, 106â ^107; Sobel, 74  
 ^ Fuess, 108  
 ^ Sobel, 76  
 ^ See also the main article, Lawrence textile strike, for a full description.  
 ^ Fuess, 110â ^111; McCoy, 45â ^46  
 ^ a b Sobel, 79â ^80; Fuess, 111  
 ^ Fuess, 111â ^113  
 ^ Fuess, 114â ^115  
 ^ Sobel, 80â ^82  
 ^ a b Coolidge, Calvin (1919). "To The State Senate On Being Elected Its President". *Have Faith in Massachusetts: A Collection of Speeches and Messages* (2nd ed.). Houghton Mifflin. pp.Â 2â ^9.  
<http://www.archive.org/details/havefaithinmassa00cooluoft>.  
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<http://www.archive.org/stream/havefaithinmassa00cooluoft#page/6/mode/2up>.  
 ^ Sobel, 90â ^92  
 ^ Sobel, 90; Fuess, 124  
 ^ Sobel, 92â ^98; Fuess, 133â ^136  
 ^ Fuess, 139â ^142  
 ^ Fuess, 145

^ Fuess, 150; Sobel, 104  
 ^ Fuess, 151â ^152  
 ^ Sobel, 107â ^110  
 ^ Sobel, 111; McCall, 75â ^76  
 ^ Sobel, 112  
 ^ Sobel, 115; McCall, 76  
 ^ Russell, 77â ^79; Sobel, 129.  
 ^ Russell, 86â ^87  
 ^ Russell, 111â ^13; Sobel, 133â ^36  
 ^ Coolidge, Calvin (1919). "A Telegram". Have Faith In Massachusetts: A Collection of Speeches and Messages (2nd ed.). Houghton Mifflin. pp.Â 222â ^224. <http://www.archive.org/stream/havefaithinmassa00cooluoft#page/222/mode/2up>. Retrieved 2009-11-07.  
 ^ Russell, 113  
 ^ Russell, 131â ^70  
 ^ Russell, 120  
 ^ Sobel, 141  
 ^ Sobel, 142  
 ^ Russell, 182â ^83  
 ^ a b Sobel, 143  
 ^ The tally was Coolidge 317,774, Long 192,673. Fuess, 238.  
 ^ Fuess, 239â ^243; McCoy, 102â ^113  
 ^ Sobel, 117; Fuess, 195  
 ^ Fuess, 186  
 ^ Fuess, 187; McCall, 81  
 ^ Fuess, 187â ^188  
 ^ Sobel, 152â ^153  
 ^ Fuess, 259â ^260  
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 ^ a b Electoral College Box Scores 1789â ^1996. Official website of the National Archives. (January 18, 2007).; Leip, David. 1920 Presidential Election Results. Dave Leip's Atlas of U.S. Presidential Elections (January 18, 2007).  
 ^ Sobel, 210â ^211  
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 ^ Sobel, 243  
 ^ Greenberg, 60  
 ^ Rouse, Robert (March 15, 2006). "Happy Anniversary to the first scheduled presidential press conference â ^ 93 years young!". American Chronicle. <http://www.americanchronicle.com/articles/6883>.  
 ^ Kerry W. Buckley, "'A President for the 'Great Silent Majority': Bruce Barton's Construction of Calvin Coolidge." New England Quarterly 2003 76(4): 593-626.  
 ^ Robert E. Gilbert, "Calvin Coolidge's Tragic Presidency: the Political Effects of Bereavement and Depression." Journal of American Studies 2005 39(1): 87-109  
 ^ See the main article, Warren Harding Death in office for a full description  
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An academic conference on Coolidge was held July 30â ^31, 1998, at the John F. Kennedy Library to mark the 75th anniversary of his lantern-light homestead inaugural.

[edit] External links

[edit] Audio and video

Persondata

Name

Coolidge, Calvin

Alternative names

Coolidge, John Calvin Jr.

Short description

30th U.S. President

Date of birth

(1872-07-04)July 4, 1872

Place of birth

Plymouth, Vermont, United States of America

Date of death

January 5, 1933(1933-01-05)

Place of death

Northampton, Massachusetts, United States of America

"Rich Girl"

SingleÂ by Gwen Stefani featuring Eve

from the album *Love. Angel. Music. Baby.*

Released

December 14, 2004

Format

CD single, 12" single, digital download

Recorded

Encore Studios(Burbank, California)Record One(Sherman Oaks, Los Angeles, California)Henson Recording Studios(Hollywood, Los Angeles, California)



Genre

Pop, ragga, dancehall

Length

3:56

Label

Interscope

Writer(s)

Mark Batson, Jerry Bock, Kara DioGuardi, Mike Elizondo, Eve, Sheldon Harnick, Chantal Kreviazuk, Gwen Stefani, Andre Young

Producer

Dr. Dre

Gwen Stefani singles chronology

"Rich Girl" is a song by American recording artist Gwen Stefani from her debut solo album, *Love. Angel. Music. Baby.* (2004). Produced by Dr. Dre, the track features rapper Eve, and is a remake of Louchie Lou & Michie One's 1993 song of the same name, which was in turn an adaptation of the Fiddler on the Roof song "If I Were a Rich Man". Stefani relates to the song stating it discusses her dreams of fame and riches from the perspective of "when she was just an Orange County girl".<sup>[1]</sup>

The last song to be included on the album,<sup>[2]</sup> "Rich Girl" was released as the album's second single in late 2004 to mixed reviews from music critics. It was a commercial success, reaching the top ten on the majority of the charts it entered. In the United States, "Rich Girl" was certified gold, and it received a nomination for Best Rap/Sung Collaboration at the 48th Grammy Awards.

[edit] Writing process

Stefani and Eve had previously collaborated on the 2001 single "Let Me Blow Ya Mind". When Stefani first began recording solo material, Eve expressed interest in working with Stefani again, saying, "She's fly, she's tight and she is talented. It's going to be hot regardless."<sup>[3]</sup> The two decided to work together again after talking in Stefani's laundry room during a party.<sup>[2]</sup> After Stefani had co-written more than twenty songs for her solo debut, she approached Dr. Dre, who had produced for her twice before.<sup>[4]</sup> Dre had produced "Let Me Blow Ya Mind" as well as "Wicked Day", a track that was excluded from No Doubt's 2001 album *Rock Steady*.<sup>[5]</sup>

After playing some of the songs on which she had been working, Dr. Dre told her, "You don't want to go back there." Instead of using one of the tracks, Dr. Dre instead suggested using English reggae duo Louchie Lou & Michie One's 1993 song "Rich Girl", which itself interpolated "If I Were a Rich Man" from the 1964 musical *Fiddler on the Roof*.<sup>[4]</sup> Stefani and Eve helped each other with their parts, but when they presented Dr. Dre with the demo, he told them to rewrite the song,<sup>[4]</sup> suggesting that Stefani play a character in the song.<sup>[2]</sup>

Since she had not seen the musical since she was a child, Stefani went to Broadway to better understand the theme that "even if you're poor and you have love, you're rich."<sup>[2]</sup> The idea which became the final version came to Stefani while brainstorming on her treadmill.<sup>[4]</sup> She commented that the troubles in writing the song came because "Dre was really pushing me to write in a new way", but when she presented him with the song, "he just totally tricked the track out."<sup>[6]</sup>

[edit] Music and structure

"Rich Girl" is a ragga song composed in the key of C minor. It is written in common time and moves at a moderate 100 beats per minute.<sup>[7]</sup> The beat is accompanied by an alternating perfect fifth dyad and an accented piano trichord.<sup>[7]</sup><sup>[8]</sup> The song is written in verse-chorus form,<sup>[7]</sup> and its instrumentation includes the electronic keyboard, guitar, and keyboard bass.<sup>[9]</sup> Stefani's voice ranges from G3 to E5.<sup>[10]</sup>

The introduction consists of the repeated use of the word *na*. Stefani reaches her highest note of the song, E5, as part of a trichord and her lowest, G3, during this section.<sup>[7]</sup> After the first chorus, Stefani discusses dreams of wealth and luxury,<sup>[11]</sup> and she namechecks fashion designers Vivienne Westwood and John Galliano. Stefani commented that the references were not product

placement but that she included them "because I think they're rad and want to talk about them. [...] I'd give all my money to [Westwood] and buy all her clothes!"[12] A bridge, in which Stefani's voice is overdubbed, precedes the second chorus. During the second verse Stefani discusses her Harajuku Girls, and she then repeats the bridge. Following Eve's rap, Stefani sings the chorus and closes the song with a coda, which, like the introduction, consists of repeating the word na.[7]

[edit] Critical reception

"Rich Girl" received mixed reviews from music critics. Richard Smirke of Playlouder said that it brought "a much-needed element of diversity" to L.A.M.B. and called it a "potential hit single".[13] Krissi Murison of the NME, however, described it as "playground chant featuring a tough-girl ragga cameo from Eve." [14] John Murphy from musicOMH gave it an overall positive review, calling it "a great fun song, and far superior to some of the dross that comes out these days", but also commented that it did not live up to "Let Me Blow Ya Mind" and found the references to the Harajuku Girls "slightly creepy." [15] Lisa Haines of BBC Music referred to the song as "disco gold, impossibly girly and very easy to dance to." [16] The song drew comparisons to the No Doubt album *Rock Steady*, [17] and Charles Merwin of Stylus Magazine described it as "a lite version of 'Hey Baby.'" [18]

Several reviewers found it ironic that Stefani, who had already sold twenty-six million records with No Doubt, [19] discussed having money in the counterfactual conditional. John Murphy from musicOMH found it "rather strange" for Stefani to sing the song while living off of royalties from No Doubt and her husband, post-grunge musician Gavin Rossdale. [20] Anthony Carew from Neumu called the lyrics "insipid" and noted that "the incredibly wealthy pop-starlet wonders what it'd be like to be, uh, incredibly wealthy". [21] The Orange County Register writer Ben Wener told Stefani that the song was disingenuous and "absurd", to which Stefani responded that the point of view was from before she was famous. [1] Stefani later refused to issue credentials to the newspaper [1] after Wener wrote that "while posting a reported \$90 million via her clothing lines [...] she's no more 'just an Orange County girl' than Best Buy is just a shack that sells Commodore 64s" in response to a track titled "Orange County Girl" from Stefani's second album *The Sweet Escape*. [22]

The interpolation of "If I Were a Rich Man" drew mixed reviews. Jason Damas, writing for PopMatters, argued that the track "turns it into an anthem of urban bling-lust" and that its "simple pounding piano chord makes for great percussive backing." [8] Nick Sylvester from Pitchfork Media found the song corny, classifying it as "Eve- and Dre- and Tevye-powered camp-hop." [23] The Villager's Winnie McCroy found the interpolation "innovative" and noted the song's take on "the current style of shout-out rap songs." [24] David Browne of Entertainment Weekly disagreed, stating that the interpolation was used awkwardly, [11] and Rob Sheffield of Rolling Stone called the interpolation a goof. [25] Jason Shawhan from About.com called the track "a dancehall/classic house teardown of 'If I Were a Rich Man'" and added, "If this is what Jay-Z's fudging with Annie has wrought, I say, be glad of it." [26]

[edit] Chart performance

"Rich Girl" performed well in North America. The single debuted at number seventy-four on the Billboard Hot 100 on December 25, 2004 [27] and reached a peak position ten weeks later at number seven, remaining on the chart for over six months. [28] The song did well on pop-oriented charts, reaching number three on the Pop 100, number four on the Mainstream Top 40, and number sixteen on the Adult Top 40. [29] The single had little crossover success on the urban charts, only reaching number twenty-seven on the Rhythmic Top 40 and number seventy-eight on the Hot R&B/Hip-Hop Songs. [29] "Rich Girl" was helped on the Hot 100 and Pop 100 charts by its strong digital downloads, peaking at number two on the Hot Digital Songs. [29] Due to its high number of digital downloads, the song was certified gold by the Recording Industry Association of America. [30] On the 2005 year-end chart, the single was listed at number thirty-one, [31] and at the 2006 Grammy Awards, the song was nominated for Best

Rap/Sung Collaboration but lost to Jay-Z and Linkin Park's "Numb/Encore".[32] The single was less successful in Canada, where it debuted at number twenty-eight and reached a peak of number twelve for two non-consecutive weeks.[33]

Across Europe, "Rich Girl" was largely successful, reaching number two on the European Hot 100 Singles.[35] It reached the top five in Belgium, Denmark, France, Ireland, the Netherlands, Norway, and Sweden and the top ten in Austria, Finland, Italy, and Switzerland.[36] The song also charted highly in the UK, debuting at number four on March 20, 2005.[37] The track was unable to reach a higher position and remained on the chart for twelve weeks.[37]

Elsewhere, "Rich Girl" peaked within the top twenty on the majority of the charts it entered. In Australia, it debuted February 27, 2005 at number two under Nelly's "Over and Over" featuring Tim McGraw.[38] It was unable to reach number one and dropped off the chart after thirteen weeks.[38] The single appeared at number twenty-six on the ARIA year-end chart,[39] and was certified platinum for sales in excess of 70,000 copies.[40]

[edit] Music video

The music video for "Rich Girl" was directed by David LaChapelle and features a pirate theme. The video, inspired by an early '80s Vivienne Westwood advertising campaign, opens with four Japanese schoolgirls playing with a toy pirate ship and two Bratz dolls of Stefani and Eve, while the girls discuss what they would do if they were a "rich girl". The video features several sequences. Stefani is first shown below the deck of a pirate ship, dancing on a table and singing to the song. She is surrounded by pirates and wenches and is soon joined by Eve, wearing an eyepatch. In the surreal style of LaChapelle, the pirate crew has distorted features, and a leaked casting call commented, "I need the freaks on this one." [41] Above deck Stefani, the Harajuku Girls, Eve, and more pirates dance on the deck and rigging. Stefani is also seen dancing with the Harajuku Girls in a treasure trove, often carrying a sword, and swinging from an anchor. When the girls dunk the toy ship in a fish tank, the galleon engages in cannonfire, causing Stefani and the pirates to fall all over the ship, and Stefani and the Harajuku Girls are soon shipwrecked.

The music video was a success on video channels. The video debuted at number nine on MTV's Total Request Live on December 13, 2004.[42] It worked its way to number five,[43] staying on the chart for a total of thirteen days.[42] The video also reached number four on MuchMusic's Countdown, remaining on the chart for sixteen weeks.[33] VH1 listed "Rich Girl" at number twenty-four on its Top 40 Videos of 2005.[44]

[edit] Use in visual media

"Rich Girl" was used in the films Last Holiday (2006), Beverly Hills Chihuahua (2008), and Confessions of a Shopaholic (2009).

[edit] Track listings

- "Rich Girl" (Album Version featuring Eve) â ^ 3:56
- "What You Waiting For?" (Live) â ^ 3:52
- UK and European CD maxi single
- "Rich Girl" (Album Version featuring Eve) â ^ 3:56
- "What You Waiting For?" (Live) â ^ 3:52
- "Harajuku Girls" (Live) â ^ 4:36
- "Rich Girl" (Video) â ^ 4:03
- A1. "Rich Girl" (Get Rich Mix) â ^ 4:07
- A2. "Rich Girl" (Get Rich Instrumental) â ^ 4:07
- B1. "Rich Girl" (Get Rich Quick Mix) â ^ 3:47
- B2. "Rich Girl" (Get Rich Quick Instrumental) â ^ 4:07
- B3. "Rich Girl" (Acappella) â ^ 3:57

[edit] Personnel

[edit] Charts

[edit] References

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[edit] External links

Vivien Leigh, Lady Olivier (5 November 1913Â â ^ 8 July 1967) was an English actress.[1] She is best known for her performances as Scarlett O'Hara in *Gone with the Wind* (1939) and Blanche DuBois in *A Streetcar Named Desire* (1951), winning the Academy Award for Best Actress for both.

Lauded for her beauty, Leigh felt that it sometimes prevented her from being taken seriously as an actress. Despite her fame as a screen actress, Leigh was primarily a stage performer. During her prolific 30-year stage career, she played roles ranging from the heroines of NoÃ«l Coward and George Bernard Shaw comedies to classic Shakespearean characters such as Ophelia, Cleopatra, Juliet

and Lady Macbeth.

In the popular conscience, Leigh is greatly associated with her second husband, the equally highly-acclaimed Laurence Olivier, to whom she was married, with turbulent and scandalous effects, from 1940 to 1960. Leigh and Olivier starred together in many films and stage productions, often with Olivier as director.

For much of her adult life Vivien Leigh suffered from bipolar disorder.[2] She earned a reputation for being difficult to work with, and her career suffered periods of inactivity. She also suffered recurrent bouts of chronic tuberculosis, first diagnosed in the mid-1940s.

In 1999, the American Film Institute ranked Leigh as the sixteenth greatest female movie star of all time.

[edit] Early life and acting debut

Leigh was born Vivian Mary Hartley in the campus of St. Paul's School, Darjeeling, Bengal, India (British India), to Ernest Hartley, an English officer in the Indian Cavalry, and Gertrude Mary Robinson Yackjee (1888â ^1972), the daughter of Mary I. Robinson and John G. Yackjee, who wed in 1872. Ernest and Gertrude married in Kensington, London in 1912.[3]

In 1917, Ernest Hartley was transferred to Bangalore, while Gertrude and Vivian stayed in Ootacamund.[4] Young Vivian made her first stage appearance at the age of three, reciting "Little Bo Peep" for her mother's amateur theatre group. Gertrude Hartley tried to instill in her daughter an appreciation of literature and introduced her to the works of Hans Christian Andersen, Lewis Carroll and Rudyard Kipling, as well as stories of Greek mythology and Indian folklore. At the age of six in 1920, an only child, Vivian Hartley was sent to the Convent of the Sacred Heart (now Woldingham School) in Roehampton, south-west London, from Loreto Convent, Darjeeling, by her devoutly Catholic mother. One of her friends there was future actress Maureen O'Sullivan, two years her senior, to whom Vivian expressed her desire to become "a great actress".[5][6] She was removed from the school by her father, who took her travelling in Europe with schools in the areas they travelled providing her schooling. They returned to Britain in 1931. She attended one of O'Sullivan's films playing in London's West End and told her parents of her ambitions to become an actress. Her father enrolled her at the Royal Academy of Dramatic Art (RADA) in London.[7]

[edit] First marriage

Vivian Hartley met (Herbert) Leigh Holman, a barrister 13 years her senior, in 1931. Despite his disapproval of "theatrical people", they were married on 20 December 1932, and she terminated her studies at RADA. On 12 October 1933 in London, she gave birth to a daughter, Suzanne, later Mrs. Robin Farrington,[8] who, decades later, would make Vivien Leigh a grandmother three times over.[9]

[edit] Early career

Leigh's friends suggested she take a small role in the film *Things Are Looking Up*, which marked her film debut. She engaged an agent, John Gliddon, who believed that "Vivian Holman" was not a suitable name for an actress. After rejecting his suggestion, "April Morn", she took "Vivian Leigh" as her professional name. Gliddon recommended her to Alexander Korda as a possible film actress, but Korda rejected her as lacking potential.[10] She was cast in the play *The Mask of Virtue* in 1935, and received excellent reviews, followed by interviews and newspaper articles. One such article was from the *Daily Express*, in which the interviewer noted "a lightening change came over her face", which was the first public mention of the rapid changes in mood that became characteristic of her.[11] John Betjeman, the future Poet Laureate, also wrote about her, describing her as "the essence of English girlhood".[12] Korda attended her opening-night performance, admitted his error, and signed her to a film contract, with the spelling of her name revised to "Vivien Leigh". She continued with the play; but, when Korda moved it to a larger theatre, Leigh was found to be unable to project her voice adequately or to hold the attention of so large an audience, and the play closed soon after.[13]

In 1960, Leigh recalled her ambivalence towards her first experience of



critical acclaim and sudden fame, commenting, "some critics saw fit to be as foolish as to say that I was a great actress. And I thought, that was a foolish, wicked thing to say, because it put such an onus and such a responsibility onto me, which I simply wasn't able to carry. And it took me years to learn enough to live up to what they said for those first notices. I find it so stupid. I remember the critic very well and have never forgiven him." [14]

[edit] Meeting Laurence Olivier

Laurence Olivier saw Leigh in *The Mask of Virtue*, and a friendship developed after he congratulated her on her performance. Olivier and Leigh began an affair after acting as lovers in *Fire Over England* (1937), when Olivier was married to actress Jill Esmond. During this time, Leigh read the Margaret Mitchell novel *Gone with the Wind* and instructed her American agent to suggest her to David O. Selznick, who was planning a film version. She remarked to a journalist, "I've cast myself as Scarlett O'Hara"; and *The Observer* film critic C.A. Lejeune recalled a conversation of the same period in which Leigh "stunned us all" with the assertion that Olivier "won't play Rhett Butler, but I shall play Scarlett O'Hara. Wait and see." [15]

Despite her relative inexperience, Leigh was chosen to play Ophelia to Olivier's *Hamlet* in an Old Vic Theatre production staged at Elsinore, Denmark. [16] Olivier later recalled an incident when her mood rapidly changed as she was preparing to go onstage. Without apparent provocation, she began screaming at him, before suddenly becoming silent and staring into space. She was able to perform without mishap; and, by the following day, she had returned to normal with no recollection of the event. It was the first time Olivier witnessed such behaviour from her. [17] They began living together, as their respective spouses had each refused to grant either of them a divorce. Under the moral standards then enforced by the film industry, their relationship had to be kept from public view. Leigh appeared with Robert Taylor, Lionel Barrymore and Maureen O'Sullivan in *A Yank at Oxford* (1938), the first of her films to receive attention in the United States. During production, she developed a reputation for being difficult and unreasonable; and Korda instructed her agent to warn her that her option would not be renewed if her behaviour did not improve. Her next role was in *St. Martin's Lane* (1938) with Charles Laughton. [18]

[edit] Achieving international success

Olivier had been attempting to broaden his film career. He was not well known in the United States despite his success in Britain, and earlier attempts to introduce him to the American market had failed. Offered the role of Heathcliff in Samuel Goldwyn's production of *Wuthering Heights* (1939), he travelled to Hollywood, leaving Leigh in London. Goldwyn and the film's director, William Wyler, offered Leigh the secondary role of Isabella; but she refused, preferring the role of Cathy, which went to Merle Oberon. [19]

Hollywood was in the midst of a widely publicised search to find an actress to portray Scarlett O'Hara in David O. Selznick's production of *Gone with the Wind* (1939). Leigh's American theatrical agent was the London representative of the Myron Selznick Agency (Myron was David's brother). In February 1938, Leigh asked that she be allowed to play Scarlett O'Hara. Selznick, who watched her performance that month in *Fire Over England* and *A Yank at Oxford*, thought her to be excellent but in no way a possible Scarlett, as she was "too British". Leigh travelled to Los Angeles to be with Olivier and to try to convince Selznick that she was Scarlett. When Myron Selznick, who also represented Olivier, met Leigh, he felt that she possessed the qualities his brother was searching for. Myron Selznick took Leigh and Olivier to the set where the burning of the Atlanta Depot scene was being filmed and introduced Leigh, telling his brother, "Hey, genius, meet your Scarlett O'Hara." The following day, Leigh read a scene for Selznick, who organised a screen test and wrote to his wife, "She's the Scarlett dark horse and looks damn good. Not for anyone's ear but your own: it's narrowed down to Paulette Goddard, Jean Arthur, Joan Bennett and Vivien Leigh". The director, George Cukor, concurred and praised

Leigh's "incredible wildness"; she secured her role as Scarlett soon after.[20] Filming proved difficult for Leigh. Cukor was dismissed and replaced by Victor Fleming, with whom Leigh frequently quarrelled. She and Olivia de Havilland secretly met with Cukor at night and on weekends for his advice about how they should play their parts. She befriended Clark Gable, his wife Carole Lombard and Olivia de Havilland; but she clashed with Leslie Howard, with whom she was required to play several emotional scenes. Leigh was sometimes required to work seven days a week, often late into the night, which added to her distress; and she missed Olivier, who was working in New York. She said to Laurence Olivier on a long-distance call, "Puss, my puss, how I hate film acting! Hate, hate, and never want to do another film again!"[21]

In 2006, Olivia de Havilland responded to claims of Leigh's manic behaviour during filming *Gone with the Wind*, published in a biography of Olivier. She defended Leigh, saying, "Vivien was impeccably professional, impeccably disciplined on *Gone with the Wind*. She had two great concerns: doing her best work in an extremely difficult role and being separated from Larry [Olivier], who was in New York." [22]

*Gone with the Wind* brought Leigh immediate attention and fame; but she was quoted as saying, "I'm not a film star â ^ I'm an actress. Being a film star â ^ just a film star â ^ is such a false life, lived for fake values and for publicity. Actresses go on for a long time and there are always marvelous parts to play." [23] Among the 10 Academy Awards won by *Gone with the Wind* was a Best Actress award for Leigh, who also won a New York Film Critics Circle Award for Best Actress.

[edit] Marriage and joint projects

In February 1940, Jill Esmond agreed to divorce Olivier, and Leigh Holman agreed to divorce Leigh, although they maintained a strong friendship for the rest of Leigh's life. Esmond was granted custody of Tarquin, her son with Olivier. Holman was granted custody of Suzanne, his daughter with Leigh. On 31 August 1940, Olivier and Leigh were married in Santa Barbara, California, in a ceremony attended only by their witnesses, Katharine Hepburn and Garson Kanin. Leigh had hoped to co-star with Olivier and made a screen test for *Rebecca*, which was to be directed by Alfred Hitchcock with Olivier in the leading role. After viewing Leigh's screen test, Selznick noted that "she doesn't seem right as to sincerity or age or innocence", a view shared by Hitchcock and Leigh's mentor, George Cukor.[24]

Selznick observed that she had shown no enthusiasm for the part until Olivier had been confirmed as the lead actor so he cast Joan Fontaine. He refused to allow her to join Olivier in *Pride and Prejudice* (1940), and Greer Garson played the role Leigh had wanted for herself. *Waterloo Bridge* (1940) was to have starred Olivier and Leigh; however, Selznick replaced Olivier with Robert Taylor, then at the peak of his success as one of Metro-Goldwyn-Mayer's most popular male stars. Her top billing reflected her status in Hollywood, and the film was popular with audiences and critics.[25]

She and Olivier mounted a stage production of *Romeo and Juliet* for Broadway. The New York press publicised the adulterous nature of the beginning of Olivier and Leigh's relationship and questioned their ethics in not returning to the UK to help with the war effort. Critics were hostile in their assessment of the production. Brooks Atkinson for *The New York Times* wrote: "Although Miss Leigh and Mr. Olivier are handsome young people they hardly act their parts at all." [26] While most of the blame was attributed to Olivier's acting and direction, Leigh was also criticised, with Bernard Grebanier commenting on the "thin, shopgirl quality of Miss Leigh's voice." The couple had invested almost their entire savings into the project, and the failure was a financial disaster for them.[27]

They filmed *That Hamilton Woman* (1941) with Olivier as Horatio Nelson and Leigh as Emma Hamilton. With the United States not yet having entered the war, it was one of several Hollywood films made with the aim of arousing a pro-British sentiment among American audiences. The film was popular in the United States and an outstanding success in the Soviet Union. Winston Churchill

arranged a screening for a party that included Franklin D. Roosevelt and, on its conclusion, addressed the group, saying, "Gentlemen, I thought this film would interest you, showing great events similar to those in which you have just been taking part." The Oliviers remained favourites of Churchill, attending dinners and occasions at his request for the rest of his life; and, of Leigh, he was quoted as saying, "By Jove, she's a clinker."[28]

The Oliviers returned to Britain, and Leigh toured through North Africa in 1943. Leigh performed for troops before falling ill with a persistent cough and fevers. In 1944, she was diagnosed as having tuberculosis in her left lung and spent several weeks in hospital before appearing to have recovered. Leigh was filming *Caesar and Cleopatra* (1945) when she discovered she was pregnant, but she suffered a miscarriage. She fell into a deep depression that hit the low point when she turned on Olivier, verbally and physically attacking him until she fell to the floor, sobbing. This was the first of many major breakdowns she suffered related to bipolar disorder. Olivier came to recognise the symptoms of an impending episode â ^ several days of hyperactivity followed by a period of depression and an explosive breakdown, after which Leigh would have no memory of the event, but would be acutely embarrassed and remorseful.[29]

Leigh was well enough to resume acting in 1946, in a successful London production of Thornton Wilder's *The Skin of Our Teeth*; but her films of this period, *Caesar and Cleopatra* (1945) and *Anna Karenina* (1948), were not great successes.

In 1947, Olivier was knighted; and Leigh accompanied him to Buckingham Palace for the investiture. She became Lady Olivier. (After their divorce, according to the style granted to the divorced wife of a knight, she became known socially as Vivien, Lady Olivier.)

By 1948, Olivier was on the board of directors for the Old Vic Theatre, and he and Leigh embarked on a six month tour of Australia and New Zealand to raise funds for it. Olivier performed *Richard III* and also performed with Leigh in *The School for Scandal* and *The Skin of Our Teeth*. The tour was an outstanding success and, although Leigh was plagued with insomnia and allowed her understudy to replace her for a week while she was ill, she generally withstood the demands placed upon her, with Olivier noting her ability to "charm the press." Members of the company later recalled several quarrels between the couple, the most dramatic occurring in Christchurch when Leigh refused to go onstage. Olivier slapped her face, and Leigh slapped him in return and swore at him before she made her way to the stage. By the end of the tour, both were exhausted and ill; and Olivier told a journalist, "You may not know it, but you are talking to a couple of walking corpses." Later, he would comment that he "lost Vivien" in Australia.[30]

The success of the tour encouraged the Oliviers to make their first West End appearance together, performing the same works with one addition, *Antigone*, included at Leigh's insistence because she wished to play a role in a tragedy.

Leigh next sought the role of Blanche DuBois in the West End stage production of Tennessee Williams's *A Streetcar Named Desire* and was cast after Williams and the play's producer Irene Mayer Selznick saw her in *The School for Scandal* and *Antigone*; Olivier was contracted to direct. Containing a rape scene and references to promiscuity and homosexuality, the play was destined to be controversial, and the media discussion about its suitability added to Leigh's anxiety, but she believed strongly in the importance of the work.

When the West End production of *Streetcar* opened in October 1949, J. B. Priestley denounced the play and Leigh's performance; and the critic Kenneth Tynan commented that Leigh was badly miscast because British actors were "too well-bred to emote effectively on stage". Olivier and Leigh were chagrined that part of the commercial success of the play lay in audience members attending to see what they believed would be a salacious and sensationalist story, rather than the Greek tragedy that they envisioned; but the play also had strong supporters,[31] among them Noël Coward who described Leigh as "magnificent." [32]

After 326 performances, Leigh finished her run, and she was soon engaged for

the film version. Her irreverent and often bawdy sense of humour allowed her to establish a rapport with her co-star Marlon Brando, but she had difficulty with director Elia Kazan, who did not hold her in high regard as an actress. He later commented that "she had a small talent" but, as work progressed, he became "full of admiration" for "the greatest determination to excel of any actress I've known. She'd have crawled over broken glass if she thought it would help her performance." Leigh found the role gruelling and commented to the Los Angeles Times, "I had nine months in the theatre of Blanche DuBois. Now she's in command of me." [33] Olivier accompanied her to Hollywood where he was to co-star in William Wyler's *Carrie*.

The film won glowing reviews for her and she won a second Academy Award for Best Actress, a British Academy of Film and Television Arts (BAFTA) Award for Best British Actress, and a New York Film Critics Circle Award for Best Actress. Tennessee Williams commented that Leigh brought to the role "everything that I intended, and much that I had never dreamed of" but, in later years, Leigh would say playing Blanche DuBois "tipped me over into madness." [34]

[edit] Struggle with illness

In 1951, Leigh and Olivier performed two plays about Cleopatra, William Shakespeare's *Antony and Cleopatra* and George Bernard Shaw's *Caesar and Cleopatra*, alternating the play each night and winning good reviews. They took the productions to New York, where they performed a season at the Ziegfeld Theatre into 1952. The reviews there were also mostly positive, but the critic Kenneth Tynan angered them when he suggested that Leigh's was a mediocre talent that forced Olivier to compromise his own. Tynan's diatribe almost precipitated another collapse; Leigh, terrified of failure and intent on achieving greatness, dwelt on his comments while ignoring the positive reviews of other critics. [35]

In January 1953, Leigh travelled to Ceylon to film *Elephant Walk* with Peter Finch. Shortly after filming commenced, she suffered a breakdown; and Paramount Pictures replaced her with Elizabeth Taylor. Olivier returned her to their home in Britain, where, between periods of incoherence, Leigh told him that she was in love with Finch and had been having an affair with him. She gradually recovered over a period of several months. As a result of this episode, many of the Oliviers' friends learned of her problems. David Niven said she had been "quite, quite mad"; and in his diary Noël Coward expressed surprise that "things had been bad and getting worse since 1948 or thereabouts." [36]

In 1953, Leigh recovered sufficiently to play *The Sleeping Prince* with Olivier; and, in 1955, they performed a season at Stratford-upon-Avon in Shakespeare's *Twelfth Night*, *Macbeth*, and *Titus Andronicus*. They played to capacity houses and attracted generally good reviews, Leigh's health seemingly stable. John Gielgud directed *Twelfth Night* and wrote, "...perhaps I will still make a good thing of that divine play, especially if he will let me pull her little ladyship (who is brainier than he but not a born actress) out of her timidity and safeness. He dares too confidently ... but she hardly dares at all and is terrified of overreaching her technique and doing anything that she has not killed the spontaneity of by overpractice." [37]

Leigh took the lead role in the Noël Coward play *South Sea Bubble*, but she became pregnant and withdrew from the production. Several weeks later, she miscarried and entered a period of depression that lasted for months. She joined Olivier for a European tour with *Titus Andronicus*, but the tour was marred by Leigh's frequent outbursts against Olivier and other members of the company. After their return to London, her former husband, Leigh Holman, who continued to exert a strong influence over her, stayed with the Oliviers and helped calm her.

In 1958, considering her marriage to be over, Leigh began a relationship with the actor Jack Merivale, who knew of Leigh's medical condition and assured Olivier he would care for her. In 1959, she achieved a success with the Noël Coward comedy *Look After Lulu*, with *The Times* critic describing her as "beautiful, delectably cool and matter of fact, she is mistress of every

situation."[38]

In 1960, she and Olivier divorced and Olivier married actress Joan Plowright. In his autobiography, Olivier discussed the years of problems they had experienced because of Leigh's illness: "Throughout her possession by that uncannily evil monster, manic depression, with its deadly ever-tightening spirals, she retained her own individual canniness â ^ an ability to disguise her true mental condition from almost all except me, for whom she could hardly be expected to take the trouble."[2]

[edit] Final years and death

Merivale proved to be a stabilising influence for Leigh, but despite her apparent contentment, she was quoted by Radie Harris as confiding that she "would rather have lived a short life with Larry [Olivier] than face a long one without him".[39] Her first husband, Leigh Holman, also spent considerable time with her. Merivale joined her for a tour of Australia, New Zealand and Latin America that lasted from July 1961 until May 1962, and Leigh enjoyed positive reviews without sharing the spotlight with Olivier. Though she was still beset by bouts of depression, she continued to work in the theatre and, in 1963, won a Tony Award for Best Actress in a Musical for her role in *Tovarich*. She also appeared in the films *The Roman Spring of Mrs. Stone* (1961) and *Ship of Fools* (1965).[40]

In May 1967, she was rehearsing to appear with Michael Redgrave in Edward Albee's *A Delicate Balance* when she suffered a recurrence of tuberculosis.[41] Following several weeks of rest, she seemed to recover. On the night of 7 July 1967, Merivale left her as usual, to perform in a play, and returned home around midnight to find her asleep. About thirty minutes later, he returned to the bedroom and discovered her body on the floor. She had been attempting to walk to the bathroom and, as her lungs filled with liquid, collapsed.[42] Merivale contacted Olivier, who was receiving treatment for prostate cancer in a nearby hospital. In his autobiography, Olivier described his "grievous anguish" as he immediately travelled to Leigh's residence, to find that Merivale had moved her body onto the bed. Olivier paid his respects, and "stood and prayed for forgiveness for all the evils that had sprung up between us",[43] before helping Merivale make funeral arrangements.

Leigh's death certificate gave her date of death as 8 July, but some references give the date as 7 July.

She was cremated at the Golders Green Crematorium and her ashes were scattered on the lake at her home, Tickerage Mill, near Blackboys, East Sussex, England. A memorial service was held at St Martin-in-the-Fields, with a final tribute read by John Gielgud. In the United States, she became the first actress honoured by "The Friends of the Libraries at the University of Southern California". The ceremony was conducted as a memorial service, with selections from her films shown and tributes provided by such associates as George Cukor.[44]

[edit] Legacy

Leigh was considered one of the most beautiful actresses of her day, and her directors emphasised this in most of her films. When asked if she believed her beauty had been an impediment to being taken seriously as an actress, she said, "People think that if you look fairly reasonable, you can't possibly act, and as I only care about acting, I think beauty can be a great handicap, if you really want to look like the part you're playing, which isn't necessarily like you."[14]

Director George Cukor commented that Leigh was a "consummate actress, hampered by beauty",[45] and Laurence Olivier said that critics should "give her credit for being an actress and not go on forever letting their judgments be distorted by her great beauty."[46] Garson Kanin shared their viewpoint and described Leigh as "a stunner whose ravishing beauty often tended to obscure her staggering achievements as an actress. Great beauties are infrequently great actresses â ~ simply because they don't need to be. Vivien was different; ambitious, persevering, serious, often inspired."[47]

Leigh explained that she played "as many different parts as possible" in an

attempt to learn her craft and to dispel prejudice about her abilities. She believed that comedy was more difficult to play than drama because it required more precise timing and said that more emphasis should be placed upon comedy as part of an actor's training. Nearing the end of her career, which ranged from Noël Coward comedies to Shakespearean tragedies, she observed, "It's much easier to make people cry than to make them laugh." [14]

Her early performances brought her immediate success in Britain, but she remained largely unknown in other parts of the world until the release of *Gone with the Wind*. In December 1939, *The New York Times* wrote, "Miss Leigh's Scarlett has vindicated the absurd talent quest that indirectly turned her up. She is so perfectly designed for the part by art and nature that any other actress in the role would be inconceivable", [48] and as her fame escalated, she was featured on the cover of *Time* magazine as Scarlett. In 1969, critic Andrew Sarris commented that the success of the film had been largely due to "the inspired casting" of Leigh, [49] and in 1998 wrote that "she lives in our minds and memories as a dynamic force rather than as a static presence." [50] Leonard Maltin described the film as one of the all-time greats, writing in 1998 that Leigh "brilliantly played" her role. [51]

Her performance in the West End production of *A Streetcar Named Desire*, described by the theatre writer Phyllis Hartnoll as "proof of greater powers as an actress than she had hitherto shown", led to a lengthy period during which she was considered one of the finest actresses in British theatre. [52] Discussing the subsequent film version, Pauline Kael wrote that Leigh and Marlon Brando gave "two of the greatest performances ever put on film" and that Leigh's was "one of those rare performances that can truly be said to evoke both fear and pity." [53]

Kenneth Tynan ridiculed Leigh's performance opposite Olivier in the 1955 production of *Titus Andronicus*, commenting that she "receives the news that she is about to be ravished on her husband's corpse with little more than the mild annoyance of one who would have preferred foam rubber." [54] He was one of several critics to react negatively to her reinterpretation of Lady Macbeth in 1955, saying that her performance was insubstantial and lacked the necessary fury demanded of the role; however, after her death he revised his opinion, describing his earlier criticism as "one of the worst errors of judgment" he had ever made. He came to believe that Leigh's interpretation, in which Lady Macbeth uses her sexual allure to keep Macbeth enthralled, "made more sense [...] than the usual battle-axe" portrayal of the character. In a survey of theatre critics conducted shortly after Leigh's death, several named it as one of her greatest achievements in theatre. [55]

In 1969, a plaque to Leigh was placed in the "Actors' Church", St Paul's, Covent Garden, London. In 1985, a portrait of her was included in a series of United Kingdom postage stamps, along with Sir Alfred Hitchcock, Sir Charlie Chaplin, Peter Sellers and David Niven to commemorate "British Film Year". [56]

The British Library in London purchased the papers of Laurence Olivier from his estate in 1999. Known as The Laurence Olivier Archive, the collection includes many of Vivien Leigh's personal papers, including numerous letters she wrote to Olivier. The papers of Vivien Leigh, including letters, photographs, contracts and diaries, are owned by her daughter, Mrs. Suzanne Farrington. In 1994, the National Library of Australia purchased a photograph album, monogrammed "L & V O" and believed to have belonged to the Oliviers, containing 573 photographs of the couple during their 1948 tour of Australia. It is now held as part of the record of the history of the performing arts in Australia. [57]

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#### [edit] External links

The 1981 Irish hunger strike was the culmination of a five-year protest during The Troubles by Irish republican prisoners in Northern Ireland. The protest began as the blanket protest in 1976, when the British government withdrew



Special Category Status for convicted paramilitary prisoners. In 1978, after a number of attacks on prisoners leaving their cells to "slop out", the dispute escalated into the dirty protest, where prisoners refused to leave their cells to wash and covered the walls of their cells with excrement. In 1980, seven prisoners participated in the first hunger strike, which ended after 53 days.[1]

The second hunger strike took place in 1981 and was a showdown between the prisoners and the Prime Minister, Margaret Thatcher. One hunger striker, Bobby Sands, was elected as a Member of Parliament during the strike, prompting media interest from around the world.[2] The strike was called off after ten prisoners had starved themselves to deathâ ~including Sands, whose funeral was attended by 100,000 people.[1] The strike radicalised nationalist politics, and was the driving force that enabled Sinn FÃ©in to become a mainstream political party.[3]

[edit] Background

There had been hunger strikes by Irish republican prisoners since 1917, and twelve men had previously died on hunger strikes including Thomas Ashe, Terence MacSwiney, SeÃ¡n McCaughey, Michael Gaughan and Frank Stagg.[4] After the introduction of internment in 1971, Long Keshâ ~later known as HM Prison Mazeâ ~was run like a prisoner of war camp. Internees lived in dormitories and disciplined themselves with military-style command structures, drilled with dummy guns made from wood, and held lectures on guerrilla warfare and revolutionary politics.[5] Convicted prisoners were refused the same rights as internees until July 1972, when Special Category Status was introduced following a hunger strike by 40 Provisional Irish Republican Army (IRA) prisoners led by the veteran republican Billy McKee. Special Category, or political, status meant prisoners were treated similarly to prisoners of war; for example, not having to wear prison uniforms or do prison work.[5] In 1976, as part of the policy of "criminalisation", the British Government brought an end to Special Category Status for paramilitary prisoners in Northern Ireland. The policy was not introduced for existing prisoners, but for those convicted of offences after 1 March 1976.[6] The end to Special Category Status was a serious threat to the authority which the paramilitary leaderships inside prison had been able to exercise over their own men, as well as being a propaganda blow.[5]

[edit] Blanket and dirty protests

On 14 September 1976, newly convicted prisoner Kieran Nugent began the blanket protest, in which IRA and Irish National Liberation Army (INLA) prisoners refused to wear prison uniform and either went naked or fashioned garments from prison blankets.[6] In 1978, after a number of attacks on prisoners leaving their cells to "slop out" (i.e., empty their chamber pots), this escalated into the dirty protest, where prisoners refused to wash and smeared the walls of their cells with excrement.[7] These protests aimed to re-establish their political status by securing what were known as the "Five Demands":

The right not to wear a prison uniform;

The right not to do prison work;

The right of free association with other prisoners, and to organise educational and recreational pursuits;

The right to one visit, one letter and one parcel per week;

Full restoration of remission lost through the protest.[8]

Initially, this protest did not attract a great deal of attention, and even the IRA regarded it as a side-issue compared to their armed campaign.[9][10] It began to attract attention when Tomás Fiaich, the Roman Catholic Archbishop of Armagh, visited the prison and condemned the conditions there.[11] In 1979, former MP Bernadette McAliskey stood in the election for the European Parliament on a platform of support for the protesting prisoners, and won 5.9% of the vote across Northern Ireland, even though Sinn FÃ©in had called for a boycott of this election.[12][13] Shortly after this, the broad-based National H-Block/Armagh Committee was formed, on a platform of support for the "Five Demands", with McAliskey as its main spokesperson.[14][15] The period leading up to the hunger strike saw assassinations by both republicans and loyalists.

The IRA shot and killed a number of prison officers;[9][16] while loyalist paramilitaries shot and killed a number of activists in the National H-Block/Armagh Committee and badly injured McAliskey and her husband in an attempt on their lives.[17][18]

[edit] First hunger strike

On 27 October 1980, republican prisoners in HM Prison Maze began a hunger strike. Many prisoners volunteered to be part of the strike, but a total of seven were selected to match the number of men who signed the Easter 1916 Proclamation of the Republic. The group consisted of IRA members Brendan Hughes, Tommy McKearney, Raymond McCartney, Tom McFeeley, Sean McKenna, Leo Green, and INLA member John Nixon.[19] On 1 December three prisoners in Armagh Women's Prison joined the strike, including Mairéad Farrell, followed by a short-lived hunger strike by several dozen more prisoners in HM Prison Maze. In a war of nerves between the IRA leadership and the British government, with McKenna lapsing in and out of a coma and on the brink of death, the government appeared to concede the essence of the prisoners' five demands with a thirty-page document detailing a proposed settlement. With the document in transit to Belfast, Hughes took the decision to save McKenna's life and end the strike after 53 days on 18 December.[8]

[edit] Second hunger strike

In January 1981 it became clear that the prisoners' demands had not been conceded. Prison authorities began to supply the prisoners with officially issued civilian clothing, whereas the prisoners demanded the right to wear their own clothing. On 4 February the prisoners issued a statement saying that the British government had failed to resolve the crisis and declared their intention of "hunger striking once more".[20] The second hunger strike began on 1 March, when Bobby Sands, the IRA's former Officer Commanding (OC) in the prison, refused food. Unlike the first strike, the prisoners joined one at a time and at staggered intervals, which they believed would arouse maximum public support and exert maximum pressure on Prime Minister Margaret Thatcher.[21]

The republican movement initially struggled to generate public support for the second hunger strike. The Sunday before Sands began his strike, 3,500 people marched through west Belfast; during the first hunger strike four months earlier the marchers had numbered 10,000.[22] Five days into the strike, however, Independent Republican MP for Fermanagh and South Tyrone Frank Maguire died, resulting in a by-election. There was debate among nationalists and republicans regarding who should contest the election: Austin Currie of the Social Democratic and Labour Party expressed an interest, as did Bernadette McAliskey and Maguire's brother Noel.[1] After negotiations, and implied threats to Noel Maguire, they agreed not to split the nationalist vote by contesting the election and Sands stood as an Anti H-Block candidate against Ulster Unionist Party candidate Harry West.[22][23] Following a high-profile campaign the election took place on 9 April, and Sands was elected to the British House of Commons with 30,492 votes to West's 29,046.[24]

Sands' election victory raised hopes that a settlement could be negotiated, but Thatcher stood firm in refusing to give concessions to the hunger strikers. She stated "We are not prepared to consider special category status for certain groups of people serving sentences for crime. Crime is crime is crime, it is not political".[25] The world's media descended on Belfast, and several intermediaries visited Sands in an attempt to negotiate an end to the hunger strike, including S  le de Valera, granddaughter of   amon de Valera, Pope John Paul II's personal envoy John Magee, and European Commission of Human Rights officials.[2][26] With Sands close to death, the government's position remained unchanged, with Secretary of State for Northern Ireland Humphrey Atkins stating "If Mr. Sands persisted in his wish to commit suicide, that was his choice. The Government would not force medical treatment upon him".[26]

On 5 May, Sands died in the prison hospital on the sixty-sixth day of his hunger strike, prompting rioting in nationalist areas of Northern Ireland.[1] Humphrey Atkins issued a statement saying that Sands had committed suicide

"under the instructions of those who felt it useful to their cause that he should die".[27] Over 100,000 people lined the route of his funeral, which was conducted with full IRA military honours. Margaret Thatcher showed no regret for his death, telling the House of Commons that, "Mr. Sands was a convicted criminal. He chose to take his own life. It was a choice that his organisation did not allow to many of its victims".[26]

In the two weeks following Sands' death, three more hunger strikers died. Francis Hughes died on 12 May, resulting in further rioting in nationalist areas of Northern Ireland, in particular Derry and Belfast. Following the deaths of Raymond McCreesh and Patsy O'Hara on 21 May, Tomás Ó Fiaich, by then Primate of All Ireland, criticised the British government's handling of the hunger strike.[1] Despite this, Thatcher still refused to negotiate a settlement, stating "Faced with the failure of their discredited cause, the men of violence have chosen in recent months to play what may well be their last card", during a visit to Belfast in late May.[27]

Nine protesting prisoners contested the general election in the Republic of Ireland in June. Kieran Doherty and Paddy Agnew (who was not on hunger strike) were elected in Cavan and Monaghan and Louth respectively, and Joe McDonnell narrowly missed election in Sligo and Leitrim.[28][29] There were also local elections in Northern Ireland around that time and although Sinn Féin did not contest them, some smaller groups and independents who supported the hunger strikers won seats, e.g. the Irish Independence Party won 21 seats, while the Irish Republican Socialist Party (the INLA's political wing) and People's Democracy (a Trotskyist group) won two seats each, and a number of pro-hunger strike independent candidates also won seats.[30][31] The British government rushed through the Representation of the People Act 1981 to prevent another prisoner contesting the second by-election in Fermanagh and South Tyrone, which was due to take place following the death of Sands.[1]

Following the deaths of Joe McDonnell and Martin Hurson the families of some of the hunger strikers attended a meeting on 28 July with Catholic priest Father Denis Faul. The families expressed concern at the lack of a settlement to the priest, and a decision was made to meet with Gerry Adams later that day. At the meeting Father Faul put pressure on Adams to find a way of ending the strike, and Adams agreed to ask the IRA leadership to order the men to end the hunger strike.[32] The following day Adams held a meeting with six of the hunger strikers to outline a proposed settlement on offer from the British government should the strike be brought to an end.[33] The strikers rejected the settlement, believing that accepting anything less than the "Five Demands" would be a betrayal of the sacrifice made by Bobby Sands and the other men who had died.[34]

On 31 July the hunger strike began to break, when the mother of Paddy Quinn insisted on medical intervention to save his life. The following day Kevin Lynch died, followed by Kieran Doherty on 2 August, Thomas McElwee on 8 August and Michael Devine on 20 August.[35] On the day Devine died, Sands' election agent Owen Carron won the Fermanagh and South Tyrone by-election with an increased number of votes.[36] On 6 September the family of Laurence McKeown became the fourth family to intervene and asked for medical treatment to save his life, and Cahal Daly issued a statement calling on republican prisoners to end the hunger strike. A week later James Prior replaced Humphrey Atkins as Secretary of State for Northern Ireland, and met with prisoners in an attempt to end the strike.[1] Liam McCloskey ended his strike on 26 September after his family said they would ask for medical intervention if he became unconscious, and it became clear that the families of the remaining hunger strikers would also intervene to save their lives. The strike was called off at 3:15 pm on 3 October,[37] and three days later Prior announced partial concessions to the prisoners including the right to wear their own clothes at all times.[3] The only one of the "Five Demands" still outstanding was the right not to do prison work. Following sabotage by the prisoners and the Maze Prison escape in 1983 the prison workshops were closed, effectively granting all of the "Five Demands" but without any formal recognition of political status from the

government.[38]

[edit] Participants who died on hunger strike

Over the summer of 1981, ten hunger strikers had died. Their names, paramilitary affiliation, dates of death, and length of hunger strike are as follows:

Name

Paramilitary affiliation

Strike started

Date of death

Length of strike

Reason for imprisonment

Bobby Sands

IRA

1 March

5 May

66 days

Possession of a handgun

Francis Hughes

IRA

15 March

12 May

59 days

Various offences, including the murder of a soldier

Raymond McCreesh

IRA

22 March

21 May

61 days

Attempted murder, possession of a rifle, IRA membership

Patsy Oâ Hara

INLA

22 March

21 May

61 days

Possession of a hand grenade

Joe McDonnell

IRA

8 May

8 July

61 days

Possession of a firearm

Martin Hurson

IRA

28 May

13 July

46 days

Attempted murder, involvement in explosions, IRA membership

Kevin Lynch

INLA

23 May

1 August

71 days

Stealing shotguns, taking part in a punishment shooting

Kieran Doherty

IRA

22 May

2 August

73 days

Possession of firearms and explosives, hijacking

Thomas McElwee

IRA

8 June

8 August

62 days

Manslaughter

Michael Devine

INLA

22 June

20 August

60 days

Theft and possession of firearms

The original pathologist's report recorded the hunger strikers' cause of death as "self-imposed starvation". This was later amended to simply "starvation", after protests from the dead strikers' families. The coroner recorded verdicts of "starvation, self-imposed".[39]

[edit] Other participants in the hunger strike

Although ten men died during the course of the hunger strike, thirteen others began refusing food but were taken off hunger strike, either due to medical reasons or after intervention by their families. Many of them still suffer from the effects of the strike, with problems including digestive, visual, physical and neurological disabilities.[40][41]

Name

Paramilitary affiliation

Strike started

Strike ended

Length of strike

Reason for ending strike

Brendan McLaughlin

IRA

14 May

26 May

13 days

Suffering from a perforated ulcer and internal bleeding

Paddy Quinn

IRA

15 June

31 July

47 days

Taken off by his family

Laurence McKeown

IRA

29 June

6 September

70 days

Taken off by his family

Pat McGeown

IRA

9 July

20 August

42 days

Taken off by his family

Matt Devlin

IRA

14 July

4 September

52 days

Taken off by his family

Liam McCloskey

INLA

3 August

26 September  
55 days  
His family said they would intervene if he became unconscious  
Patrick Sheehan  
IRA  
10 August  
3 October  
55 days  
End of hunger strike  
Jackie McMullan  
IRA  
17 August  
3 October  
48 days  
End of hunger strike  
Bernard Fox  
IRA  
24 August  
24 September  
32 days  
Suffering from an obstructed kidney  
Hugh Carville  
IRA  
31 August  
3 October  
34 days  
End of hunger strike  
John Pickering  
IRA  
7 September  
3 October  
27 days  
End of hunger strike  
Gerard Hodgkins  
IRA  
14 September  
3 October  
20 days  
End of hunger strike  
James Devine  
IRA  
21 September  
3 October  
13 days  
End of hunger strike

[edit] Consequences

The British press hailed the hunger strike as a triumph for Thatcher, with The Guardian newspaper stating "The Government had overcome the hunger strikes by a show of resolute determination not to be bullied".[42] However, the hunger strike was a Pyrrhic victory for Thatcher and the British government.[43] Thatcher became a republican hate figure of Cromwellian proportions, with Danny Morrison describing her as "the biggest bastard we have ever known".[43] There was extensive international condemnation of the British government's handling of the hunger strike, and the relationship between the British and Irish governments was strained.[2] As with internment in 1971 and Bloody Sunday in 1972, IRA recruitment was boosted, resulting in a new surge of paramilitary activity.[43] There was an upsurge of violence after the comparatively quiet years of the late 1970s, with widespread civil disorder in Northern Ireland and rioting outside the British Embassy in Dublin.[1] Security forces fired 29,695 plastic bullets in 1981, causing seven deaths, compared to a total of around

16,000 bullets and four deaths in the eight years following the hunger strikes.[44] The IRA continued its armed campaign during the seven months of the strike, killing thirteen policemen, eight soldiers, five members of the Ulster Defence Regiment and five civilians. The seven months were one of the bloodiest periods of the Troubles with a total of 61 people killed, 34 of them civilians.[21] Three years later the IRA tried to take their revenge on Thatcher with the Brighton hotel bombing, an attack on the Conservative party conference that killed five people and in which Thatcher herself only narrowly escaped death.[2]

The hunger strike prompted Sinn Féin to move towards electoral politicsâSands' election victory combined with that of pro-hunger strike candidates in the Northern Ireland local elections and Dáil elections in the Republic of Ireland gave birth to the armalite and ballot box strategy, with Gerry Adams remarking "His [Sands] victory exposed the lie that the hunger strikersâand by extension the IRA and the whole republican movementâhad no popular support".[45] The election victories of Doherty and Agnew also had political impact in the Republic of Ireland, as they denied power to Charles Haughey's outgoing Fianna Fáil government.[28] In 1982 Sinn Féin won five seats in the elections to the Northern Ireland Assembly, and in 1983 Gerry Adams won a seat in the UK general election.[46] As a result of the political base built during the hunger strike, Sinn Féin continued to grow in the following two decades, and it is currently the largest nationalist party in Northern Ireland holding 29 out of 108 seats in the Northern Ireland Assembly.[3][47]

In 2005, the role of Gerry Adams was questioned by former prisoner Richard O'Rawe, who was the public relations officer inside the prison during the strike. O'Rawe states in his book *Blanketmen* that Adams prolonged the strike as it was of great political benefit to Sinn Féin and allowed Owen Carron to win Sands' seat.[48][49] This claim is denied by several hunger strikers and Brendan McFarlane, who was OC inside the prison during the hunger strike.[50] McFarlane claims O'Rawe's version of events is confused and fragmentary, and states "We were desperate for a solution. Any deal that went some way to meeting the five demands would have been taken. If it was confirmed in writing, we'd have grabbed it . . . There was never a deal, there was never a "take it or leave it" option at all".[51]

[edit] Commemorations

There are memorials and murals in memory of the hunger strikers in towns and cities across Ireland, including Belfast, Dublin, Derry, Crossmaglen and Camlough.[52] Annual commemorations take place across Ireland for each man who died on the hunger strike, and an annual hunger strike commemoration march is held in Belfast each year, which includes a Bobby Sands memorial lecture.[53][54] Several towns and cities in France have named streets after Bobby Sands, including Paris and Le Mans.[2][55] The Iranian government also named a street running alongside the British embassy in Tehran after Bobby Sands, which was formerly called Winston Churchill Street.[56]

A memorial to the men who died in the Irish Rebellion of 1798, the Easter Rising and the hunger strike stands in Waverley Cemetery, Sydney, Australia, which is also the burial place of Michael Dwyer of the Society of United Irishmen.[57][58] In 1997 the people of Hartford, Connecticut, in the United States dedicated a monument to Bobby Sands and the other hunger strikers.[59] The monument stands in a traffic circle known as "Bobby Sands Circle", at the bottom of Maple Avenue near Goodwin Park.[60] On 20 March 2001 Sinn Féin's national chairperson Mitchel McLaughlin opened the National Hunger Strike Commemoration Committee's exhibition at the Europa Hotel in Belfast, which included three original works of art from Belfast-based artists.[61] A separate exhibition was also launched in Derry the following month.[62] Three films have been made based on the events of the hunger strike, *Some Mother's Son* starring Helen Mirren, *H3* (which was co-written by former hunger striker Laurence McKeown), and *Steve McQueen's Hunger*.

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[edit] External links

Numerical weather prediction uses mathematical models of the atmosphere and oceans to predict the weather based on current weather conditions. Though first attempted in the 1920s, it was not until the advent of computer simulation in the 1950s that numerical weather predictions produced realistic results. A number of global and regional forecast models are run in different countries worldwide, using current weather observations relayed from radiosondes or weather satellites as inputs to the models.

Mathematical models based on the same physical principles can be used to generate either short-term weather forecasts or longer-term climate predictions; the latter are widely applied for understanding and projecting climate change. The improvements made to regional models have allowed for significant improvements in tropical cyclone track and air quality forecasts; however, atmospheric models perform poorly at handling processes that occur in a relatively constricted area, such as wildfires.

Manipulating the vast datasets and performing the complex calculations necessary to modern numerical weather prediction requires some of the most powerful supercomputers in the world. Even with the increasing power of supercomputers, the forecast skill of numerical weather models extends to about only six days. Factors affecting the accuracy of numerical predictions include the density and quality of observations used as input to the forecasts, along with deficiencies in the numerical models themselves. Although post-processing techniques such as model output statistics (MOS) have been developed to improve the handling of errors in numerical predictions, a more fundamental problem lies in the chaotic nature of the partial differential equations used to simulate the atmosphere. It is impossible to solve these equations exactly, and small errors grow with time (doubling about every five days). In addition, the partial differential equations used in the model need to be supplemented with parameterizations for solar radiation, moist processes (clouds and precipitation), heat exchange, soil, vegetation, surface water, and the effects of terrain. In an effort to quantify the large amount of inherent uncertainty remaining in numerical predictions, ensemble forecasts have been used since the 1990s to help gauge the confidence in the forecast, and to obtain useful results farther into the future than otherwise possible. This approach analyzes multiple forecasts created with an individual forecast model or multiple models.

[edit] History

The history of numerical weather prediction began in the 1920s through the

efforts of Lewis Fry Richardson, who used procedures originally developed by Vilhelm Bjerknes[1] to produce by hand a six-hour forecast for the state of the atmosphere over two points in central Europe, taking at least six weeks to do so.[1][2] It was not until the advent of the computer and computer simulations that computation time was reduced to less than the forecast period itself. The ENIAC was used to create the first weather forecasts via computer in 1950;[3][4] in 1954, Carl-Gustav Rossby's group at the Swedish Meteorological and Hydrological Institute used the same model to produce the first operational forecast (i.e. routine predictions for practical use).[5] Operational numerical weather prediction in the United States began in 1955 under the Joint Numerical Weather Prediction Unit (JNWPU), a joint project by the U.S. Air Force, Navy and Weather Bureau.[6] In 1956, Norman Phillips developed a mathematical model which could realistically depict monthly and seasonal patterns in the troposphere; this became the first successful climate model.[7][8] Following Phillips' work, several groups began working to create general circulation models.[9] The first general circulation climate model that combined both oceanic and atmospheric processes was developed in the late 1960s at the NOAA Geophysical Fluid Dynamics Laboratory.[10]

As computers have become more powerful, the size of the initial data sets has increased and newer atmospheric models have been developed to take advantage of the added available computing power. These newer models include more physical processes in the simplifications of the equations of motion in numerical simulations of the atmosphere.[5] In 1966, West Germany and the United States began producing operational forecasts based on primitive-equation models, followed by the United Kingdom in 1972 and Australia in 1977.[1][11] The development of limited area (regional) models facilitated advances in forecasting the tracks of tropical cyclones as well as air quality in the 1970s and 1980s.[12][13] By the early 1980s models began to include the interactions of soil and vegetation with the atmosphere, which led to more realistic forecasts.[14]

The output of forecast models based on atmospheric dynamics is unable to resolve some details of the weather near the Earth's surface. As such, a statistical relationship between the output of a numerical weather model and the ensuing conditions at the ground was developed in the 1970s and 1980s, known as model output statistics (MOS).[15][16] Starting in the 1990s, model ensemble forecasts have been used to help define the forecast uncertainty and to extend the window in which numerical weather forecasting is viable farther into the future than otherwise possible.[17][18][19]

[edit] Initialization

The atmosphere is a fluid. As such, the idea of numerical weather prediction is to sample the state of the fluid at a given time and use the equations of fluid dynamics and thermodynamics to estimate the state of the fluid at some time in the future. The process of entering observation data into the model to generate initial conditions is called initialization. On land, terrain maps available at resolutions down to 1 kilometer (0.62 mi) globally are used to help model atmospheric circulations within regions of rugged topography, in order to better depict features such as downslope winds, mountain waves and related cloudiness that affects incoming solar radiation.[20] The main inputs from country-based weather services are observations from devices (called radiosondes) in weather balloons that measure various atmospheric parameters and transmits them to a fixed receiver, as well as from weather satellites. The World Meteorological Organization acts to standardize the instrumentation, observing practices and timing of these observations worldwide. Stations either report hourly in METAR reports,[21] or every six hours in SYNOP reports.[22] These observations are irregularly spaced, so they are processed by data assimilation and objective analysis methods, which perform quality control and obtain values at locations usable by the model's mathematical algorithms.[23] Some global models use finite differences, in which the world is represented as discrete points on a regularly spaced grid of latitude and longitude;[24] other models use spectral methods that solve for a range of wavelengths. The data are

then used in the model as the starting point for a forecast.[25]

A variety of methods are used to gather observational data for use in numerical models. Sites launch radiosondes in weather balloons which rise through the troposphere and well into the stratosphere.[26] Information from weather satellites is used where traditional data sources are not available. Commerce provides pilot reports along aircraft routes[27] and ship reports along shipping routes.[28] Research projects use reconnaissance aircraft to fly in and around weather systems of interest, such as tropical cyclones.[29][30] Reconnaissance aircraft are also flown over the open oceans during the cold season into systems which cause significant uncertainty in forecast guidance, or are expected to be of high impact from three to seven days into the future over the downstream continent.[31] Sea ice began to be initialized in forecast models in 1971.[32] Efforts to involve sea surface temperature in model initialization began in 1972 due to its role in modulating weather in higher latitudes of the Pacific.[33]

#### [edit] Computation

An atmospheric model is a computer program that produces meteorological information for future times at given locations and altitudes. Within any modern model is a set of equations, known as the primitive equations, used to predict the future state of the atmosphere.[34] These equationsâ ~along with the ideal gas lawâ ~are used to evolve the density, pressure, and potential temperature scalar fields and the air velocity (wind) vector field of the atmosphere through time. Additional transport equations for pollutants and other aerosols are included in some primitive-equation high-resolution models as well.[35] The equations used are nonlinear partial differential equations which are impossible to solve exactly through analytical methods,[36] with the exception of a few idealized cases.[37] Therefore, numerical methods obtain approximate solutions. Different models use different solution methods: some global models and almost all regional models use finite difference methods for all three spatial dimensions, while other global models and a few regional models use spectral methods for the horizontal dimensions and finite-difference methods in the vertical.[36]

These equations are initialized from the analysis data and rates of change are determined. These rates of change predict the state of the atmosphere a short time into the future; the time increment for this prediction is called a time step. The equations are then applied to this new atmospheric state to find new rates of change, and these new rates of change predict the atmosphere at a yet further time step into the future. This time stepping is repeated until the solution reaches the desired forecast time. The length of the time step chosen within the model is related to the distance between the points on the computational grid, and is chosen to maintain numerical stability.[38] Time steps for global models are on the order of tens of minutes,[39] while time steps for regional models are between one and four minutes.[40] The global models are run at varying times into the future. The UKMET Unified Model is run six days into the future,[41] while the European Centre for Medium-Range Weather Forecasts' Integrated Forecast System and Environment Canada's Global Environmental Multiscale Model both run out to ten days into the future,[42] and the Global Forecast System model run by the Environmental Modeling Center is run sixteen days into the future.[43] The visual output produced by a model solution is known as a prognostic chart, or prog.[44]

#### [edit] Parameterization

Some meteorological processes are too small-scale or too complex to be explicitly included in numerical weather prediction models. Parameterization is a procedure for representing these processes by relating them to variables on the scales that the model resolves. For example, the gridboxes in weather and climate models have sides that are between 5 kilometers (3Â mi) and 300 kilometers (200Â mi) in length. A typical cumulus cloud has a scale of less than 1 kilometer (0.6Â mi), and would require a grid even finer than this to be represented physically by the equations of fluid motion. Therefore the processes that such clouds represent are parameterized, by processes of various

sophistication. In the earliest models, if a column of air in a model gridbox was conditionally unstable (essentially, the bottom was warmer and moister than the top) and the water vapor content at any point within the column became saturated then it would be overturned (the warm, moist air would begin rising), and the air in that vertical column mixed. More sophisticated schemes recognize that only some portions of the box might convect and that entrainment and other processes occur. Weather models that have gridboxes with sides between 5 and 25 kilometers (3 and 16 mi) can explicitly represent convective clouds, although they need to parameterize cloud microphysics which occur at a smaller scale.[45] The formation of large-scale (stratus-type) clouds is more physically based; they form when the relative humidity reaches some prescribed value. Sub-grid scale processes need to be taken into account. Rather than assuming that clouds form at 100% relative humidity, the cloud fraction can be related a critical value of relative humidity less than 100%,[46] reflecting the sub grid scale variation that occurs in the real world.

The amount of solar radiation reaching the ground, as well as the formation of cloud droplets occur on the molecular scale, and so they must be parameterized before they can be included in the model. Atmospheric drag produced by mountains must also be parameterized, as the limitations in the resolution of elevation contours produce significant underestimates of the drag.[47] This method of parameterization is also done for the surface flux of energy between the ocean and the atmosphere, in order to determine realistic sea surface temperatures and type of sea ice found near the ocean's surface.[48] Sun angle as well as the impact of multiple cloud layers is taken into account.[49] Soil type, vegetation type, and soil moisture all determine how much radiation goes into warming and how much moisture is drawn up into the adjacent atmosphere, and thus it is important to parameterize their contribution to these processes.[50] Within air quality models, parameterizations take into account atmospheric emissions from multiple relatively tiny sources (e.g. roads, fields, factories) within specific grid boxes.[51]

#### [edit] Domains

The horizontal domain of a model is either global, covering the entire Earth, or regional, covering only part of the Earth. Regional models (also known as limited-area models, or LAMs) allow for the use of finer grid spacing than global models because the available computational resources are focused on a specific area instead of being spread over the globe. This allows regional models to resolve explicitly smaller-scale meteorological phenomena that cannot be represented on the coarser grid of a global model. Regional models use a global model to specify conditions at the edge of their domain in order to allow systems from outside the regional model domain to move into its area. Uncertainty and errors within regional models are introduced by the global model used for the boundary conditions of the edge of the regional model, as well as errors attributable to the regional model itself.[52]

The vertical coordinate is handled in various ways. Lewis Fry Richardson's 1922 model used geometric height ( $z$ ) as the vertical coordinate. Later models substituted the geometric coordinate with a pressure coordinate system, in which the geopotential heights of constant-pressure surfaces become dependent variables, greatly simplifying the primitive equations.[53] This correlation between coordinate systems can be made since pressure decreases with height through the Earth's atmosphere.[54] The first model used for operational forecasts, the single-layer barotropic model, used a single pressure coordinate at the 500-millibar (about 5,500 m (18,000 ft)) level,[3] and thus was essentially two-dimensional. High-resolution models—also called mesoscale models—such as the Weather Research and Forecasting model tend to use normalized pressure coordinates referred to as sigma coordinates.[55] This coordinate system receives its name from the independent variable used to scale atmospheric pressures with respect to the pressure at the surface, and in some cases also with the pressure at the top of the domain.[56]

#### [edit] Model output statistics

Because forecast models based upon the equations for atmospheric dynamics do

not perfectly determine weather conditions, statistical methods have been developed to attempt to correct the forecasts. Statistical models were created based upon the three-dimensional fields produced by numerical weather models, surface observations and the climatological conditions for specific locations. These statistical models are collectively referred to as model output statistics (MOS), [57] and were developed by the National Weather Service for their suite of weather forecasting models in the late 1960s. [15][58]

Model output statistics differ from the perfect prog technique, which assumes that the output of numerical weather prediction guidance is perfect. [59] MOS can correct for local effects that cannot be resolved by the model due to insufficient grid resolution, as well as model biases. Because MOS is run after its respective global or regional model, its production is known as post-processing. Forecast parameters within MOS include maximum and minimum temperatures, percentage chance of rain within a several hour period, precipitation amount expected, chance that the precipitation will be frozen in nature, chance for thunderstorms, cloudiness and surface winds. [60]

[edit] Ensembles

In 1963, Edward Lorenz discovered the chaotic nature of the fluid dynamics equations involved in weather forecasting. [61] Extremely small errors in temperature, winds, or other initial inputs given to numerical models will amplify and double every five days, [61] making it impossible for long-range forecastsâthose made more than two weeks in advanceâto predict the state of the atmosphere with any degree of forecast skill. Furthermore, existing observation networks have poor coverage in some regions (for example, over large bodies of water such as the Pacific Ocean), which introduces uncertainty into the true initial state of the atmosphere. While a set of equations, known as the Liouville equations, exists to determine the initial uncertainty in the model initialization, the equations are too complex to run in real-time, even with the use of supercomputers. [62] These uncertainties limit forecast model accuracy to about five or six days into the future. [63][64]

Edward Epstein recognized in 1969 that the atmosphere could not be completely described with a single forecast run due to inherent uncertainty, and proposed using an ensemble of stochastic Monte Carlo simulations to produce means and variances for the state of the atmosphere. [65] Although this early example of an ensemble showed skill, in 1974 Cecil Leith showed that they produced adequate forecasts only when the ensemble probability distribution was a representative sample of the probability distribution in the atmosphere. [66]

Since the 1990s, ensemble forecasts have been used operationally (as routine forecasts) to account for the stochastic nature of weather processes â that is, to resolve their inherent uncertainty. This method involves analyzing multiple forecasts created with an individual forecast model by using different physical parametrizations or varying initial conditions. [62] Starting in 1992 with ensemble forecasts prepared by the European Centre for Medium-Range Weather Forecasts (ECMWF) and the National Centers for Environmental Prediction, model ensemble forecasts have been used to help define the forecast uncertainty and to extend the window in which numerical weather forecasting is viable farther into the future than otherwise possible. [17][18][19] The ECMWF model, the Ensemble Prediction System, [18] uses singular vectors to simulate the initial probability density, while the NCEP ensemble, the Global Ensemble Forecasting System, uses a technique known as vector breeding. [17][19] The UK Met Office runs global and regional ensemble forecasts where perturbations to initial conditions are produced using a Kalman filter. [67] There are 24 ensemble members in the Met Office Global and Regional Ensemble Prediction System (MOGREPS).

In a single model-based approach, the ensemble forecast is usually evaluated in terms of an average of the individual forecasts concerning one forecast variable, as well as the degree of agreement between various forecasts within the ensemble system, as represented by their overall spread. Ensemble spread is diagnosed through tools such as spaghetti diagrams, which show the dispersion of one quantity on prognostic charts for specific time steps in the future.

Another tool where ensemble spread is used is a meteogram, which shows the dispersion in the forecast of one quantity for one specific location. It is common for the ensemble spread to be too small to include the weather that actually occurs, which can lead to forecasters misdiagnosing model uncertainty;[68] this problem becomes particularly severe for forecasts of the weather about ten days in advance.[69] When ensemble spread is small and the forecast solutions are consistent within multiple model runs, forecasters perceive more confidence in the ensemble mean, and the forecast in general.[68] Despite this perception, a spread-skill relationship is often weak or not found, as spread-error correlations are normally less than 0.6, and only under special circumstances range between 0.6â<sup>^</sup>0.7.[70] The relationship between ensemble spread and forecast skill varies substantially depending on such factors as the forecast model and the region for which the forecast is made.

In the same way that many forecasts from a single model can be used to form an ensemble, multiple models may also be combined to produce an ensemble forecast. This approach is called multi-model ensemble forecasting, and it has been shown to improve forecasts when compared to a single model-based approach.[71] Models within a multi-model ensemble can be adjusted for their various biases, which is a process known as superensemble forecasting. This type of forecast significantly reduces errors in model output.[72]

[edit] Applications

[edit] Air quality modeling

Air quality forecasting attempts to predict when the concentrations of pollutants will attain levels that are hazardous to public health. The concentration of pollutants in the atmosphere is determined by their transport, or mean velocity of movement through the atmosphere, their diffusion, chemical transformation, and ground deposition.[73] In addition to pollutant source and terrain information, these models require data about the state of the fluid flow in the atmosphere to determine its transport and diffusion.[74] Meteorological conditions such as thermal inversions can prevent surface air from rising, trapping pollutants near the surface,[75] which makes accurate forecasts of such events crucial for air quality modeling. Urban air quality models require a very fine computational mesh, requiring the use of high-resolution mesoscale weather models; in spite of this, the quality of numerical weather guidance is the main uncertainty in air quality forecasts.[74]

[edit] Climate modeling

A General Circulation Model (GCM) is a mathematical model that can be used in computer simulations of the general circulation of a planetary atmosphere or ocean. An atmospheric general circulation model (AGCM) is essentially the same as a global numerical weather prediction model, and some (such as the one used in the UK Unified Model) can be configured for both short-term weather forecasts and longer-term climate predictions. Along with sea ice and land-surface components, AGCMs and oceanic GCMs (OGCM) are key components of global climate models, and are widely applied for understanding the climate and projecting climate change. For example, they can be used to simulate the El Niño-Southern Oscillation and study its forcings on global climate and the Asian monsoon circulation. For aspects of climate change, a range of man-made chemical emission scenarios can be fed into the climate models to see how an enhanced greenhouse effect would modify the Earth's climate.[76] Versions designed for climate applications with time scales of decades to centuries were originally created in 1969 by Syukuro Manabe and Kirk Bryan at the Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey.[77] When run for multiple decades, the models use a low resolution, which leaves smaller-scale interactions unresolved.[78]

[edit] Ocean surface modeling

The transfer of energy between the wind blowing over the surface of an ocean and the ocean's upper layer is an important element in wave dynamics.[79] The spectral wave transport equation is used to describe the change in wave spectrum over changing topography. It simulates wave generation, wave movement

(propagation within a fluid), wave shoaling, refraction, energy transfer between waves, and wave dissipation.[80] Since surface winds are the primary forcing mechanism in the spectral wave transport equation, ocean wave models use information produced by numerical weather prediction models as inputs to determine how much energy is transferred from the atmosphere into the layer at the surface of the ocean. Along with dissipation of energy through whitecaps and resonance between waves, surface winds from numerical weather models allow for more accurate predictions of the state of the sea surface.[81]

[edit] Tropical cyclone forecasting

Tropical cyclone forecasting also relies on data provided by numerical weather models. Three main classes of tropical cyclone guidance models exist: Statistical models are based on an analysis of storm behavior using climatology, and correlate a storm's position and date to produce a forecast that is not based on the physics of the atmosphere at the time. Dynamical models are numerical models that solve the governing equations of fluid flow in the atmosphere; they are based on the same principles as other limited-area numerical weather prediction models but may include special computational techniques such as refined spatial domains that move along with the cyclone. Models that use elements of both approaches are called statistical-dynamical models.[82]

In 1978, the first hurricane-tracking model based on atmospheric dynamicsâ ~the movable fine-mesh (MFM) modelâ ~began operating.[12] Within the field of tropical cyclone track forecasting, despite the ever-improving dynamical model guidance which occurred with increased computational power, it was not until the 1980s when numerical weather prediction showed skill, and until the 1990s when it consistently outperformed statistical or simple dynamical models.[83] Predictions of the intensity of a tropical cyclone based on numerical weather prediction continue to be a challenge, since statistical methods continue to show higher skill over dynamical guidance.[84]

[edit] Wildfire modeling

On a molecular scale, there are two main competing reaction processes involved in the degradation of cellulose, or wood fuels, in wildfires. When there is a low amount of moisture in a cellulose fiber, volatilization of the fuel occurs; this process will generate intermediate gaseous products that will ultimately be the source of combustion. When moisture is presentâ ~or when enough heat is being carried away from the fiber, charring occurs. The chemical kinetics of both reactions indicate that there is a point at which the level of moisture is low enoughâ ~and/or heating rates high enoughâ ~for combustion processes become self-sufficient. Consequently, changes in wind speed, direction, moisture, temperature, or lapse rate at different levels of the atmosphere can have a significant impact on the behavior and growth of a wildfire. Since the wildfire acts as a heat source to the atmospheric flow, the wildfire can modify local advection patterns, introducing a feedback loop between the fire and the atmosphere.[85]

A simplified two-dimensional model for the spread of wildfires that used convection to represent the effects of wind and terrain, as well as radiative heat transfer as the dominant method of heat transport led to reaction-diffusion systems of partial differential equations.[86][87] More complex models join numerical weather models or computational fluid dynamics models with a wildfire component which allow the feedback effects between the fire and the atmosphere to be estimated.[85] The additional complexity in the latter class of models translates to a corresponding increase in their computer power requirements. In fact, a full three-dimensional treatment of combustion via direct numerical simulation at scales relevant for atmospheric modeling is not currently practical because of the excessive computational cost such a simulation would require. Numerical weather models have limited forecast skill at spatial resolutions under 1 kilometer (0.6Â mi), forcing complex wildfire models to parameterize the fire in order to calculate how the winds will be modified locally by the wildfire, and to use those modified winds to determine the rate at which the fire will spread locally.[88][89][90] Although models



such as Los Alamos' FIRETEC solve for the concentrations of fuel and oxygen, the computational grid cannot be fine enough to resolve the combustion reaction, so approximations must be made for the temperature distribution within each grid cell, as well as for the combustion reaction rates themselves.

[edit] See also

[edit] References

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[edit] External links

The early life and military career of John Sidney McCain III spans the first forty-five years of his life (1936â ^1981). McCain's father and grandfather were admirals in the United States Navy. McCain was born on August 29, 1936, in the Panama Canal Zone, and attended many schools growing up as his family moved among naval facilities. McCain graduated from the United States Naval Academy in 1958. He married the former Carol Shepp in 1965; he adopted two children from her previous marriage and they had another child together.

As a naval aviator, McCain flew attack aircraft from carriers. During the Vietnam War, he narrowly escaped death in the 1967 Forrestal fire. On his twenty-third bombing mission in October 1967, he was shot down over Hanoi and badly injured. He subsequently endured five and a half years as a prisoner of war, including periods of torture. In 1968, he refused a North Vietnamese offer of early release, because it would have meant leaving before other prisoners who had been held longer. He was released in 1973 after the Paris Peace Accords.

Upon his return, McCain studied at the National War College, commanded a large training squadron in Florida, and was appointed the Navy liaison to the U.S. Senate. He divorced his wife Carol in 1980 and married the former Cindy Hensley shortly thereafter. He retired from the Navy in 1981 as a captain.

[edit] Early years and education

[edit] Family heritage

John Sidney McCain III was born on August 29, 1936,[1] at a United States Navy hospital[2][3][4] at Coco Solo Naval Air Station[5][6] in Panama Canal Zone, Panama, to Navy officer John S. "Jack" McCain, Jr. (1911â ^1981) and Roberta (Wright) McCain (1912â ^ ). McCain is of Scots-Irish and English ancestry.[7]

John McCain's grandparents were natives of Arkansas, Mississippi, and Texas, and much of his ancestry was Southern on both his mother's side and father's side.[7] The McCain family's patrilineal ancestral home is in Mississippi's Carroll County;[8][9] they owned and ran a 2,000-acre (8.1Â km2) plantation in Teoc from 1848 until 1952.[8][10] The plantation had slaves before the American Civil War â ^ some of whose descendants share the surname and call themselves the "black McCains"[11] â ^ and sharecroppers afterward; influential blues guitarist Mississippi John Hurt was born on the plantation to one of the latter.[8]

The McCain family tree has a long heritage of American military service, with ancestors fighting as soldiers in the Indian Wars,[5] American Revolutionary War[12] (due to which McCain maintains a membership with the Sons of the American Revolution),[13] War of 1812,[14] for the Confederate States of America in the American Civil War,[8] and in World War I.[5] The tree also includes roguish behavior and economic success. John McCain's maternal grandfather, Archibald Wright (1875â ^1971),[15] was a Mississippi native who migrated to Muskogee, Oklahoma in his twenties, ran afoul of the law with several gambling and bootlegging charges,[15] then became a strong-willed wildcatter who prospered on land deals during the early statehood years and struck oil in the Southwest.[15][16] Rich by age forty, he never worked again and became a stay-at-home father.[5][16] Raising a family in Oklahoma and Southern California, he instilled in Roberta and her twin sister Rowena a lifelong habit of travel and adventure.[17] There is also independent-minded behavior in the family tree: Jack McCain and Roberta Wright eloped and married in a bar in Tijuana, Mexico, when Archibald Wright's wife Myrtle objected to Roberta's association with a sailor.[18]

McCain's father and paternal grandfather eventually became Navy admirals, and were the first father-son pair to achieve four-star admiral rank.[19] His grandfather, Admiral John S. "Slew" McCain, Sr. (1884â ^1945), was a pioneer of aircraft carrier operations[5] who in 1942 commanded all land-based air operations in support of the Guadalcanal campaign, and who ultimately in 1944â ^1945 aggressively led the Fast Carrier Task Force in the Pacific Ocean theater of World War II. His operations off the Philippines and Okinawa, and air strikes against Formosa and the Japanese home islands, caused tremendous destruction of Japanese naval and air forces in the closing period of the war.[20] His death four days after the Japanese surrender ceremony in Tokyo Bay was front page news.[5] Jack McCain was a submarine commander in several theaters of operation in World War II and was decorated with both the Silver Star and Bronze Star.[20]

[edit] Early life

For his first ten years, "Johnny" McCain (the family nickname he was given)[2] was frequently uprooted as his family, including older sister Sandy (born 1934) and younger brother Joe (born 1942),[5][18] followed his father to New London, Connecticut, Pearl Harbor, Hawaii, and other stations in the Pacific Ocean.[21] Summer vacations were sometimes spent at the family's Teoc plantation,[10] but McCain always felt his heritage was military, not Southern.[8] McCain attended whatever naval base school was available,[21] often to the detriment of his education, as schools were sometimes substandard and their curricula often erratic.[21] After the 1941 attack on Pearl Harbor, his father was absent for long stretches.[5] His formal education was supplemented by the efforts of his mother, who took advantage of the family's many long-distance travels to expose him to historical and cultural sites.[17][22] He later wrote, "She taught me to find so much pleasure in life that misfortune could not rob me of the joy of living." [22] A Republican, she also made sure that he followed current events, although his parents avoided outward partisan affiliations due to his father's military career.[23]

After World War II ended, his father stayed in the Navy, sometimes working political liaison posts.[5] The family settled in Northern Virginia, and McCain attended the educationally stronger St. Stephen's School in Alexandria from 1946 to 1949.[24] To his family, McCain had long been quiet, dependable, and courteous,[5] while at St. Stephen's he began to develop an unruly, defiant streak.[25] Another two years were then spent following his father to naval stations;[26] altogether he attended about twenty schools during his youth.[27] He was frequently disciplined in school for fighting.[28] He later wrote, "The repeated farewells to friends rank among the saddest regrets of a childhood constantly disrupted by the demands of my father's career... At each new school I arrived eager to make, by means of my insolent attitude, new friends to compensate for the loss of others. At each new school I grew more determined to assert my crude individualism. At each new school I became a more unrepentant



pain in the neck." [29]

In 1951, McCain enrolled at Episcopal High School in Alexandria, an academically superior, all-male private boarding school with a rigorous honor code, tradition of hazing, and spartan living environment. [30][31] Most of the children there were sons of wealthy Southerners, from whom McCain got a glimpse of life and career aspirations outside the Navy culture. [32] Nicknamed "Punk" and "McNasty" due to his combative, fiery disposition, McCain enjoyed and cultivated that tough guy image; he also made a few friends. [5][25][33][34] McCain earned two varsity letters in wrestling, excelling in the lighter weight classes. [35] He also played on the junior varsity football team and the tennis team, and participated in the student newspaper, yearbook, and drama club. [36] English teacher William Bee Ravenel III, who was also his football coach, became a great influence towards his sense of learning, honor, and self-image. [37] With what he later termed an "undistinguished, but acceptable" academic record, [38] McCain graduated from high school in 1954. [25]

[edit] Naval Academy

Having done well on its entrance exams, [5] McCain entered the United States Naval Academy in Annapolis, Maryland in June 1954, following in the footsteps of his father and grandfather. [39] He had neither been ordered to go there by his parents nor discussed alternatives; as he later wrote, "I remember simply recognizing my eventual enrollment at the Academy as an immutable fact of life, and accepting it without comment." [40]

Ambivalent about his presence there, [39] McCain chose not to conform to the Academy's rules and some of its traditions. [41] Each year he was given over a hundred demerits â ^ earning him membership in the "Century Club" [19] â ^ for offenses such as shoes not being shined, formation faults, room in disorder, and talking out of place. [39] His father came to the Academy to reprimand him on his behavior a number of times. [31] He hated "plebe year", the trial by ordeal and hazing of entering midshipmen that would eventually weed out one quarter of the class. [42] He did not take well to those of higher rank arbitrarily wielding power over him â ^ "It was bullshit, and I resented the hell out of it" [39] â ^ and occasionally intervened when he saw it being done to others. [19][31] At 5-foot 7Â inches [12] and 127Â pounds [43] (1.70Â m and 58Â kg), he competed as a lightweight boxer for three years, where he lacked skills but was fearless and "didn't have a reverse gear". [43] In his final year, he managed the battalion boxing team to a brigade championship. [44]

Possessed of a strong intelligence, [45] McCain did well in a few subjects that interested him, such as English literature, history, and government. [19][39] There was a fixed Bachelor of Science curriculum taken by all midshipmen; [46][47][48] McCain's classmates were impressed by his cramming abilities on mathematics, science, and engineering courses [49] and thought his low grades were by inclination and not ability, [19] while McCain would later acknowledge that those courses were a struggle for him. [50] His class rank was further lowered by poor grades for conduct and leadership, which reflected his sloppy appearance, rebellious attitude, and poor relations with his company officer. [49][51] Despite his low standing, he was popular and a leader among his fellow midshipmen, in what biographer Robert Timberg called a "manic, intuitive, highly idiosyncratic way". [39] Good at attracting women, [19] he was famed for organizing off-Yard activities with a group who called themselves "the Bad Bunch"; [31] one classmate said that "being on liberty with John McCain was like being in a train wreck." [39] Other midshipmen were annoyed by his behavior. [31] A June 1957 training cruise aboard the destroyer USSÂ Hunt [52] found McCain showing good skills at the conn, [53] and the destination stop in Rio de Janeiro led to a dream-like romance with Brazilian fashion model and ballerina Maria Gracinda that persisted through a Christmastime reunion. [54][55]

McCain graduated from the Naval Academy in June 1958; he was fifth from the bottom in class rank, 894th out of 899. [39] Despite his difficulties, McCain later wrote that he never defamed the more compelling traditions of the Academy â ^ courage, resilience, honor, and sacrifice for one's country â ^ and he never

wavered in his desire to show his father and family that he was of the same mettle as his naval forebears.[56] Indeed, Slew and Jack McCain had not had sterling records at the Academy themselves, finishing in the bottom third and bottom twentieth respectively.[57] McCain realized later that the Academy had taught him that "to sustain my self-respect for a lifetime it would be necessary for me to have the honor of serving something greater than my self-interest", a lesson that he would need to carry him through a "desperate and uncertain" time a decade later.[56]

[edit] Military career

[edit] Naval training, early assignments, first marriage, and children

McCain was commissioned an ensign.[58] He spent two years as a naval aviator in training, first at Naval Air Station Pensacola in Florida through September 1959, and then at Naval Air Station Corpus Christi in Texas, during which time he was promoted to lieutenant, junior grade.[58][59] He earned a reputation as a party man, as he drove a Corvette, dated an exotic dancer named "Marie the Flame of Florida", spent all his free time on the beach or in a Bachelor Officer Quarters room turned bar and friendly gambling den, and, as he later said, "generally misused my good health and youth".[27][60] He began as a sub-par flier: he had limited patience for studying aviation manuals, and spent study time reading history books instead.[31][60] He was not assigned to the elite units flying fighter aircraft, and instead became a pilot of attack aircraft.[31] During a March 1960 practice run in Texas, he lost track of his altitude and speed, and his single-seat, single-piston-engine AD-6 Skyraider crashed into Corpus Christi Bay and sank to the bottom.[61] Although momentarily knocked unconscious by the impact, he squeezed out of the cockpit and swam ten feet to the surface, escaping without major injuries.[59][61] He graduated from flight school at Corpus Christi[59] in May 1960.[58] He joined squadron VA-42 at Naval Air Station Oceana in Virginia for five months of further training on the Skyraider.[58]

Starting in November 1960, McCain flew Skyraiders with the VA-65 "World Famous Fighting Tigers" squadron[58][62] on the aircraft carriers USSÂ Intrepid and USSÂ Enterprise.[63] The carriers were based at Naval Station Norfolk[62] and cruised in the Caribbean and in several deployments to the Mediterranean.[60] His aviation skills improved,[60][61] but around December 1961 he collided with power lines while recklessly flying too low over southern Spain.[61] The area suffered a power outage, but McCain was able to return his damaged Skyraider to Intrepid.[61]

On board for Enterprise's maiden voyage in January 1962, McCain gained visibility with the captain and shipboard publicity that fellow sailors and aviators attributed to his famous last name.[61] McCain was made a lieutenant in June 1962,[58] and was on alert duty on Enterprise when it helped enforce the naval quarantine of Cuba during the October 1962 Cuban Missile Crisis.[64] In November 1963, he was rotated back to shore duty, serving nine months on the staff of the Naval Air Basic Training Command at Pensacola.[58][63] In September 1964, he became a flight instructor with the VT-7 training squadron at Naval Air Station Meridian in Mississippi,[58][65] where McCain Field had been named for his grandfather.[66]

During the 1964 stint at Pensacola, McCain began a relationship with Carol Shepp, a successful swimwear and runway model[67][68] originally from Philadelphia, Pennsylvania.[59][60] They had known each other at the Naval Academy and she had married and then divorced one of his classmates.[59][63] McCain told her he wanted to do something important with his life, so he would be recorded in history.[69] On July 3, 1965, McCain married Shepp in Philadelphia.[70] She already had two children, Douglas and Andrew, born in 1959 and 1962 respectively;[71] he adopted them in 1966.[72] Carol and he then had a daughter named Sidney in September 1966.[73]

In July 1965, McCain appeared as a contestant on the quiz show Jeopardy! (during the Fleming era), winning one game and losing the next.[74][75]

In November 1965, he had his third accident when apparent engine failure in his T-2 Buckeye trainer jet over the Eastern Shore of Virginia led to his

ejecting safely before his plane crashed.[61] While at Meridian, McCain requested a combat assignment.[76] In October 1966, he was slated for upcoming Vietnam War duty, and so reported to the VA-44 Replacement Air Group squadron at Naval Air Station Cecil Field in Florida for training on the A-4 Skyhawk, a single-seat jet attack aircraft.[58][76][77] There McCain was seen as a good pilot, albeit one who tended to "push the envelope" in his flying.[61] Promoted to lieutenant commander in January 1967,[58] McCain joined the aircraft carrier USSÂ Forrestal by May 1967,[58] flying Skyhawks with the VA-46 "Clansmen" squadron.[78]Forrestal conducted training exercises in the Atlantic throughout the spring, then set sail for the Pacific in June.[79] By this time, Jack McCain had risen in the ranks, making rear admiral in 1958 and vice admiral in 1963;[80] in May 1967, he was promoted to four-star admiral, and became Commander-in-Chief, U.S. Naval Forces, Europe, stationed in London.[5]

[edit] Vietnam operations

On July 25, 1967, Forrestal reached Yankee Station in the Gulf of Tonkin[79] and joined Operation Rolling Thunder, the 1965â ^1968 air interdiction and strategic bombing campaign against North Vietnam.[70][81] The alpha strikes flown from Forrestal were against specific, pre-selected targets such as arms depots, factories, and bridges.[82] They were quite dangerous, due to the strength of the North Vietnamese air defenses, which used Soviet-designed and -supplied surface-to-air missiles, anti-aircraft artillery, and MiG jet interceptors.[82] McCain's first five attack missions over North Vietnam went without incident,[83] and while still unconcerned with minor Navy regulations, McCain had garnered the reputation of a serious aviator.[64] McCain and his fellow pilots were frustrated by the micromanagement of Rolling Thunder from Washington;[82] he later wrote, "The target list was so restricted that we had to go back and hit the same targets over and over again... Most of our pilots flying the missions believed that our targets were virtually worthless. In all candor, we thought our civilian commanders were complete idiots who didn't have the least notion of what it took to win the war." [81]

McCain was almost killed on board Forrestal on July 29, 1967. While the air wing was preparing to launch attacks, a Zuni rocket from an F-4 Phantom accidentally fired across the carrier's deck.[84] The rocket struck either McCain's A-4E Skyhawk or one near it.[79] The impact ruptured the Skyhawk's fuel tank, which ignited the fuel and knocked two bombs loose.[85] McCain later said, "I thought my aircraft exploded. Flames were everywhere." [79] McCain escaped from his jet by climbing out the cockpit, working himself to the nose of the jet, and jumping off its refueling probe onto the burning deck.[85] His flight suit caught on fire as he rolled through the flames, but he was able to put it out.[85] He went to help another pilot trying to escape the fire when the first bomb exploded; McCain was thrown backwards ten feet (three meters)[86] and suffered minor wounds when struck in the legs and chest by fragments.[61][79][87] McCain helped crewmen throw unexploded bombs overboard off the hangar deck elevator, then went to Forrestal's ready room and with other pilots watched the ensuing fire and the fire-fighting efforts on the room's closed-circuit television.[88] The fire killed 134Â sailors, injured scores of others, destroyed at least 20Â aircraft, and took 24Â hours to control.[79][89][90] In Saigon a day after the conflagration, McCain praised the heroism of enlisted men who gave their lives trying to save the pilots on deck,[86] and told New York Times reporter R. W. Apple, Jr., "It's a difficult thing to say. But now that I've seen what the bombs and the napalm did to the people on our ship, I'm not so sure that I want to drop any more of that stuff on North Vietnam." [91] But such a change of course was unlikely; as McCain added, "I always wanted to be in the Navy. I was born into it and I never really considered another profession. But I always had trouble with the regimentation." [91]

As Forrestal headed to port for repairs, McCain volunteered to join the undermanned VA-163 "Saints" squadron on board the USSÂ Oriskany.[92] This carrier had earlier endured its own deck fire disaster[93] and its squadrons had suffered some of the heaviest losses during Rolling Thunder. The Saints had

a reputation for aggressive, daring attacks, but paid the price:[94] in 1967, one-third of their pilots were killed or captured, and all of their original fifteen A-4s had been destroyed.[94] After taking some leave in Europe and back home in Orange Park, Florida,[95] McCain joined Oriskany on September 30, 1967,[94] for a tour he expected would finish early the next summer.[96] He volunteered to fly the squadron's most dangerous missions right away, rather than work his way up to them.[97] During October 1967, the pilots operated in constant twelve-hour on, twelve-hour off shifts.[98] McCain would be awarded a Navy Commendation Medal for leading his air section through heavy enemy fire during an October 18 raid on the Lac Trai shipyard in Haiphong.[99] On October 25, McCain successfully attacked the Phuc Yen airfield north of Hanoi through a barrage of anti-aircraft artillery and surface-to-air missile fire, which would garner him the Bronze Star.[99] Air defenses around Hanoi were then the strongest they would be during the entire war.[100]

[edit] Prisoner of war

[edit] Arrival

On October 26, 1967, McCain was flying his twenty-third mission, part of a twenty-plane strike force against the Yen Phu thermal power plant in central Hanoi[101][102] that previously had almost always been off-limits to U.S. raids due to the possibility of collateral damage.[100] Arriving just before noon, McCain dove from 9,000 to 4,000 feet on his approach;[103] as he neared the target, warning systems in McCain's A-4E Skyhawk alerted him that he was being tracked by enemy fire-control radar.[104] Like other U.S. pilots, he would not consider breaking off a bombing run,[61] and he held his dive until he released his bombs at about 3,500 feet (1,000 m).[105] As he started to pull up, the Skyhawk's wing was blown off by a Soviet-made SA-2 anti-aircraft missile fired by the North Vietnamese Air Defense Command's 61st Battalion,[100][103] commanded by Captain Nguyen Lan[103] and with fire control officer Lieutenant Nguyen Xuan Dai.[100][103] (McCain was later awarded the Distinguished Flying Cross for this day,[99] while Nguyen Xuan Dai was awarded the title Hero of the People's Armed Forces.[100] Decades later, Soviet Army Lieutenant Yuri Trushechkin claimed that he had been the missile guidance officer who had shot McCain down.[106][107] In any case, the raid was a failure, as the power plant was not damaged and three of the Navy planes were shot down.[103])

McCain's plane went into a vertical inverted spin.[109] Bailing out upside down at high speed,[110] the force of the ejection fractured McCain's right arm in three places, his left arm, and his right leg at the knee, and knocked him unconscious.[110][111] McCain nearly drowned after parachuting into Tr c B  ch Lake in Hanoi; the weight of his equipment was pulling him down, and as he regained consciousness, he could not use his arms.[104] Eventually, he was able to inflate his life vest using his teeth.[104] Several Vietnamese, possibly led by Department of Industry clerk Mai Van On, pulled him ashore.[112] A mob gathered around, spat on him, kicked him, and stripped him of his clothes; his left shoulder was crushed with the butt of a rifle and he was bayoneted in his left foot and abdominal area.[104][110][111] He was then transported to Hanoi's main Hoa Lo Prison, nicknamed the "Hanoi Hilton" by American POWs.[113]

McCain reached Hoa Lo in as bad a physical condition as any prisoner during the war.[113] His captors refused to give him medical care unless he gave them military information; they beat and interrogated him, but McCain only offered his name, rank, serial number, and date of birth[114][115] (the only information he was required to provide under the Geneva Conventions and permitted to give under the U.S. Code of Conduct).[103] Soon thinking he was near death, McCain said he would give them more information if taken to the hospital,[114] hoping he could then put his interrogators off once he was treated.[116] A prison doctor came and said it was too late, as McCain was about to die anyway.[114] Only when the North Vietnamese discovered that his father was a top admiral did they give him medical care,[114] calling him "the crown prince".[113] Two days after McCain's plane went down, that event and his status as a POW made the front pages of The New York Times[91] and The Washington Post.[117] Interrogation and beatings resumed in the hospital;

McCain gave the North Vietnamese his ship's name, squadron's name, and the attack's intended target.[118] This information, along with personal details of McCain's life and purported statements by McCain about the war's progress, would appear over the next two weeks in the North Vietnamese official newspaper *Nhã»n Dã»n*[103] as well as in dispatches from outlets such as the Cuban news agency Prensa Latina.[119] Disclosing the military information was in violation of the Code of Conduct, which McCain later wrote he regretted, although he saw the information as being of no practical use to the North Vietnamese.[120] Further coerced to give future targets, he named cities that had already been bombed, and responding to demands for the names of his squadron's members, he supplied instead the names of the Green Bay Packers' offensive line.[118][121]

McCain spent six weeks in the hospital,[101] receiving marginal care in a dirty, wet environment.[122] A prolonged attempt to set the fractures on his right arm, done without anesthetic, was unsuccessful;[123] he received an operation on his broken leg but no treatment for his broken left arm.[124] He was temporarily taken to a clean room and interviewed by a French journalist, François Chalais, whose report was carried on the French television program *Panorama* in January 1968[125] and later in the U.S. on the CBS Evening News.[126] The film footage of McCain lying in the bed, in a cast, smoking cigarettes and speaking haltingly,[127] would become the most well-known images of McCain's imprisonment.[125] McCain was observed by a variety of North Vietnamese, including renowned Vietnamese writer Nguyễn Tuân and Defense Minister and Army commander-in-chief General Võ Nguyên Giáp.[103][128] Many of the North Vietnamese observers assumed that McCain must be part of America's political-military-economic elite.[129] Now having lost fifty pounds (twenty-three kilograms), in a chest cast, covered in grime and eyes full of fever, and with his hair turned white,[101] in early December 1967 McCain was sent to a prisoner-of-war camp on the outskirts of Hanoi nicknamed "the Plantation".[103][130] He was placed in a cell with George "Bud" Day, a badly injured and tortured Air Force pilot (later awarded the Medal of Honor) and Norris Overly, another Air Force pilot; they did not expect McCain to live another week.[131][132] Overly, and subsequently Day, nursed McCain and kept him alive;[132] Day later remembered that McCain had "a fantastic will to live".[133]

[edit] Solitary

In March 1968, McCain was put into solitary confinement, where he remained for two years.[134] Unknown to the POWs, in April 1968, Jack McCain was named Commander-in-Chief, Pacific Command (CINCPAC) effective in July, stationed in Honolulu and commander of all U.S. forces in the Vietnam theater.[135][136] In mid-June, Major Bai, commander of the North Vietnamese prison camp system,[137] offered McCain a chance to return home early.[135] The North Vietnamese wanted to score a worldwide propaganda coup by appearing merciful,[133] and also wanted to show other POWs that members of the elite like McCain were willing to be treated preferentially.[135] McCain turned down the offer of release, due to the POWs' "first in, first out" interpretation of the U.S. Code of Conduct:[138] he would only accept the offer if every man captured before him was released as well.[101][139] McCain's refusal to be released was remarked upon by North Vietnamese senior negotiator Lê Đức Thọ to U.S. envoy Averell Harriman, during the ongoing Paris Peace Talks.[140] Enraged by his declining of the offer, Bai and his assistant told McCain that things would get very bad for him.[139]

In late August 1968, a program of vigorous torture methods began on McCain.[141] The North Vietnamese used rope bindings to put him into prolonged, painful positions and severely beat him every two hours, all while he was suffering from dysentery.[141] His right leg was reinjured, his ribs were cracked, some teeth were broken at the gumline, and his left arm was re-fractured.[33][141] Lying in his own waste, his spirit was broken;[141] the beginnings of a suicide attempt were stopped by guards.[101] After four days of this, McCain signed and taped[142] an anti-American propaganda "confession" that said, in part, "I am a black criminal and I have performed the deeds of an

air pirate. I almost died, and the Vietnamese people saved my life, thanks to the doctors." [101][141] He used stilted Communist jargon and ungrammatical language to signal that the statement was forced. [121] McCain was haunted then and since with the belief that he had dishonored his country, his family, his comrades and himself by his statement, [143][144] but as he later wrote, "I had learned what we all learned over there: Every man has his breaking point. I had reached mine." [109] Two weeks later his captors tried to force him to sign a second statement; his will to resist restored, he refused. [141] He sometimes received two to three beatings per week because of his continued resistance; [145] the sustained mistreatment went on for over a year. [133] His refusals to cooperate, laced with loud obscenities directed towards his guards, were often heard by other POWs. [132] His boxing experience from his Naval Academy days helped him withstand the battering, [43] and the North Vietnamese did not break him again. [141]

Other American POWs were similarly tortured and maltreated in order to extract "confessions" and propaganda statements. [146][147] Many, especially among those who had been captured earlier and imprisoned longer â ^ such as those in the "Alcatraz Gang" â ^ endured even worse treatment than McCain. [148] Under extreme duress, virtually all the POWs eventually yielded something to their captors. [146][149] There were momentary exceptions: on one occasion, a guard surreptitiously loosened McCain's painful rope bindings for a night; when, months later, the guard later saw McCain on Christmas Day, he stood next to McCain and silently drew a cross in the dirt with his foot. [150] In October 1968, McCain's isolation was partly relieved when Ernest C. Brace was placed in the cell next to him; [151] he taught Brace the tap code the prisoners used to communicate. [152] On Christmas Eve 1968, a church service for the POWs was staged for photographers and film cameras; McCain defied North Vietnamese instructions to be quiet, speaking out details of his treatment then shouting "Fu-u-u-ck you, you son of a bitch!" and giving the finger whenever a camera was pointed at him. [153] McCain refused to meet with various anti-Vietnam War peace groups coming to Hanoi, [154] such as those led by David Dellinger, Tom Hayden, and Rennie Davis, not wanting to give either them or the North Vietnamese a propaganda victory based on his connection to his father. [109] McCain was still badly hobbled by his injuries, earning the nickname "Crip" among the other POWs, [155][156] but despite his physical condition, continued beatings and isolation, he was one of the key players in the Plantation's resistance efforts. [157]

In May 1969, U.S. Secretary of Defense Melvin Laird began publicly questioning North Vietnamese treatment of U.S. prisoners. [158] On June 5, 1969, a United Press International report described a Radio Hanoi broadcast that denied any such mistreatment. [158] The broadcast used excerpts from McCain's forced "confession" of a year before, including a statement where he said he had bombed "cities, towns and villages" and had received "very good medical treatment" as a prisoner. [158][159] In late 1969, treatment of McCain and the other POWs suddenly improved. [160][161] North Vietnamese leader Ho Chi Minh had died the previous month, possibly causing a change in policy towards POWs. [160][160] Also, a badly beaten and weakened POW who had been released that summer disclosed to the world press the conditions to which they were being subjected, [109] and the National League of Families of American Prisoners and Missing in Southeast Asia, which included McCain's brother Joe, heightened awareness of the POWs' plight. [162] In December 1969, McCain was transferred back to the Hoa Lo "Hanoi Hilton"; [163] his solitary confinement ended in March 1970. [164] When the prisoners talked about what they wanted to do once they got out, McCain said he wanted to become President. [69] McCain consented to a January 1970 interview outside Hoa Lo with Spanish-born, Cuban psychologist Fernando Barral, that was published in the official Cuban newspaper Granma. [165] McCain talked about his life and expressed no remorse for his bombing North Vietnam, [165] and Barral proclaimed him "an insensitive individual without human depth." [166] The POWs issued an edict forbidding any further such interviews, [165] and despite pressure from his captors, McCain

subsequently refused to see any anti-war groups or journalists sympathetic to the North Vietnamese regime.[166]

[edit] Release

McCain and other prisoners were moved around to different camps at times, but conditions over the next several years were generally more tolerable than they had been before.[109] Unbeknownst to them, each year that Jack McCain was CINCPAC, he paid a Christmastime visit to the American troops in South Vietnam serving closest to the DMZ; he would stand alone and look north, to be as close to his son as he could get.[167] By 1971, some 30 to 50 percent of the POWs had become disillusioned about the war, both because of the apparent lack of military progress and what they heard of the growing anti-war movement in the U.S., and some of them were less reluctant to make propaganda statements for the North Vietnamese.[149] McCain was not among them: he participated in a defiant church service[168] and led an effort to write letters home that only portrayed the camp in a negative light,[169] and as a result spent much of the year in a camp reserved for "bad attitude" cases.[149]

Back at the "Hanoi Hilton" from November 1971 onward,[170] McCain and the other POWs cheered the resumed bombing of the north starting in April 1972, whose targets included the Hanoi area and whose daily orders were issued by Jack McCain, knowing his son was in the vicinity.[171] Jack McCain's tour as CINCPAC ended in September 1972,[172] despite his desire to have it extended so he could see the war to its conclusion.[167] The old-time POWs cheered even more during the intense "Christmas Bombing" campaign of December 1972,[171][173] when Hanoi was subjected for the first time to repeated B-52 Stratofortress raids. Although its explosions lit the night sky and shook the walls of the camp, scaring some of the newer POWs,[173] most saw it as a forceful measure to compel North Vietnam to finally come to terms.[171]

The Paris Peace Accords were signed on January 27, 1973, ending direct U.S. involvement in the war, but the Operation Homecoming arrangements for the 591 American POWs took longer.[174] McCain was finally released from captivity on March 14, 1973, being taken by bus to Gia Lam Airport, transferred to U.S. custody, and flown by C-141 to Clark Air Base in the Philippines.[175][176]

Altogether, McCain was held as a prisoner of war in North Vietnam for five and a half years, nearly five of them after his refusal to accept the out-of-sequence repatriation offer. His wartime injuries left him permanently incapable of raising either arm more than 80 degrees.[33][111] For his actions as a POW, McCain was awarded the Silver Star, the Legion of Merit, three more instances of the Bronze Star, another instance of the Navy Commendation Medal, and the Purple Heart.[58][99] He also gained an appreciation, from experiencing the mutual help and organized resistance of the POWs, that his earlier individualism needed to be tempered by a belief in causes greater than self-interest.[144]

[edit] Return to United States

Upon his return to the United States a few days later, McCain was reunited with his wife Carol and his family.[177] She had suffered her own crippling, near-death ordeal during his captivity, due to an automobile accident in December 1969 that left her hospitalized for six months and facing twenty-three operations and ongoing physical therapy.[178] Businessman and POW advocate Ross Perot had paid for her medical care.[69] By the time McCain saw her, she was four inches (ten centimeters) shorter, on crutches, and substantially heavier.[69] As a returned POW, McCain became a celebrity of sorts: The New York Times ran a story and front-page photo of him getting off the plane at Clark Air Base in the Philippines;[175][179] he authored a thirteen-page cover story describing his ordeal and his support for the Nixon administration's handling of the war in U.S. News & World Report;[109] he participated in parades in Orange Park and elsewhere and made personal appearances before groups, where he showed strong speaking skills;[177][180] he was given the key to the city of Jacksonville, Florida;[177] and a photograph of him on crutches shaking the hand of President Richard Nixon at a White House reception for returning POWs became iconic.[181][182] The McCains became frequent guests of

honor at dinners hosted by Governor of California Ronald Reagan and his wife Nancy Reagan,[183] and John McCain made a strong impression speaking at a large prayer breakfast hosted by the governor.[184] McCain had admired Ronald Reagan while in captivity and afterwards, believing him a man who saw honor in Vietnam service and a potential leader would not lead the nation into a war it was unwilling to win.[185]

McCain underwent three operations and other treatment for his injuries,[186] spending three months at the Naval Regional Medical Center in Jacksonville.[58][187] Psychological tests, given to all the returning POWs, showed that McCain had "adjusted exceptionally well to repatriation" and had "an ambitious, striving, successful pattern of adjustment".[188] McCain told examiners that he withstood his ordeal by having "Faith in country, United States Navy, family, and God".[189] Unlike many veterans, McCain did not experience flashbacks or nightmares of his Vietnam experience,[190] although due to the association with prison guards, the sound of keys rattling would cause him to "tense up".[111]

McCain was promoted to commander effective July 1973[58] and attended the National War College in Fort McNair in Washington, D.C. during the 1973â ^1974 academic year.[191][192] There he intensively studied the history of Vietnam and the French and American wars there,[193] and wrote "The Code of Conduct and the Vietnam Prisoners of War", a long paper on the Vietnam POW experience as a test of the U.S. Code of Conduct.[194] By the time he graduated,[195] he concluded that mistakes by American political and military leaders had doomed the war effort.[193] He accepted the right of the anti-war movement in the U.S. to have exercised their freedom to protest, and he adopted a live-and-let-live attitude towards those who had evaded the draft.[193] Nor did the vast changes in American social mores that had taken place during his absence bother him, as it did many other former POWs.[182] McCain returned to Saigon in November 1974;[196] he and a couple of other former POWs received the National Order of Vietnam, that country's highest honor.[190] He also spoke at the South Vietnamese war college, five months before Saigon fell.[196] McCain resolved not to become a "professional POW" but to move forward and rebuild his life.[193] Few thought McCain could fly again, but he was determined to try, and during this time he engaged in nine months of grueling, painful physical therapy, especially to get his knees to bend again.[69]

[edit] Commanding officer

McCain recuperated just enough to pass his flight physical and have his flight status reinstated.[69] In August 1974, he was assigned to the Replacement Air Group VA-174 "Hellrazors".[58] This was an A-7 Corsair II training squadron located at Naval Air Station Cecil Field in Jacksonville[197] and the largest aviation squadron in the Navy.[198] He became its executive officer in 1975,[198] and on July 1, 1976, he was made VA-174's commanding officer.[197][199] This last assignment was controversial, as he did not have the required experience of having commanded a smaller squadron first[196] (something that he now had too high a rank to do).[200] While some senior officers resented McCain's presence as favoritism due to his father, junior officers rallied to him and helped him qualify for A-7 carrier landings.[69]

As commanding officer, McCain relied upon a relatively unorthodox leadership style based upon the force of his personality.[201] He removed personnel he thought ineffective, and sought to improve morale and productivity by establishing an informal rapport with enlisted men.[69][199][201] Dealing with limited post-Vietnam defense budgets and parts shortages,[69][199] he was forceful in demanding that respect be given the female officers just beginning to arrive into the unit.[201] McCain's leadership abilities were credited with improving the unit's aircraft readiness; for the first time, all fifty of its aircraft were able to fly.[69][199] Although some operational metrics declined during the period,[198][201] the pilot safety improved to the point of having zero accidents.[198][199] The squadron was awarded its first-ever Meritorious Unit Commendation,[197] while McCain received a Meritorious Service Medal.[99] McCain later stated that being commanding officer of VA-174 was the most



rewarding assignment of his naval career.[202] When his stint ended in July 1977,[197] the change of command ceremony was attended by his father and the rest of his family, as well as some of his fellow POWs; speaker Admiral Isaac C. Kidd, Jr. said that John had joined Jack and Slew McCain in a place of honor in Navy tradition, a tribute that deeply moved McCain.[196]

During their time in Jacksonville, the McCains' marriage began to falter.[203] McCain had extramarital affairs;[203] he was seen with other women in social settings and developed a reputation among his colleagues for womanizing.[201][204] Some of McCain's activity with other women occurred when he was off-duty after routine flights to Marine Corps Air Station Yuma and Naval Air Facility El Centro.[203] McCain later said, "My marriage's collapse was attributable to my own selfishness and immaturity more than it was to Vietnam, and I cannot escape blame by pointing a finger at the war. The blame was entirely mine." [205] His wife Carol later stated that the failure was not due to her accident or Vietnam and that "I attribute [the breakup of our marriage] more to John turning 40 and wanting to be 25 again than I do to anything else." [206] John McCain's biographer, Robert Timberg, believes that "Vietnam did play a part, perhaps not the major part, but more than a walk-on." [206] According to John McCain, "I had changed, she had changed. People who have been apart that much change." [206]

[edit] Senate liaison, divorce, and second marriage

McCain had thought about entering politics since his return from Vietnam,[23] although 1964 had been the only time in his life he had ever voted.[23] In 1976, he briefly thought of running for the U.S. House of Representatives from Florida;[207] he had the support of some local figures in Jacksonville, but was convinced by other Republican Party leaders that he did not have sufficient political experience, funding, or popular support to defeat longtime Democratic incumbent Charles E. Bennett.[23][184][208] He did work so hard for Ronald Reagan's 1976 Republican primary campaign that his base commander reprimanded him for being too politically active for his naval position.[201]

As his tenure with VA-174 was ending, McCain was assigned to a low-profile desk job within the Naval Air Systems Command.[201][209] Chief of Naval Operations Admiral James L. Holloway III thought this assignment a waste of McCain's social talents,[209] and instead in July 1977 McCain was appointed to the Senate Liaison Office within the Navy's Office of Legislative Affairs[58] (an assignment Jack McCain had once held).[207] The office's role mostly consisted of providing constituent service and acting as a facilitator among legislators, the Department of Defense, and lobbyists.[209] McCain later said the liaison job represented "[my] real entry into the world of politics and the beginning of my second career as a public servant".[181] McCain's lively personality and knowledge of military matters made his post in the Russell Senate Office Building a popular gathering spot for senators and staff.[209] He also frequently escorted congressional delegations on overseas trips, where he arranged entertaining side escapades.[210] McCain was influenced by senators of both parties, and formed an especially strong bond with John Tower of Texas, the ranking member of the Senate Armed Services Committee.[210] During 1978 and 1979, McCain played a key behind-the-scenes role in gaining congressional funding for a new supercarrier against the wishes of the Carter administration and Navy Secretary W. Graham Claytor Jr.[69][211] In August 1979, McCain was promoted to captain,[58] and became Director of the Senate Liaison Office.[99][209] During McCain's time there, the Senate Liaison Office enjoyed one of its few periods of high influence.[208]

McCain and his wife Carol had been briefly separated soon after returning to Washington, but then reunited and remained married.[69] In April 1979,[69] while attending a military reception for senators in Hawaii, McCain met Cindy Lou Hensley, eighteen years his junior,[212] a teacher from Phoenix, Arizona and the daughter of James Willis Hensley, a wealthy Anheuser-Busch beer distributor, and Marguerite "Smitty" Hensley.[205] They began dating, travelling between Arizona and Washington to see each other,[213] and John McCain urged his wife Carol to accept a divorce.[69] The McCains stopped

cohabiting in January 1980,[214] and John McCain filed for divorce in February,[214] which Carol McCain accepted at that time.[69] After she did not respond to court summonses,[68] the uncontested divorce became official in Fort Walton Beach, Florida, on April 2, 1980.[214] McCain gave Carol a settlement that included full custody of their children, alimony, child support including college tuition, houses in Virginia and Florida, and lifelong financial support for her ongoing medical treatments resulting from the 1969 automobile accident;[67][68] they would remain on good terms.[205] McCain and Hensley were married on May 17, 1980[70] in Phoenix, with Senators William Cohen and Gary Hart as best man and groomsman.[205] McCain's children were upset with him and did not attend the wedding,[68][69] but after several years they reconciled with him and Cindy.[69][73] Carol McCain became a personal assistant to Nancy Reagan and later Director of the White House Visitors Office.[215] The Reagans were stunned by the divorce;[214] Nancy Reagan's relationship with John McCain turned cold for a while following it, but eventually the two renewed their friendship.[214][216] The same happened with most of McCain's other friends, who were eventually won over by the force of his personality and his frequent expressions of guilt over what had happened.[69]

Around the end of 1980, McCain decided to retire from the Navy.[217] He had not been given a major sea command,[218] and his physical condition had deteriorated, causing him to fail the flight physical required for any carrier command position[184][219] (in addition to his limited arm movement, certain weather would always cause him to walk with a limp).[111] McCain thought he might make rear admiral, but probably not vice admiral, and never become a four-star admiral as his grandfather and father had been.[218] McCain later wrote that he did not anguish over his decision,[217] although it pained his mother, who thought congressional careers paled in comparison to top naval ones.[184] He was excited by the idea of being a member of Congress[210] and was soon recruiting a campaign manager that Cohen knew, for a planned run at a House seat from Arizona.[69] In early 1981, Secretary of the Navy John F. Lehman, who did not want to see McCain leave the liaison post, told McCain that he was still on the path to be selected for one-star rear admiral.[184] McCain told Lehman that he was leaving the Navy[184] and that he could "do more good" in Congress.[210]

McCain retired with an effective date of April 1, 1981,[58] the rank of captain,[58] and a disability pension due to his wartime injuries.[220] For his service in the Senate liaison office, McCain was awarded a second instance of the Legion of Merit.[99] Jack McCain died on March 22, 1981.[221] On March 27, 1981, McCain attended his father's funeral at Arlington National Cemetery, wearing his uniform for the last time before signing his discharge papers, and later that day flew to Phoenix with his wife Cindy to begin his new life.[18][221]

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John McCain received the following medals and decorations:[58]

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^ a b Alexander, Man of the People, pp. 13â ^14.

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^ a b c Purdum, Todd S (February 2007). "Prisoner of Conscience". Vanity Fair. <http://www.vanityfair.com/politics/features/2007/02/mccain200702>. Retrieved 2008-01-19.

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^ McCain, Faith of My Fathers, p. 116. Used to support brief quotation of McCain self-assessment.

^ a b c d e f g h Timberg, The Nightingale's Song, pp. 31â ^35.

^ McCain, Faith of My Fathers, pp. 110â ^111. Used to support McCain state of mind and direct quotation. Timberg, An American Odyssey, p. 34, gives this formulation: "And so, ... John McCain journeyed to Annapolis, raised his right hand, and marched joylessly into his future."

^ McCain, Faith of My Fathers, pp. 120â ^124. "In this well-ordered and timeless

world, with its lofty aspirations and grim determination to make leaders and gentlemen of schoolboys, plebes who possessed minor eccentricities might be tolerated somewhat, but arrogant nonconformists encountered open hostility. Recognized as belonging in the latter category, I soon found myself in conflict with the Academy's authorities and traditions. Instead of beginning a crash course in self-improvement so that I could find a respectable place in the ranks, I reverted to form and embarked on a four-year course of insubordination and rebellion."

^ Timberg, *The Nightingale's Song*, pp. 24â ^29.

^ a b c Bailey, Holly (2007-05-14). "John McCain: 'I Learned How to Take Hard Blows'". *Newsweek*. <http://www.newsweek.com/id/34694>. Retrieved 2007-12-19.

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^ a b Timberg, *The Nightingale's Song*, pp. 41â ^42.

^ McCain, *Faith of My Fathers*, p. 134. Used to supply McCain's own assessment of his aptitude in those subjects.

^ McCain, *Faith of My Fathers*, pp. 130â ^131, 141â ^142.

^ "Hunt". *Dictionary of American Naval Fighting Ships*. 2005-04-18.

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^ McCain, *Faith of My Fathers*, pp. 135â ^138. Used to supply McCain self-assessment of cruise, not found in any other source.

^ Timberg, *The Nightingale's Song*, pp. 44â ^46. Timberg writes: "Even though he lived it, or something like it, McCain recounts his romance with Elena [not her real name, which was not publicly known until 2008] these days as if it were a dream. In some ways it was. But it wasn't just his dream. With minor variations, it was the dream of all but the most inert midshipmen. Duty, honor, country, sure, those things were importantÂ ... [but] the chance of someday being swept away and ravished by a beautiful woman in some exotic locale has always been an unspoken part of the deal.... McCain's fling with Elena, though rare, was not all that rare. Things like that happened often enough to keep that goofy dream alive."

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^ a b McCain, *Faith of My Fathers*, pp. 151â ^152. Used to support McCain overall perspectives and direct quotations on Naval Academy experience and value it gave him.

^ Timberg, *An American Odyssey*, pp. 18, 28.

^ a b c d e f g h i j k l m n o p q r s t "John McCain's Navy Records: Biographical Data" (PDF). United States Navy.

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^ a b c Feinberg, Barbara Silberdick (2000). John McCain: Serving His Country. Millbrook Press. ISBNÂ 0-7613-1974-3. pp. 16, 18.

^ a b Freeman, Gregory A. (2002). Sailors to the End: The Deadly Fire on the USS Forrestal and the Heroes Who Fought It. HarperCollins. ISBNÂ 0-06-093690-8. p. 25.

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^ a b c Hubbell, P.O.W., p. 363.

^ a b c d Hubbell, P.O.W., p. 364.

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^ Rochester and Kiley, Honor Bound, p. 361.

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^ Alexander, Man of the People, pp. 53â ^54.

^ a b c Coram, Robert (2007). American Patriot: The Life and Wars Of Colonel Bud Day. Little, Brown and Company. ISBNÂ 0-316-75847-7. pp. 186â ^189.

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^ a b c Hubbell, P.O.W., pp. 450â ^451.

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^ Timberg, An American Odyssey, p. 91. Bai was called "Cat" by the POWs, who assigned often derogatory nicknames to all of the prison officials and guards.

^ The Code of Conduct itself only forbade prisoners from accepting parole or special favors from the enemy. The POWs decided this meant that they could only accept release in the order they had been captured. They made an exception for those seriously sick or badly injured. One fellow prisoner told McCain he qualified under that exception, but after deliberation McCain refused nonetheless. See Timberg, An American Odyssey, p. 92.

^ a b Hubbell, P.O.W., p. 452.

^ Timberg, An American Odyssey, p. 209. Harriman's September 13, 1968 cable said: "At tea break Le Duc Tho mentioned that DRV had intended to release Admiral McCain's son as one of the three pilots freed recently, but he had refused."

^ a b c d e f g Hubbell, P.O.W., pp. 452â ^454.

^ McCain, Faith of My Fathers, p. 244. Used to indicate "confession" was

recorded in addition to being written, not made clear by other sources.

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^ Hubbell, *P.O.W.*, pp. 288â ^306.

^ a b c Hubbell, *P.O.W.*, pp. 548â ^549.

^ McCain, *Faith of My Fathers*, pp. 227â ^228. It is not clear from McCain's account in which year the cross episode took place. Fellow POW Orson Swindle vaguely recalls McCain telling it to him in 1971. See York, Byron (2008-08-18). "Fellow POW: I Remember McCain Telling the "Cross in the Dirt" Story". *National Review Online*.  
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^ Brace, *A Code to Keep*, pp. 170â ^171.

^ Timberg, *An American Odyssey*, pp. 98â ^99.

^ Brace, *A Code to Keep*, pp. 175, 179.

^ Rochester and Kiley, *Honor Bound*, p. 371.

^ Brace, *A Code to Keep*, p. 183.

^ Rochester and Kiley, *Honor Bound*, pp. 363â ^364, 371, 487.

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^ McCain, *Faith of My Fathers*, pp. 285â ^286. Used to confirm that this was McCain's August 1968 "confession", heavily edited; a U.S. military voice analysis verified that it was McCain's voice.

^ a b c Hubbell, *P.O.W.*, p. 519.

^ Rochester and Kiley, *Honor Bound*, pp. 489â ^491.

^ McCain, *Faith of My Fathers*, pp. 290â ^291. Used to illustrate McCain family role while he was a POW.

^ Brace, *A Code to Keep*, pp. 187â ^188.

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^ Timberg, An American Odyssey, p. 104.

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^ a b c Timberg, An American Odyssey, pp. 106â ^107.

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^ a b c d e f g Helman, Scott (2008-08-31). "Taking command â ^ The McCain way". The Boston Globe.  
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^ a b c Timberg, *The Nightingale's Song*, p. 239.

^ One VA-174 legal officer and her colleague approached the base chaplain about McCain's behavior. See "Taking command â ^ The McCain way". There were also widespread rumors at the time that some of the affairs were with women who were subordinates under his command, which McCain later flatly denied. See *The Nightingale's Song*, p. 239.

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