

= Franklin 's lost expedition =

Franklin 's lost expedition was a British voyage of Arctic exploration led by Captain Sir John Franklin that departed England in 1845 . A Royal Navy officer and experienced explorer , Franklin had served on three previous Arctic expeditions , the latter two as commanding officer . His fourth and last , undertaken when he was 59 , was meant to traverse the last unnavigated section of the Northwest Passage . After a few early fatalities , the two ships became icebound in Victoria Strait near King William Island in the Canadian Arctic . The entire expedition , 129 men including Franklin , was lost .

Pressed by Franklin 's wife , Jane , Lady Franklin , and others , the Admiralty launched a search for the missing expedition in 1848 . Prompted in part by Franklin 's fame and the Admiralty 's offer of a finder 's reward , many subsequent expeditions joined the hunt , which at one point in 1850 involved eleven British and two American ships . Several of these ships converged off the east coast of Beechey Island , where the first relics of the expedition were found , including the graves of three crewmen . In 1854 , explorer John Rae , while surveying near the Canadian Arctic coast southeast of King William Island , acquired relics of and stories about the Franklin party from the Inuit . A search led by Francis Leopold McClintock in 1859 discovered a note left on King William Island with details about the expedition 's fate . Searches continued through much of the 19th century . Finally , in 2014 , a Canadian search team located HMS Erebus west of O 'Reilly Island , in the eastern portion of Queen Maud Gulf , in the waters of the Arctic archipelago .

In 1981 , a team of scientists led by Owen Beattie , a professor of anthropology at the University of Alberta , began a series of scientific studies of the graves , bodies , and other physical evidence left by Franklin 's men on Beechey Island and King William Island . They concluded that the men whose graves had been found on Beechey Island most likely died of pneumonia and perhaps tuberculosis and that lead poisoning may have worsened their health , owing to badly soldered cans held in the ships ' food stores . However , it was later suggested that the source of this lead may not have been tinned food , but the distilled water systems fitted to the expedition 's ships . Cut marks on human bones found on King William Island were seen as signs of cannibalism . The combined evidence of all studies suggested that hypothermia , starvation , lead poisoning and disease including scurvy , along with general exposure to a hostile environment whilst lacking adequate clothing and nutrition , killed everyone on the expedition in the years following its last sighting by Europeans in 1845 .

The Victorian media portrayed Franklin as a hero despite the expedition 's failure and the reports of cannibalism . Songs were written about him , and statues of him in his home town , in London , and in Tasmania credit him with discovery of the Northwest Passage which was actually found by John Rae . Franklin 's lost expedition has been the subject of many artistic works , including songs , verse , short stories , and novels , as well as television documentaries .

= = Background = =

The search by Europeans for a northern shortcut by sea from Europe to Asia began with the voyages of Christopher Columbus in 1492 and continued through the mid @-@ 19th century with a long series of exploratory expeditions originating mainly in England . These voyages , when to any degree successful , added to the sum of European geographic knowledge about the Western Hemisphere , particularly North America , and as that knowledge grew larger , attention gradually turned toward the Arctic . Voyagers of the 16th and 17th centuries who made geographic discoveries about North America included Martin Frobisher , John Davis , Henry Hudson , and William Baffin . In 1670 , the incorporation of the Hudson 's Bay Company led to further exploration of the Canadian coasts and interior and of the Arctic seas . In the 18th century , explorers included James Knight , Christopher Middleton , Samuel Hearne , James Cook , Alexander MacKenzie , and George Vancouver . By 1800 , their discoveries showed conclusively that no Northwest Passage navigable by ships lay in the temperate latitudes between the Pacific and the Atlantic Oceans .

In 1804 , Sir John Barrow became Second Secretary of the Admiralty , a post he held until 1845 , and began a push by the Royal Navy to complete the Northwest Passage over the top of Canada

and to navigate toward the North Pole . Over the next four decades , explorers including John Ross , David Buchan , William Edward Parry , Frederick William Beechey , James Clark Ross , George Back , Peter Warren Dease , and Thomas Simpson made productive trips to the Canadian Arctic . Among these explorers was John Franklin , second @-@ in @-@ command of an expedition towards the North Pole in the ships Dorothea and Trent in 1818 and the leader of overland expeditions to and along the Arctic coast of Canada in 1819 ? 22 and 1825 ? 27 . By 1845 , the combined discoveries of all of these expeditions had reduced the relevant unknown parts of the Canadian Arctic to a quadrilateral area of about 181 @,@ 300 km² (70 @,@ 000 sq mi) . It was into this unknown area that Franklin was to sail , heading west through Lancaster Sound and then west and south as ice , land , and other obstacles might allow , to complete the Northwest Passage . The distance to be navigated was roughly 1 @,@ 670 kilometres (1 @,@ 040 mi) .

= = Preparations = =

= = = Command = = =

Barrow , who was 82 and nearing the end of his career , deliberated about who should command the expedition to complete the Northwest Passage and perhaps also find what Barrow believed to be an ice @-@ free Open Polar Sea around the North Pole . Parry , his first choice , was tired of the Arctic and politely declined . His second choice , James Clark Ross , also declined because he had promised his new wife he was done with the Arctic . Barrow 's third choice , James Fitzjames , was rejected by the Admiralty on account of his youth . Barrow considered George Back but thought he was too argumentative . Francis Crozier , another possibility , was of humble birth and Irish , which counted against him . Reluctantly , Barrow settled on the 59 @-@ year @-@ old Franklin . The expedition was to consist of two ships , HMS Erebus and HMS Terror , each of which had seen Antarctic service with James Clark Ross . Fitzjames was given command of Erebus , and Crozier , who had commanded Terror during the Antarctica expedition with Ross in 1841 ? 44 , was appointed the executive officer and commander of Terror . Franklin received his expedition command on 7 February 1845 , and his official instructions on 5 May 1845 .

= = = Ships , provisions and crew = = =

Erebus at 378 tons (bm) and Terror at 331 tons (bm) were sturdily built and were outfitted with recent inventions . Steam engines were fitted in Erebus and Terror to drive a single screw in each vessel ; these engines were former locomotives from the London & Croydon Railway . They enabled the ships to make 7 @.@ 4 km / h (4 kn) on their own power . Other advanced technology included bows reinforced with heavy beams and plates of iron , an internal steam heating device for the comfort of the crew , screw propellers and iron rudders that could be withdrawn into iron wells to protect them from damage , ships ' libraries of more than 1 @,@ 000 books , and three years ' worth of conventionally preserved or tinned preserved food supplies . The latter was supplied from a provisioner , Stephen Goldner , who was awarded the contract on 1 April 1845 , a mere seven weeks before Franklin set sail . Goldner worked frantically on the large and hasty order of 8 @,@ 000 tins . The speed required affected quality control of a proportion of the tins manufactured , which were later found to have lead soldering that was " thick and sloppily done , and dripped like melted candle wax down the inside surface " .

Most of the crew were Englishmen , many of them from the North Country , with a small number of Irishmen and Scotsmen . Aside from Franklin , Crozier , and Lieutenant Graham Gore , the only other officers who were Arctic veterans were an assistant surgeon and the two ice @-@ masters .

= = = Australian connections = = =

Apart from Sir John Franklin himself , who was a former Lieutenant @-@ Governor of Van Diemen

's Land , the crew included two people with close family connections to explorers of Australia who also died tragically . Cmdr Henry Le Vesconte was the first cousin of William John Wills , the co @-@ leader of the 1861 Burke and Wills expedition , the first to cross the Australian mainland from south to north ; both Burke and Wills perished on the return journey . William Gibson , a steward on HMS Terror , was the elder brother of Alfred Gibson , who disappeared on an 1874 expedition led by Ernest Giles to cross the deserts of Western Australia from east to west , and was honoured in the naming of the Gibson Desert . From Giles ' journal entry of 21 April 1873 :

I remarked to Gibson as we rode along that this was the anniversary of Burke 's and Wills 's return to their depot at Coopers ' Creek and then recited to him , as he did not appear to know anything whatever about it , the hardships they endured , their desparate struggles for existence and death there ; and casually remarked that Mr Wills had a brother [sic] who also lost his life in the field of discovery , as he went out with Sir John Franklin in 1845 . Gibson then remarked , " Oh , I had a brother who died with Franklin at the North Pole and my father had a great deal of trouble getting his pay from Government " .

= = Loss = =

The expedition set sail from Greenhithe , England , on the morning of 19 May 1845 , with a crew of 24 officers and 110 men . The ships stopped briefly in Stromness Harbour in the Orkney Islands in northern Scotland , and from there they sailed to Greenland with HMS Rattler and a transport ship , Barretto Junior .

At the Whalefish Islands in Disko Bay , on the west coast of Greenland , 10 oxen carried by the transport ship were slaughtered for fresh meat ; supplies were transferred to Erebus and Terror , and crew members wrote their last letters home . Letters written on board told how Franklin banned swearing and drunkenness . Before the expedition 's final departure , five men were discharged and sent home on Rattler and Barretto Junior , reducing the ships ' final crew size to 129 . The expedition was last seen by Europeans in late July 1845 , when Captain Dannett of the whaler Prince of Wales and Captain Robert Martin of the whaler Enterprise encountered Terror and Erebus in Baffin Bay , waiting for good conditions to cross to Lancaster Sound .

Over the next 150 years , other expeditions , explorers , and scientists would piece together what happened next . Franklin 's men wintered in 1845 ? 46 on Beechey Island , where three crew members died and were buried . Terror and Erebus became trapped in ice off King William Island in September 1846 and never sailed again . According to a note dated 25 April 1848 , and left on the island by Fitzjames and Crozier , Franklin had died on 11 June 1847 ; the crew had wintered on King William Island in 1846 ? 47 and 1847 ? 48 , and the remaining crew had planned to begin walking on 26 April 1848 toward the Back River on the Canadian mainland . Nine officers and fifteen men had already died ; the rest would die along the way , most on the island and another 30 or 40 on the northern coast of the mainland , hundreds of miles from the nearest outpost of Western civilization .

= = Early searches = =

After two years had passed with no word from Franklin , public concern grew and Lady Franklin ? as well as members of Parliament and British newspapers ? urged the Admiralty to send a search party . In response , the Admiralty developed a three @-@ pronged plan put into effect in the spring of 1848 that sent an overland rescue party , led by Sir John Richardson and John Rae , down the MacKenzie River to the Canadian Arctic coast . Two expeditions by sea were also launched , one entering the Canadian Arctic archipelago through Lancaster Sound , and the other entering from the Pacific side . In addition , the Admiralty offered a reward of £ 20 @,@ 000 (£ 1 @,@ 811 @,@ 000 as of 2016) " to any Party or Parties , of any country , who shall render assistance to the crews of the Discovery Ships under the command of Sir John Franklin " . After the three @-@ pronged effort failed , British national concern and interest in the Arctic increased until " finding Franklin became nothing less than a crusade . " Ballads such as " Lady Franklin 's Lament " , commemorating Lady

Franklin's search for her lost husband, became popular.

Many joined the search. In 1850, 11 British and two American ships cruised the Canadian Arctic, including Breadalbane, and her sister ship HMS Phoenix. Several converged off the east coast of Beechey Island, where the first relics of the expedition were found, including remnants of a winter camp from 1845-46 and the graves of John Torrington, John Hartnell, and William Braine. No messages from the Franklin expedition were found at this site. In the spring of 1851, passengers and crew aboard several ships observed a huge iceberg off Newfoundland which bore two vessels, one upright and one on its beam ends. The ships were not examined closely. It was suggested that the ships could have been Erebus and Terror, though it is more likely that they were abandoned whaling ships.

In 1852, Edward Belcher was given command of the government Arctic expedition in search of Sir John Franklin. This was unsuccessful; Belcher's inability to render himself popular with his subordinates was peculiarly unfortunate in an Arctic voyage, and he was not wholly suited to command vessels among ice. Four of the five ships (HMS Resolute, Pioneer, Assistance and Intrepid) were abandoned in pack ice, for which Belcher was court-martialed but acquitted. One of the ships, HMS Resolute, was later recovered intact by an American whaler. Timbers from the ship were later used to manufacture three desks, one of which, the Resolute desk, was presented by Queen Victoria to the U.S. President Rutherford B. Hayes; it has often been chosen by presidents for use in the Oval Office in the White House.

= = Overland searches = =

In 1854, John Rae, while surveying the Boothia Peninsula for the Hudson's Bay Company (HBC), discovered further evidence of the lost men's fate. Rae met an Inuk near Pelly Bay (now Kugaaruk, Nunavut) on 21 April 1854, who told him of a party of 35 to 40 white men who had died of starvation near the mouth of the Back River. Other Inuit confirmed this story, which included reports of cannibalism among the dying sailors. The Inuit showed Rae many objects that were identified as having belonged to Franklin and his men. In particular, Rae brought from the Pelly Bay Inuit several silver forks and spoons later identified as belonging to Fitzjames, Crozier, Franklin, and Robert Osmer Sargent, a shipmate aboard Erebus. Rae's report was sent to the Admiralty, which in October 1854 urged the HBC to send an expedition down the Back River to search for other signs of Franklin and his men.

Next were Chief Factor James Anderson and HBC employee James Stewart, who travelled north by canoe to the mouth of the Back River. In July 1855, a band of Inuit told them of a group of qallunaat (Inuktitut for "whites") who had starved to death along the coast. In August, Anderson and Stewart found a piece of wood inscribed with "Erebus" and another that said "Mr. Stanley" (surgeon aboard Erebus) on Montreal Island in Chantrey Inlet, where the Back River meets the sea.

Despite the findings of Rae and Anderson, the Admiralty did not plan another search of its own. Britain officially labelled the crew deceased in service on 31 March 1854. Lady Franklin, failing to convince the government to fund another search, personally commissioned one more expedition under Francis Leopold McClintock. The expedition ship, the steam schooner Fox, bought via public subscription, sailed from Aberdeen on 2 July 1857.

In April 1859, sledge parties set out from Fox to search on King William Island. On 5 May, the party led by Royal Navy Lieutenant William Hobson found a document in a cairn left by Crozier and Fitzjames. It contained two messages. The first, dated 28 May 1847, said that Erebus and Terror had wintered in the ice off the northwest coast of King William Island and had wintered earlier at Beechey Island after circumnavigating Cornwallis Island. "Sir John Franklin commanding the Expedition. All well", the message said. The second message, written in the margins of that same sheet of paper, was much more ominous. Dated 25 April 1848, it reported that Erebus and Terror had been trapped in the ice for a year and a half and that the crew had abandoned the ships on 22 April. Twenty-four officers and crew had died, including Franklin on 11 June 1847, just two weeks after the date of the first note. Crozier was commanding the expedition, and the 105

survivors planned to start out the next day , heading south towards the Back River . This note contains significant errors ; most notably the date of the expedition 's winter camp at Beechy Island is incorrectly given as 1846 ? 47 rather than 1845 ? 46 .

The McClintock expedition also found a human skeleton on the southern coast of King William Island . Still clothed , it was searched , and some papers were found , including a seaman 's certificate for Chief Petty Officer Henry Peglar (b . 1808) , Captain of the Foretop , HMS Terror . However , since the uniform was that of a ship 's steward , it is more likely that the body was that of Thomas Armitage , gun @-@ room steward on HMS Terror and a shipmate of Peglar , whose papers he carried . At another site on the western extreme of the island , Hobson discovered a lifeboat containing two skeletons and relics from the Franklin expedition . In the boat was a large amount of abandoned equipment , including boots , silk handkerchiefs , scented soap , sponges , slippers , hair combs , and many books , among them a copy of The Vicar of Wakefield . McClintock also took testimony from the Inuit about the expedition 's disastrous end .

Two expeditions between 1860 and 1869 by Charles Francis Hall , who lived among the Inuit near Frobisher Bay on Baffin Island and later at Repulse Bay on the Canadian mainland , found camps , graves , and relics on the southern coast of King William Island , but none of the Franklin expedition survivors he believed would be found among the Inuit . Though he concluded that all of the Franklin crew were dead , he believed that the official expedition records would yet be found under a stone cairn . With the assistance of his guides Ebierbing and Tookoolito , Hall gathered hundreds of pages of Inuit testimony . Among these materials are accounts of visits to Franklin 's ships , and an encounter with a party of white men on the southern coast of King William Island near Washington Bay . In the 1990s , this testimony was extensively researched by David C. Woodman , and was the basis of two books , Unravelling the Franklin Mystery (1992) and Strangers Among Us (1995) , in which he reconstructs the final months of the expedition .

The hope of finding these lost papers led Lieutenant Frederick Schwatka of the U.S. Army to organise an expedition to the island between 1878 and 1880 . Traveling to Hudson Bay on the schooner Eothen , Schwatka , assembling a team that included Inuit who had assisted Hall , continued north by foot and dog sled , interviewing Inuit , visiting known or likely sites of Franklin expedition remains , and wintering on King William Island . Though Schwatka failed to find the hoped @-@ for papers , in a speech at a dinner given in his honour by the American Geographical Society in 1880 , he noted that his expedition had made " the longest sledge journey ever made both in regard to time and distance " of 11 months and 4 days and 4 @,@ 360 kilometres (2 @,@ 710 mi) , that it was the first Arctic expedition on which the whites relied entirely on the same diet as the Inuit , and that it established the loss of the Franklin records " beyond all reasonable doubt " . The Schwatka expedition found no remnants of the Franklin expedition south of a place known as Starvation Cove on the Adelaide Peninsula . This was well north of Crozier 's stated goal , the Back River , and several hundred miles away from the nearest Western outpost , on the Great Slave Lake . Woodman wrote of Inuit reports that between 1852 and 1858 Crozier and one other expedition member were seen in the Baker Lake area , about 400 kilometres (250 mi) to the south , where in 1948 Farley Mowat found " a very ancient cairn , not of normal Eskimo construction " inside which were shreds of a hardwood box with dovetail joints .

= = Contemporary search expeditions = =

1848 :

East : James Clark Ross , (HMS Enterprise , HMS Investigator) only to Somerset Island because of ice .

Center : Rae ? Richardson Arctic Expedition Mackenzie River and along the coast .

West : HMS Plover , HMS Herald to Bering Strait ; William Pullen reaches Mackenzie by whaleboat .

1850 :

West : Richard Collinson (HMS Enterprise) , Robert McClure (HMS Investigator) to Bering Strait . McClure frozen in at Banks Island , when rescued becomes first man to cross the northwest

passage . Collinson reaches Coronation Gulf , furthest east of any ship .

East : Horatio Austin (HMS Resolute) , Erasmus Ommanney (HMS Assistance) , plus 2 steam tenders , Pioneer and Intrepid (cpt John Bertie Cator 1850) . Ommanney finds Franklin 's Beechey Island camp . Austin 's four and the below ships gather around Beechey Island , are frozen in and in spring send out sledge expeditions in all directions . They leave the Arctic before winter in 1851 .

East : Charles Forsyth (Prince Albert) financed by Lady Franklin ; sledge on Somerset Island to Fury Beach .

East : William Penny (Lady Franklin and Sophia)

East : John Ross (schooner Felix)

East : Edwin de Haven (USS Rescue , USS Advance) = First Grinnell Expedition

1851 : William Kennedy (Prince Albert again) finds Bellot Strait proving that Somerset Island is an island .

1852 :

Edward Augustus Inglefield in northern Baffin Bay .

Edward Belcher in five ships ; much sledge exploration ; rescues McClure ; 4 ships abandoned in the ice . Bredalbane crushed by ice .

Elisha Kane led the Second Grinnell Expedition

Boat expedition up the Wellington Channel under the command of R. M 'Cormick , R.N. , in HMB Forlorn Hope

1854 : John Rae learns where Franklin lost his ship .

1855 : Anderson and Stewart descend the Back River and find relics in Chantry Inlet .

1857 : Francis Leopold McClintock finds relics at King William Island , including a ship 's boat on runners containing two corpses .

1869 : Charles Francis Hall at King William Island

1875 : Allen Young blocked at Peel Sound

1878 : Frederick Schwatka at King William Island

= = Scientific expeditions = =

= = = King William Island excavations (1981 ? 82) = = =

In June 1981 , Owen Beattie , a professor of anthropology at the University of Alberta , began the 1845 ? 48 Franklin Expedition Forensic Anthropology Project (FEFAP) when he and his team of researchers and field assistants travelled from Edmonton to King William Island , traversing the island 's western coast as Franklin 's men did 132 years before . FEFAP hoped to find artifacts and skeletal remains in order to use modern forensics to establish identities and causes of death among the lost 129 .

Although the trek found archaeological artifacts related to 19th @-@ century Europeans and undisturbed disarticulated human remains , Beattie was disappointed that more remains were not found . Examining the bones of Franklin crewmen , he noted areas of pitting and scaling often found in cases of Vitamin C deficiency , the cause of scurvy . After returning to Edmonton , he compared notes from the survey with James Savelle , an Arctic archaeologist , and noticed skeletal patterns suggesting cannibalism . Seeking information about the Franklin crew 's health and diet , he sent bone samples to the Alberta Soil and Feed Testing Laboratory for trace element analysis and assembled another team to visit King William Island . The analysis would find an unexpected level of 226 parts per million (ppm) of lead in the crewman 's bones , which was 10 times higher than the control samples , taken from Inuit skeletons from the same geographic area , of 26 ? 36 ppm .

In June 1982 , a team made up of Beattie ; Walt Kowall , a graduate student in anthropology at the University of Alberta ; Arne Carlson , an archaeology and geography student from Simon Fraser University in British Columbia ; and Arsien Tungilik , an Inuk student and field assistant , were flown to the west coast of King William Island , where they retraced some of the steps of McClintock in 1859 and Schwatka in 1878 ? 79 . Discoveries during this expedition included the remains of

between six and fourteen men in the vicinity of McClintock 's " boat place " and artifacts including a complete boot sole fitted with makeshift cleats for better traction .

= = = Beechey Island excavations and exhumations (1984 ? 86) = = =

After returning to Edmonton in 1982 and learning of the lead @-@ level findings from the 1981 expedition , Beattie struggled to find a cause . Possibilities included the lead solder used to seal the expedition 's food tins , other food containers lined with lead foil , food colouring , tobacco products , pewter tableware , and lead @-@ wicked candles . He came to suspect that the problems of lead poisoning compounded by the effects of scurvy could have been lethal for the Franklin crew . However , because skeletal lead might reflect lifetime exposure rather than exposure limited to the voyage , Beattie 's theory could be tested only by forensic examination of preserved soft tissue as opposed to bone . Beattie decided to examine the graves of the buried crewmen on Beechey Island .

After obtaining legal permission , Beattie 's team visited Beechey Island in August 1984 to perform autopsies on the three crewmen buried there . They started with the first crew member to die , Leading Stoker John Torrington . After completing Torrington 's autopsy and exhuming and briefly examining the body of John Hartnell , the team , pressed for time and threatened by the weather , returned to Edmonton with tissue and bone samples . Trace element analysis of Torrington 's bones and hair indicated that the crewman " would have suffered severe mental and physical problems caused by lead poisoning " . Although the autopsy indicated that pneumonia had been the ultimate cause of the crewman 's death , lead poisoning was cited as a contributing factor .

During the expedition , the team visited a place about 1 km (0 @. @ 6 mi) north of the grave site to examine fragments of hundreds of food tins discarded by Franklin 's men . Beattie noted that the seams were poorly soldered with lead , which had likely come in direct contact with the food . The release of findings from the 1984 expedition and the photo of Torrington , a 138 @-@ year @-@ old corpse well preserved by permafrost in the tundra , led to wide media coverage and renewed interest in the lost Franklin expedition .

Recent research has suggested that another potential source for the lead may have been the ships ' fresh @-@ water systems rather than the tinned food . K.T.H. Farrer argued that " it is impossible to see how one could ingest from the canned food the amount of lead , 3 @. @ 3 mg per day over eight months , required to raise the PbB to the level 80 ?g / dL at which symptoms of lead poisoning begin to appear in adults and the suggestion that bone lead in adults could be ' swamped ' by lead ingested from food over a period of a few months , or even three years , seems scarcely tenable . " In addition , tinned food was in widespread use within the Royal Navy at that time and its use did not lead to any significant increase in lead poisoning elsewhere . However , and uniquely for this expedition only , the ships were fitted with converted railway locomotive engines for auxiliary propulsion which required an estimated one tonne of fresh water per hour when steaming . It is highly probable that it was for this reason that the ships were fitted with a unique water distillation system which , given the materials in use at the time , would have produced large quantities of water with a very high lead content . William Battersby has argued that this is a much more likely source for the high levels of lead observed in the remains of expedition members than the tinned food .

A further survey of the graves was undertaken in 1986 . A camera crew filmed the procedure , shown in Nova 's television documentary , Buried in Ice in 1988 . Under difficult field conditions , Derek Notman , a radiologist and medical doctor from the University of Minnesota , and radiology technician Larry Anderson took many X @-@ rays of the crewmen prior to autopsy . Barbara Schweger , an Arctic clothing specialist , and Roger Amy , a pathologist , assisted in the investigation .

Beattie and his team had noticed that someone else had attempted to exhume Hartnell . In the effort , a pickaxe had damaged the wooden lid of his coffin , and the coffin plaque was missing . Research in Edmonton later showed that Sir Edward Belcher , commander of one of the Franklin rescue expeditions , had ordered the exhumation of Hartnell in October 1852 , but was thwarted by the permafrost . A month later , Edward A. Inglefield , commander of another rescue expedition ,

succeeded with the exhumation and removed the coffin plaque .

Unlike Hartnell 's grave , the grave of Private William Braine was largely intact . When he was exhumed , the survey team saw signs that his burial had been hasty . His arms , body , and head had not been positioned carefully in the coffin , and one of his undershirts had been put on backwards . The coffin seemed too small for him ; its lid had pressed down on his nose . A large copper plaque with his name and other personal data punched into it adorned his coffin lid .

== NgLj @-@ 2 excavations (1992) ==

In 1992 , a team of archaeologists and forensic anthropologists identified a site , which they referenced as " NgLj @-@ 2 " , on the western shores of King William Island . The site matches the physical description of Leopold McClintock 's " boat place " . Excavations there uncovered nearly 400 bones and bone fragments , and physical artefacts ranging from pieces of clay pipes to buttons and brass fittings . Examination of these bones by Anne Keenleyside , the expedition 's forensic scientist , showed elevated levels of lead and many cut @-@ marks " consistent with de @-@ fleshing " . On the basis of this expedition , it has become generally accepted that at least some groups of Franklin 's men resorted to cannibalism in their final distress . On 18 June 2015 , a study accepted for publication in the Journal of Osteoarchaeology concluded that in addition to the de @-@ fleshing of bones , 35 " bones had signs of breakage and ' pot polishing , ' which occurs when the ends of bones heated in boiling water rub against the cooking pot they are placed in " , which " typically occurs in the end stage of cannibalism , when starving people extract the marrow to eke out the last bit of calories and nutrition they can . "

== Wreck searches (1992 ? 93) ==

In 1992 , Franklin author David C. Woodman , with the help of magnetometer expert Brad Nelson , organised " Project Ootjoolik " to search for the wreck reported by Inuit testimony to lie off the waters of Adelaide Peninsula . Enlisting both a National Research Council and a Canadian Forces patrol aircraft , each fitted with a sensitive magnetometer , a large search area to the west of Grant Point was surveyed from an elevation of 200 feet (61 m) . Over 60 strong magnetic targets were identified , of which five were deemed to have characteristics most congruent to those expected from Franklin 's ships .

In 1993 , Dr. Joe McInnis and Woodman organised an attempt to identify the priority targets from the year before . A chartered aircraft landed on the ice at three of the locations , a hole was drilled through the ice , and a small sector @-@ scan sonar was used to image the sea bottom . Unfortunately , due to ice conditions and uncertain navigation , it was not possible to exactly confirm the locations of the holes , and nothing was found although hitherto @-@ unknown depths were found at the locations that were consistent with Inuit testimony of the wreck .

== King William Island (1994 ? 95) ==

In 1994 Woodman organised and led a land search of the area from Richard Collinson Inlet to (modern) Victory Point in search of the buried " vaults " spoken of in the testimony of the contemporary Inuit hunter Supunger . A 10 @-@ person team spent 10 days in the search , sponsored by the Royal Canadian Geographical Society , and filmed by the CBC Focus North . No trace of the vaults was found .

In 1995 , an expedition was jointly organised by Woodman , George Hobson , and American adventurer Steven Trafton ? with each party planning a separate search . Trafton 's group travelled to the Clarence Island to investigate Inuit stories of a " white man 's cairn " there but found nothing . Dr. Hobson 's party , accompanied by archaeologist Margaret Bertulli , investigated the " summer camp " found a few miles to the south of Cape Felix , where some minor Franklin relics were found . Woodman , with two companions , travelled south from Wall Bay to Victory Point and investigated all likely campsites along this coast , finding only some rusted cans at a previously unknown campsite

near Cape Maria Louisa .

== Wreck searches (1997 ? 2013) ==

In 1997 , a " Franklin 150 " expedition was mounted by the Canadian film company Eco Nova to use sonar to investigate more of the priority magnetic targets found in 1992 . Senior archaeologist was Robert Grenier , assisted by Margaret Bertulli , and Woodman again acted as expedition historian and search coordinator . Operations were conducted from the Canadian Coast Guard icebreaker Laurier . Approximately 40 square kilometres (15 sq mi) were surveyed , without result , near Kirkwall Island . When detached parties found Franklin relics , primarily copper sheeting and small items , on the beaches of islets to the north of O'Reilly Island the search was diverted to that area , but poor weather prevented significant survey work before the expedition ended . A documentary , " Oceans of Mystery : Search for the Lost Fleet " , was produced by Eco Nova about this expedition .

In 2000 , James Delgado of the Vancouver Maritime Museum organised a re enactment of the historic St. Roch passage westward through the Northwest Passage using the RCMP vessel Nadon supported by the Canadian Buoy Tender Simon Fraser . Knowing that ice would delay the transit in the area of King William Island , he offered the use of the Nadon as a search vessel to his friends Hobson and Woodman , and using the Nadon 's Kongsberg / Simrad SM2000 forward looking sonar , the survey of the northern search area around Kirkwall Island was continued without result .

Three expeditions were mounted by Woodman to continue the magnetometer mapping of the proposed wreck sites , a privately sponsored expedition in 2001 , and the Irish Canadian Franklin Search Expeditions of 2002 and 2004 . These made use of sled drawn magnetometers working on the sea ice and completed the unfinished survey of the northern (Kirkwall Island) search area (2001) , and the entire southern O'Reilly Island area (2002 and 2004) . All high priority magnetic targets were identified by sonar through the ice as geological in origin . In 2002 and 2004 , small Franklin artefacts and characteristic explorer tent sites were found on a small islet northeast of O'Reilly Island during shore searches .

In August 2008 , a new search was announced , to be led by Robert Grenier , a senior archaeologist with Parks Canada . This search hoped to take advantage of the improved ice conditions , using side scan sonar from a boat in open water . Grenier also hoped to draw from newly published Inuit testimony collected by oral historian Dorothy Harley Eber . Some of Eber 's informants have placed the location of one of Franklin 's ships in the vicinity of the Royal Geographical Society Island , an area not searched by previous expeditions . The search was to also include local Inuit historian Louie Kamookak , who has found other significant remains of the expedition and would represent the indigenous culture .

On 25 July 2010 , HMS Investigator , which had become icebound and was subsequently abandoned while searching for Franklin 's expedition in 1853 , was found in shallow water in Mercy Bay along the northern coast of Banks Island in Canada 's western Arctic . The Parks Canada team reported that it was in good shape , upright in about 11 metres (36 feet) of water .

In August 2013 , a new search was announced by Parks Canada .

== Victoria Strait Expedition (2014) ==

On 1 September 2014 , a larger search by a Canadian team under the banner of the " Victoria Strait Expedition " found two items on Hat Island in the Queen Maud Gulf near Nunavut 's King William Island ? a wooden object , possibly a plug for a deck hawse , the iron pipe through which the ship 's chain cable would descend into the chain locker below ; and part of a boat launching davit bearing the stamps of two Royal Navy broad arrows .

On 9 September 2014 , the expedition announced that on 7 September it had located one of Franklin 's two ships . The ship is preserved in very good condition , with side scan sonar picking up even the deck planking . The wreck lies at the bottom of the eastern portion of Queen

Maud Gulf , west of O 'Reilly Island . On 1 October at the House of Commons , Prime Minister Stephen Harper confirmed that the wreck is indeed HMS Erebus .

= = = Scientific conclusions = = =

The FEFAP field surveys , excavations and exhumations spanned more than 10 years . The results of this study from King William Island and Beechey Island artefacts and human remains showed that the Beechey Island crew had most likely died of pneumonia and perhaps tuberculosis , which was suggested by the evidence of Pott 's disease discovered in Braine . Toxicological reports pointed to lead poisoning as a likely contributing factor . Blade cut marks found on bones from some of the crew were seen as signs of cannibalism . Evidence suggested that a combination of cold , starvation and disease including scurvy , pneumonia and tuberculosis , all made worse by lead poisoning , killed everyone in the Franklin party .

= = Other factors = =

Franklin 's chosen passage down the west side of King William Island took Erebus and Terror into " ... a ploughing train of ice ... [that] does not always clear during the short summers ... " , whereas the route along the island 's east coast regularly clears in summer and was later used by Roald Amundsen in his successful navigation of the Northwest Passage . The Franklin expedition , locked in ice for two winters in Victoria Strait , was naval , not well @-@ equipped or trained for land travel . Some of the crew members heading south from Erebus and Terror hauled many items not needed for Arctic survival . McClintock noted a large quantity of heavy goods in the lifeboat at the " boat place " and thought them " a mere accumulation of dead weight , of little use , and very likely to break down the strength of the sledge @-@ crews " . In addition , cultural factors might have prevented the crew from seeking help as quickly as possible from the Inuit or adopting their survival techniques .

= = Timeline = =

1845 , 19 May : Franklin expedition sails from England
1845 , July : Expedition docks in Greenland , sends home five men and a batch of letters
1845 , 28 July : Last sighting of expedition by Europeans (a whaling ship in Baffin Bay)
1845 ? 46 : Expedition winters on Beechey Island . Three crewmen die of tuberculosis and are buried .
1846 : Erebus and Terror leave Beechey Island and sail down Peel Sound towards King William Island
1846 , 12 September : Ships trapped in the ice off King William Island
1846 ? 47 : Expedition winters on King William Island
1847 , 28 May : Date of first note , says " All well "
1847 , 11 June : Franklin dies
1847 ? 48 : Expedition again winters off King William Island , after the ice fails to thaw in 1847
1848 , 22 April : Erebus and Terror abandoned after one year and seven months trapped in the ice
1848 , 25 April : Date of second note , saying 24 men have died and the survivors plan to start marching south on 26 April to the Back River
1850 (?) : Inuit board an abandoned ship , which is icebound off King William Island
1850 (?) : Inuit see 40 men walking south on King William Island
1851 (?) : Inuit hunters see four men still trying to head south , last verified sighting of survivors (as reported to Charles Hall)
1852 ? 58 (?) : Inuit may have seen Crozier and one other survivor much further south in the Baker Lake area
1854 : John Rae interviews local Inuit , who give him items from the expedition and tell him the men starved to death , after resorting to cannibalism

1859 : McClintock finds the abandoned boat and the messages on an admiralty form in a cairn on King William Island

2014 : Ryan Harris , an underwater archeologist who was Parks Canada 's project lead for the 2014 search , announced the finding in September of an underwater wreck that he said was " indisputably " one of Franklin 's two ships . Further investigation has determined that it is HMS Erebus and the news was confirmed 1 October in the Canadian House of Commons .

= = Legacy = =

= = = Historical = = =

The most meaningful outcome of the Franklin expedition was the mapping of several thousand miles of hitherto unsurveyed coastline by expeditions searching for Franklin 's lost ships and crew . As Richard Cyriax noted , " the loss of the expedition probably added much more [geographical] knowledge than its successful return would have done " . At the same time , it largely quelled the Admiralty 's appetite for Arctic exploration . There was a gap of many years before the Nares expedition and when Nares declared there was " no thoroughfare " to the North Pole , his words marked the end of the Royal Navy 's historical involvement in Arctic exploration , the end of an era in which such exploits were widely seen by the British public as worthy expenditures of human effort and monetary resources . As a writer for The Athenaeum put it , " We think that we can fairly make out the account between the cost and results of these Arctic Expeditions , and ask whether it is worth while to risk so much for that which is so difficult of attainment , and when attained , is so worthless . " The navigation of the Northwest Passage in 1903 ? 05 by Roald Amundsen with the Gjøa expedition effectively ended the centuries @-@ long quest for the Northwest Passage .

= = = Cultural legacy = = =

For years after the loss of the Franklin Party , the Victorian media portrayed Franklin as a hero who led his men in the quest for the Northwest Passage . A statue of Franklin in his home town bears the inscription " Sir John Franklin ? Discoverer of the North West Passage " , and statues of Franklin outside the Athenaeum in London and in Tasmania bear similar inscriptions . Although the expedition 's fate , including the possibility of cannibalism , was widely reported and debated , Franklin 's standing with the Victorian public was undiminished . The expedition has been the subject of numerous works of non @-@ fiction , including two books by Ken McGoogan , Fatal Passage and Lady Franklin 's Revenge .

The mystery surrounding Franklin 's last expedition was the subject of a 2006 episode of the NOVA television series Arctic Passage ; a 2007 television documentary , " Franklin 's Lost Expedition " , on Discovery HD Theatre ; as well as a 2008 Canadian documentary , Passage . In an episode of the 2009 ITV1 travel documentary series Billy Connolly : Journey to the Edge of the World , presenter Connolly and his crew visited Beechey Island , filmed the gravesite , and gave details of the Franklin expedition .

In memory of the lost expedition , one of Canada 's Northwest Territories subdivisions was known as the District of Franklin . Including the high Arctic islands ; this jurisdiction was abolished when the area was set off into the newly created Nunavut Territory on 1 April 1999 .

On 29 October 2009 , a special service of thanksgiving was held in the chapel at the Old Royal Naval College in Greenwich , to accompany the rededication of the national monument to Franklin there . The service also included the solemn re @-@ interment of the remains of Lieutenant Henry Thomas Dundas Le Vesconte , the only remains ever repatriated to England , entombed within the monument in 1873 . The event brought together members of the international polar community and invited guests included polar travellers , photographers and authors and descendants of Franklin , Captain Francis Rawdon Moira Crozier and their men , and the families of those who went to search for them , including Admiral Sir Francis Leopold McClintock , Rear Admiral Sir John Ross and Vice

Admiral Sir Robert McClure among many others . The gala was directed by the Rev Jeremy Frost and polar historian Huw Lewis @-@ Jones and was organised by Polarworld and the High Commission of Canada to the United Kingdom . It was a celebration of the contributions made by the United Kingdom in the charting of the Canadian North , which honoured the loss of life in the pursuit of geographical discovery . The Navy was represented by Admiral Nick Wilkinson , prayers were led by the Bishop of Woolwich and among the readings were eloquent tributes from Duncan Wilson , chief executive of the Greenwich Foundation and H.E. James Wright , the Canadian High Commissioner . At a private drinks reception in the Painted Hall following this Arctic service , Chief Marine Archaeologist for Parks Canada Robert Grenier spoke of his ongoing search for the missing expedition ships . The following day , a group of polar authors went to London 's Kensal Green Cemetery to pay their respects to the Arctic explorers buried there . After some difficulty , McClure 's gravestone was located . It is hoped that his memorial , in particular , may be conserved in the future . Many other veterans of the searches for Franklin are buried there , including Admiral Sir Horatio Thomas Austin , Admiral Sir George Back , Admiral Sir Edward Augustus Inglefield , Admiral Bedford Clapperton Trevelyan Pim , and Admiral Sir John Ross . Franklin 's redoubtable wife Jane Griffin , Lady Franklin , is also interred at Kensal Green in the vault , and commemorated on a marble cross dedicated to her niece Sophia Cracroft .

= = = Portrayal in fiction and the arts = = =

From the 1850s through to the present day , Franklin 's last expedition inspired numerous literary works . Among the first was a play , *The Frozen Deep* , written by Wilkie Collins with assistance and production by Charles Dickens . The play was performed for private audiences at Tavistock House early in 1857 , as well as at the Royal Gallery of Illustration (including a command performance for Queen Victoria) , and for the public at the Manchester Trade Union Hall . News of Franklin 's death in 1859 inspired elegies , including one by Algernon Charles Swinburne .

Fictional treatments of the final Franklin expedition begin with Jules Verne 's *Journeys and Adventures of Captain Hatteras* , (1866) , in which the novel 's hero seeks to retrace Franklin 's footsteps and discovers that the North Pole is dominated by an enormous volcano . Mark Twain briefly satirized the fate of the expedition and its subsequent searches in the beginning of the story " *Some Learned Fables for Good Old Boys and Girls* " (1875) . The German novelist Sten Nadolny 's *The Discovery of Slowness* (1983 ; English translation 1987) takes on the entirety of Franklin 's life , touching only briefly on his last expedition . Other recent novelistic treatments of Franklin include Mordecai Richler 's *Solomon Gursky Was Here* (1989) , William T. Vollmann 's *The Rifles* (1994) , John Wilson 's *North With Franklin : The Journals of James Fitzjames* (1999) ; and Dan Simmons 's *The Terror* (2007) - the latter of which is being developed as an AMC television series , announced in February 2013 . The expedition has also been the subject of a horror role @-@ playing game supplement , *The Walker in the Wastes* . Most recently , Clive Cussler 's 2008 novel *Arctic Drift* incorporates the ordeal of the Franklin expedition as a central element in the story , and Richard Flanagan 's *Wanting* (2009) deals with Franklin 's deeds in both Tasmania and the Arctic . 2013 ? s novel *The White Passage* rounds out the list with a vaguely science @-@ fiction take on the concepts of time @-@ travel and the consequences of an alternate fate of the lost expedition .

On 12 January 2012 , BBC Radio 4 broadcast a radio play entitled " *Erebus* " based on the Franklin expedition .

Franklin 's last expedition also inspired a great deal of music , beginning with the ballad " *Lady Franklin 's Lament* " (also known as " *Lord Franklin* ") , which originated in the 1850s and has been recorded by dozens of artists , among them Martin Carthy , Pentangle , Sinéad O 'Connor , the Pearlfishers , and John Walsh . Other Franklin @-@ inspired songs include Fairport Convention 's " *I 'm Already There* " , and James Taylor 's " *Frozen Man* " (based on Beattie 's photographs of John Torrington) .

The influence of the Franklin expedition on Canadian literature has been especially significant . Among the best @-@ known contemporary Franklin ballads is " *Northwest Passage* " by the late Ontario folksinger Stan Rogers (1981) , which has been referred to as the unofficial Canadian

national anthem . The distinguished Canadian novelist Margaret Atwood has also spoken of Franklin 's expedition as a sort of national myth of Canada , remarking that " In every culture many stories are told , (but) only some are told and retold , and these stories bear examining ... in Canadian literature , one such story is the Franklin expedition . " Other recent treatments by Canadian poets include a verse play , *Terror and Erebus* , by Gwendolyn MacEwen that was broadcast on Canadian Broadcasting Corporation (CBC) radio in the 1960s , as well as David Solway 's verse cycle , *Franklin 's Passage* (2003) . Dominique Fortier 's 2008 French language novel , *Du bon usage des étoiles* , creatively considers the Franklin expedition from a variety of perspectives and genres and was both shortlisted and a finalist for several literary awards in Canada (2009 Governor General 's Awards) . Sheila Fischman 's English translation of the novel , *On the Proper Use of Stars* , was also shortlisted for the 2010 Governor General 's Awards for French to English Translation .

In the visual arts , the loss of Franklin 's expedition inspired a number of paintings in both the United States and Britain . In 1861 , Frederic Edwin Church unveiled his great canvas " *The Icebergs* " ; later that year , prior to taking it to England for exhibition , he added an image of a broken ship 's mast in silent tribute to Franklin . In 1864 , Sir Edwin Landseer 's *Man Proposes , God Disposes* caused a stir at the annual Royal Academy exhibition ; its depiction of two polar bears , one chewing on a tattered ship 's ensign , the other gnawing on a human ribcage , was seen at the time as in poor taste , but has remained one of the most powerful imaginings of the expedition 's final fate . The expedition also inspired numerous popular engravings and illustrations , along with many panoramas , dioramas , and magic lantern shows .