THE MAN WHO BROKE THE GERMAN CODE IN WW2 – "THE IMITATION GAME"

A STORY OF PREJUDICE & THE GERMAN CODEBOX ENIGMA

THE TRUE STORY OF HOW A BRILLIANT WARTIME MATHEMATICIAN AND CODE BREAKER WAS DRIVEN TO SUICIDE

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ALAN TURING -CELEBRATING THE LIFE OF A GENIUS

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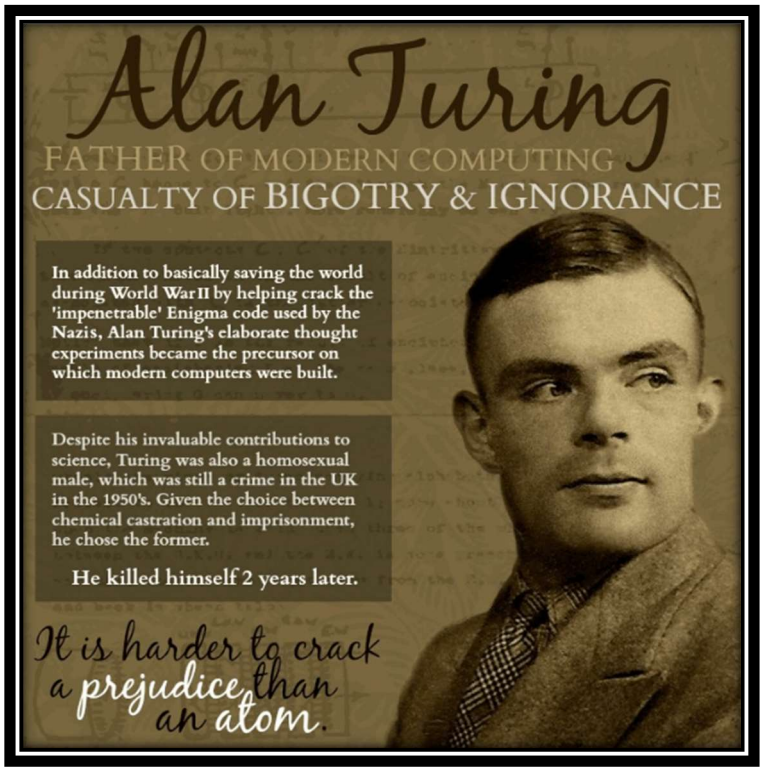


June 23, 1912 – June 7, 1954

How very sad it is when the prejudices of society result in the promulgation of harsh laws within a system of justice which results in persons being treated most unjustly. Often the sentence imposed for the "crime" had widespread ramifications of devastating proportions. Just so is the tale of a renowned mathematician, the man often called the father of the modern computer, Alan Mathison Turing.

Turing was born on 23rd June 1912 to parents who, fairly typical of the time, traveled between England and India for most of his early life. He thus lived mostly with foster parents and at various boarding schools *so he did not experience ordinary family life*.

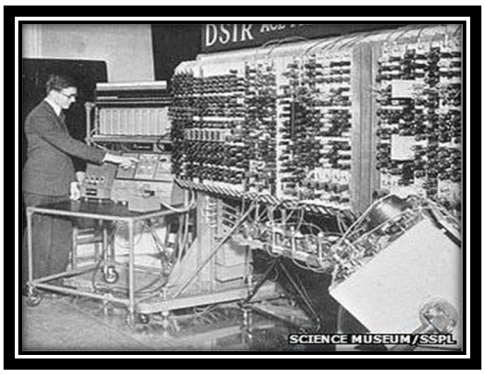
He was not much of a scholar but interested in science and mathematics, which was an embarrassment to his parents - for gentlemen of the time were required to study the classics and languages. It was only when he went to Kings College that he finally found the comfort of being accepted and experienced a sense of belonging.

Turing was usually casually dressed and often looked rather scruffy. He chewed his nails and tended to stutter although those who knew him well noted that it seemed he used to think carefully before he spoke. At college, he enjoyed rowing and sailing.

He became a very good marathon runner and won many races. At one of the marathons he ran in 1948, he clocked a time just 11 minutes short of the Olympic-winning runners – not a result to be sneezed at. He often used to run the 10 or so miles between his two places of work and explained that "I have such a stressful job that the only way I can get it out of my head is by running hard".

While having a brilliant mathematical mind, and furthering his studies in various areas of physics, biology, chemistry, and even neurology, he was also fascinated by Einstein's theory of relativity and quantum mechanics. However, by far his most far-reaching works were concerned with computer science. He created the universal Turing machine which was the basis of the first computer.

His exceptional expertise in being able to think "out of the box" and his ability to come up with ideas that had not been considered by more logical thinkers, were utilized during WWII, at Bletchley Park. *This secretive center worked ceaselessly at breaking enemy codes*.



Turing and his team @ work

Turing was instrumental in the cracking of, amongst others, one of the Nazi's most damaging encryption codes, the Enigma. This enabled Britain to decode important, strategic German messages, thereby saving thousands of lives, in Europe and of those who were at sea. *It is thought to have shortened the war by at least two years.*

By 1950, his work, much of which was aimed at how machines can 'think', resulted in the development of a test for artificial intelligence which is still used today. Soon afterward, he broke new ground in the area of morphogenesis which introduced another field of study – one of mathematical biology. He was an unusually brilliant man.

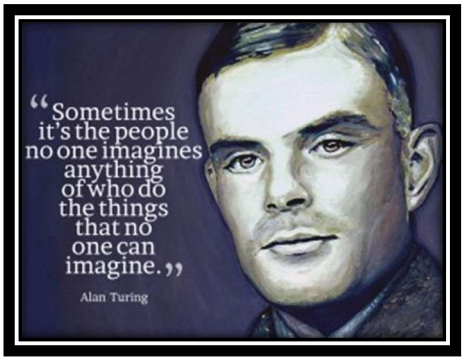
ALAN TURING'S HOUSE AND OFFICE WHILE WORKING

This house was the one used by Alan Turing (the great mathematician) during his time at Bletchley. The high "tower" was his office, and apparently, he used to lower a tray out of the window for fresh tea to be hoisted up to him.

Then came personal disaster. While Turing *had not kept his homosexuality a secret from his close friends and workmates, it was strictly against the law and governed by the Criminal Law Amendment Act of 1885*. *He was arrested in 1952 and charged with indecency, for which he was subsequently convicted*, having himself admitted to the charges while insisting that it shouldn't be against the law.

The sentence imposed was one of chemical castration **whereby a series of injections were administered which would cause him to become impotent. It was dreadful enough to be submitted to public humiliation but even worse was to come.**

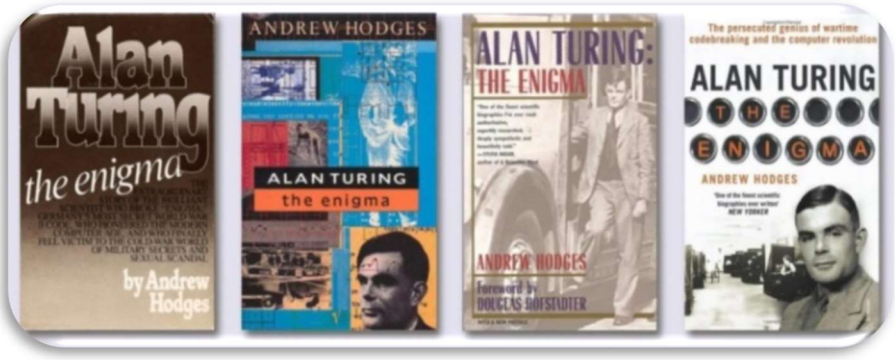
Turin, now a convicted homosexual *was deemed a security risk and so his Security Clearance was revoked, essentially cutting him off from the passion of his life - his work*. It would seem that these two blows were just too much for him to deal with and were probably the reason for his *suicide on 7th June 1954, at the age of 42.*



Society has changed radically since that time and consequently, many very old and unjust laws have been changed. "The fact that it was common practice for decades reflected the intolerance of the times … but it does not make it any less wrong and we should apologize for it," was what Robert Hannigan (Head of Britain's digital espionage agency) said in a speech at the conference organized in support of all gays and their rights.

He apologized for the tremendous damage caused to homosexuals by such policies. In his speech, he paid particular tribute to Turing as — "a problem-solver who was not afraid to think differently and radically."

Turing's story, as told in the film about him called *'The Imitation Game'*, shows today's generation just what a genius he was. His Turing Machine has been described as the "foundation of the modern theory of computation and computability. "



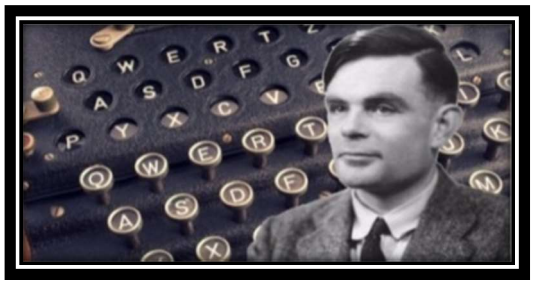
Books were written about the achievements of Alan Turing

Turing was granted a posthumous pardon by Queen Elizabeth II, under the "Royal Prerogative of Mercy," after the request was submitted by Justice Secretary Chris Grayling. ***One cannot turn back the clock but one should be glad the Turing memory has been so "cleansed", even though more than 60 years later. It should be noted that the "pardon" was somewhat controversial in the eyes of some of "the old core".***

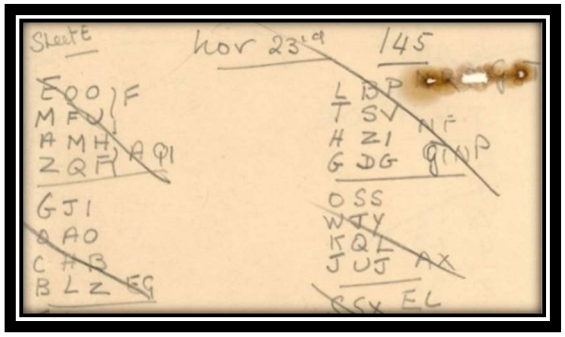
One wonders, however, what Alan Turing would have achieved and what legacy he would have left the world, had the times been more forgiving and had he lived his life to a ripe old age.

Alan Turing is credited with the cracking of the ***Enigma Code***, probably the most important 'break' for the British, for it allowed access to orders sent to the U-boats regarding the targeting of shipping, thereby saving thousands of lives***. Even today, Turing is seen as the "father of modern computing"***

His papers on the subject are widely acknowledged as the foundation of research in artificial intelligence.



NOTES BY ALAN TURING'S TEAM FOUND IN THE WALLS OF THE CODE-CRACKING HUT



The team's activities were kept top secret throughout the war, as well as for decades afterward, and their papers and other materials were supposed to have been destroyed long ago.

After completing ***his Ph.D. in mathematical logic at Princeton University in 1938***, Alan Turing returned to his native Britain and had a fellowship at King's College, University of Cambridge. With the outbreak of war with Germany the following year, he joined the wartime headquarters of the Government Code and Cypher School, housed at Bletchley Park, Buckinghamshire, some 55 miles northwest of London. Over the next year, Turing and his fellow cryptologists worked to design a machine known as the Bombe, ***which successfully decoded messages encrypted by Nazi Germany's Enigma machine. By early 1942, the team at Bletchley Park was decoding about 39,000 intercepted messages each month; the monthly total later rose to more than 84,000.***

Turing also developed a system known as Banburismus, which Turing based on a mistake the Germans made in the Enigma's wheel design. Using this system, Allied code-breakers punched holes that represented encrypted messages into two long sheets of paper, then slid the two sheets of paper over each other until they lined up. This gave Turing's cryptologists insight into the Enigma's rotor settings, which the Germans changed daily. The sheets of paper they used became known as Banbury sheets, as the stationery was printed in Banbury, Oxfordshire'

During a recent large-scale renovation of Bletchley Park, workers found a number of these Banbury sheets stuffed into the walls of one of the huts where Turing and his colleagues did their code-breaking work. The documents, which bear notes handwritten by Turing's colleagues (although not Turing himself) in pencil and crayon, *represent the only known examples of Banbury sheets to survive, given the wartime security mandate to destroy all documentary evidence of the code-breaking process.*

Instead, these notes appear to have been used to block holes in the walls and ceiling of the hut, which like the others at Bletchley had no insulation or heating. As Iain Stander, chief executive of the Bletchley Park Trust, told MKWeb: "The fact that these papers were used to block draughty holes in the primitive hut walls reminds us of the rudimentary conditions under which these extraordinary people were working."

When Turing and his colleagues began cracking the Enigma code, World War II was decidedly headed in Nazi Germany's favor. Their work is thought to have done a good deal to turn the tide of the conflict toward the Allies and may have shortened the war by as much as two years. At the war's end, Turing was made an officer of the Order of the British Empire for his code-breaking work. In the years after the war, he turned his efforts to developing some of the earliest computers*. He also pioneered the emerging field of artificial intelligence,* developing the so-called Turing test to serve as a criterion for whether a machine can "think."

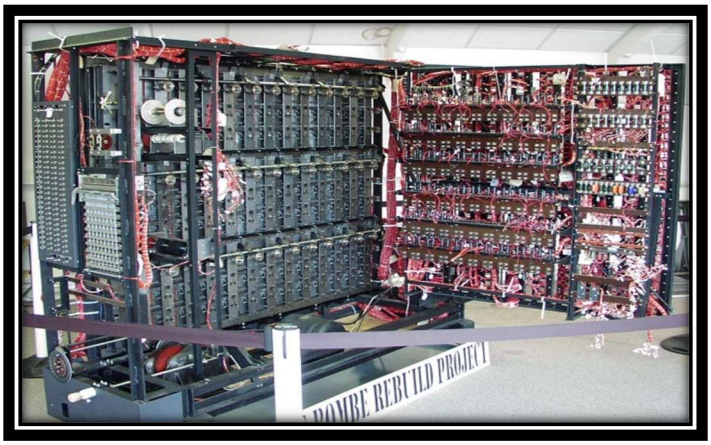
Due to its top-secret nature, *Turing's WWII-era code-cracking was not revealed until the 1970s.*

By the end of the 20th century, he was honored for that important work, as well as for his groundbreaking achievements in computer science.

In 2009, British Prime Minister Gordon Brown publicly apologized for Turing's treatment by the justice system, and *Queen Elizabeth II issued Turing a posthumous pardon in 2013.*

The current Academy Award-nominated film *"The Imitation Game,"* starring Benedict Cumberbatch and Keira Knightley, dramatizes the wartime work of Turing and his fellow code-breakers at Bletchley Park, including the daily race to decipher German messages using the Banburismus system.

The surviving Banbury sheets, which the workers discovered in the walls of Bletchley Park's Hut No. 6 in 2013, were immediately frozen to prevent further deterioration. They have now been restored and will go on exhibition at Bletchley Park later this month.



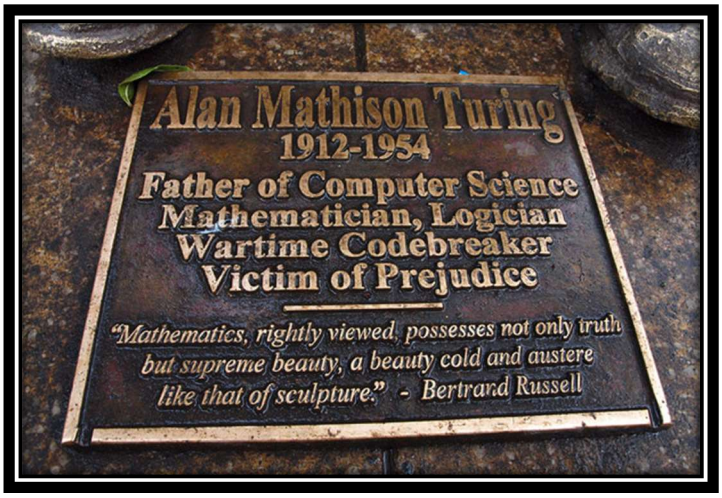
A complete and working replica of a bombe at the National Codes Centre at Bletchley Park

ALAN TURING MEMORIAL IN MANCHESTER, ENGLAND

Have a seat with the father of modern computing at this Manchester monument.

Bench and statue in Sackville Gardens

Imagine eternally sitting on a public park bench in Manchester's Sackville Park the bronze statue of the innovative computer pioneer seems to just be waiting for some companions to come to sit next to him. Unveiled in 2001, the figure sits on a bench, which is itself made of bronze, holding an apple which is likely meant to signify the biblical fruit of knowledge. Etched on the bench behind him is a rough cipher meant to look like the output of the infamous Enigma Machine which Turing helped crack. When decoded, the phrase reads, "Founder of Computer Science." This appellation is made a bit clearer on the plaque at the figure's feet which lists the scientist's birth and death dates as well as a short list of his accomplishments.



The Plaque between his feet…..

Turing committed suicide after being legally outed for being homosexual making him an important figure in the LGBT community. The statue's placement seems to reflect this as it is located near Manchester's gay culture center.

On 8 June 1954, Turing's housekeeper found him dead. He had died the previous day. **A post-mortem examination established that the cause of death was cyanide poisoning.**

When his body was discovered, an apple lay half-eaten beside his bed, and although the apple was *not tested for cyanide*, it was speculated that this was how a fatal dose was consumed. An inquest determined that he had committed suicide, and he was cremated at Woking Crematorium on 12 June 1954. Turing's ashes were scattered there, just as his father's had been.

Whether he is appreciated as a hero of science or the culture wars or both, the round-faced icon makes a great sitting companion and will continue to be well into the future he helped create.

The famed Alan Turing was a man of many geniuses. From mathematics to cryptography to computer science, Turing was a visionary thinker in each field leaving a legacy that has had a part in most of our modern inventions, and thanks to a bronze monument in Manchester you can sit and have lunch with him.

ALAN TURING – MANCHESTER CELEBRATES PARDONED GENIUS

The decision to pardon wartime codebreaker and computer pioneer Alan Turing has been roundly welcomed, but in Manchester, where the campaign began to clear his name, it has been especially celebrated.

Today, mathematics students at the university attend lectures in the building bearing his name.

But it was also in Manchester, in 1952, that Dr. Turing was arrested for having sex with another man, which was then an illegal act.

He was tried and convicted of gross indecency, banned from working for the government and forced to have injections of female hormones in a bid to render him asexual.

Two years after his conviction Turing poisoned himself with cyanide, which an inquest deemed to be suicide.

The fact that such a "national hero" was then treated by the state in such a "barbaric" way was described as a "terrible blight on our history" by Justice Secretary Chris Grayling, *who requested the royal pardon.*

The decision has been welcomed by Manchester's gay communities, who have strived for years to get Turing's story to a wider audience.

"It's great news but something long overdue," said Rob Cookson, director of The Lesbian and Gay Foundation (LGF), based in Manchester.

"It is recognition of the range of people involved in fighting this. It is another step towards equality."

The Enigma

GAY PRIDE

The original petition calling for a posthumous pardon was begun by William Jones - also a computer scientist and a gay man living in Manchester - *which eventually reached 37,000 signatures*.

"It's a very good step along the path that the countries realized what happened to him and the law generally was wrong," Mr. Jones said.

"In Manchester, he's not as well-known as he should be but it's [the pardon] something the gay community should be very proud about."

Back in 1994, when the city's leaders renamed part of the inner ring road Alan Turing Way, some people living nearby did not recognize the name.

"The council leader at the time was a mathematician and had heard of Turing," said councilor Pat Karney.

"We were horrified when we heard the story, particularly the chemical castration, and secondly because of his unrecognized contribution to computers and the war."

The renaming of the road - and the subsequent decision to highlight his story by commissioning a play about his life - marked a turning point, Manchester Withington Lib Dem MP John Leech later told Parliament.

"Over time, however, the simple fact of renaming it meant people got to know about him."

LIVES DESTROYED

The decision to pardon Dr. Turing means attention can be focused on his "significant" achievements, which are marked at the University of Manchester ***where he spent the last six years of his life working.***

During that time he helped create the world's first modern computer, the Manchester Mark 1, and also invented a test for artificial intelligence.

His legacy will live on as one of the most significant scientists of his or any other generation s says Professor Dame Nancy Rothwell, University of Manchester.

Professor Dame Nancy Rothwell, president and vice-chancellor of the university, said: "His legacy will live on as one of the most significant scientists of his or any other generation."

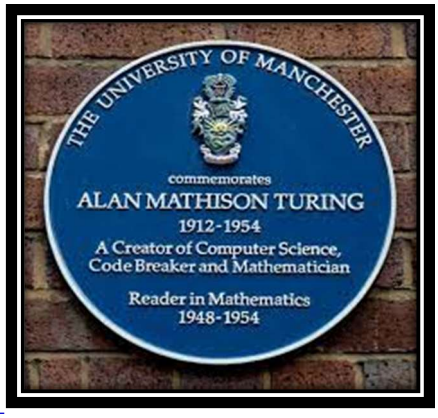
The city council and the LGF last year launched the Alan Turing Memorial Award to recognize people who have made a significant contribution to the fight against homophobia.

And many campaigners are calling for Dr. Turing's case to set a precedent enabling further pardons for others who had similar convictions.

Mr. Karney said: "Lots of other lives were destroyed. We will be symbolically righting their injustice."

On 31 March - the date he was convicted - the city council held an Alan Turing Pardon Day and the names of other Mancunians convicted of the same offenses will be read out in a ceremony before the statue of the great man.

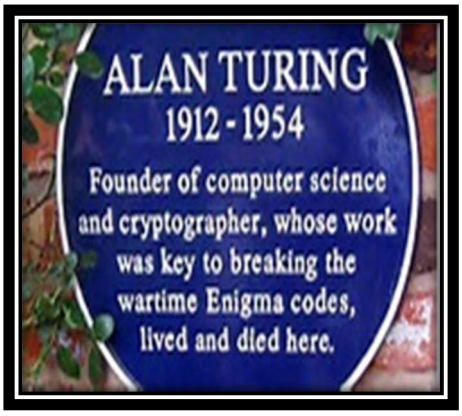
MANCHESTER TRIBUTES TO ALAN TURING



Alan Turing Building and blue plaque at Manchester University

Turing by Stephen Kettle at Bletchley Park, commissioned by Sidney Frank, was built from half a million pieces of Welsh slate.

Turing was born on June 23, 1912, in this London building. It's now the Collonade Hotel located near the Warwick Avenue tube station in Little Venice



Blue plaque on his former Wilmslow home

A. M. Turing

OTHER TRIBUTES FROM AROUND THE WORLD BY UNIVERSITIES AND RESEARCH

The computer room at King's College, Cambridge, Alan Turing's alma mater, is called the Turing Room.

The Turing Room at the University of Edinburgh's School of Informatics houses a bust of Turing by Eduardo Paolozzi and a set (No. 42/50) of his Turing prints (2000).

The University of Surrey has a statue of Turing on their main piazza[] and one of the buildings of the Faculty of Engineering and Physical Sciences is named after him.

Istanbul Bilgi University organizes an annual conference on the theory of computation called "Turing Days".

The University of Texas at Austin has an honors computer science program named the Turing Scholars.[

In the early 1960s, Stanford University named the sole lecture room of the Polya Hall Mathematics building "Alan Turing Auditorium".

One of the amphitheaters of the Computer Science Department (LIFL) at the University of Lille in northern France is named in honor of Alan M. Turing (the other amphitheater is named after Kurt Gödel).

The Department of Computer Science at Pontifical Catholic University of Chile, the University of Buenos Aires, the Polytechnic University of Puerto Rico, Los Andes University in Bogotá, Colombia, King's College, Cambridge, Bangor University in Wales, the Universities of Ghent and Mons in Belgium, the University of Turin (Università degli Studi di Torino), the University of Puerto Rico at Humacao, Keele University and the University of Washington have computer laboratories named after Turing.

The University of Manchester, the Open University, Oxford Brookes University, and Aarhus University (in Aarhus, Denmark) all have a building named after Turing.

Alan Turing Road in the Surrey Research Park[] and the Alan Turing Way, part of the Manchester Inner Ring Road are named after Alan Turing.

Carnegie Mellon University has a granite bench, situated in the Hornbostel Mall, with the name "A. M. Turing" carved across the top, "Read" down the left leg, and "Write" down the other.

The University of Oregon has a bust of Turing on the side of Deschutes Hall, the computer science building.

The École Polytechnique Fédérale de Lausanne has a road and a square named after Alan Turing (Chemin de Alan Turing and Place de Alan Turing).

The Faculty of Informatics and Information Technologies at Slovak University of Technology in Bratislava, Slovakia, has a lecture room named "Turing Auditorium".

The Paris Diderot University has a lecture room named "Amphithéâtre Turing".

The Faculty of Mathematics and Computer Science at the University of Würzburg has a lecture hall named "Turing Hörsaal".

The Paul Sabatier University in Toulouse has a lecture room named "Amphithéâtre Turing" (Bâtiment U4).

The largest conference hall at the Amsterdam Science Park is named Turingzaal.

King's College London's School of Natural and Mathematical Sciences awards the Alan Turing Centenary Prize. The

The **University of Kent named Turing College after him at their Canterbury campus.**

The campus of the École Polytechnique has a building named after Alan Turing; it is a research center whose premises are shared by the École Polytechnique, the INRIA, and Microsoft.

The University of Toronto developed the Turing programming language in 1982, named after Alan Turing

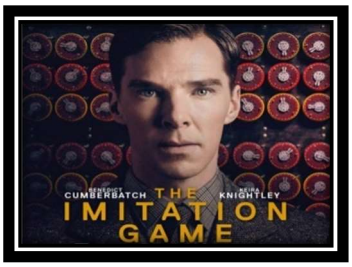
The Faculty of Exact Sciences at the University of Buenos Aires has a computer laboratory named after Alan Turing.

The campus of the State University of Campinas has an avenue, one of its largest, named after Turing

THE STORY OF THE PARDON

Alan Mathison Turing was a gay man born on June 23, 1912, and died on June 7, 1954. He was instrumental in breaking the German "Enigma' Code during WW2, thus saving many Allied lives during the War……..was arrested in Manchester, England for gross negligence in 1952, was stripped of his security clearance, disgraced, and fired from his job, chemically castrated for this crime in 1952 and took his own life in 1954, and then was fully pardoned for all of this by Queen Elisabeth II *on December 24, 2013, 61 years after the so-called "crime" was committed and 59 years after his death.*

But the world had never heard of this man until after he was pardoned in 2013 **and most of us never actually knew about him until the movie entitled " *The Imitation Game" was released in 2016.***



GOVERNMENT APOLOGY AND PARDON

In August 2009, John Graham-Cumming started a petition urging the British Government to apologize for Turing's prosecution as a homosexual. The petition received more than 30,000 signatures. Prime Minister Gordon Brown acknowledged the petition, releasing a statement on 10 September 2009 apologizing and describing the treatment of Turing as "appalling":

Thousands of people have come together to demand justice for Alan Turing and recognition of the appalling way he was treated. While Turing was dealt with under the law of the time and we can't put the clock back, his treatment was of course utterly unfair and I am pleased to have the chance to say how deeply sorry I and we all are for what happened to him … *So on behalf of the British government, and all those who live freely thanks to Alan's work I am very proud to say: we're sorry, you deserved so much better.*

In December 2011, William Jones created an e-petition requesting the British Government pardon Turing for his conviction of "gross indecency".

We ask the HM Government to grant a pardon to Alan Turing for the conviction of "gross indecency". In 1952, he was convicted of "gross indecency" with another man and was forced to undergo so-called "organo-therapy" - chemical castration. Two years later, he killed himself with cyanide, aged just 41. Alan Turing was driven to a terrible despair and early death by the nation he'd done so much to save. This remains a shame on the British government and British history. A pardon can go some way to healing this damage. It may act as an apology to many of the other gay men, not as well-known as Alan Turing, who were subjected to these laws.

The petition gathered over 37,000 signatures, but the request *was discouraged by Lord McNally, who gave the following opinion in his role as the Justice Minister:*

A posthumous pardon was not considered appropriate as Alan Turing was properly convicted of what at the time was a criminal offense. He would have known that his offense was against the law and that he would be prosecuted.

Tragically, Alan Turing was convicted of an offense that now seems cruel and absurd—particularly poignant given his outstanding contribution to the war effort. However, the law at the time required a prosecution and, as such, long-standing policy has been to accept that such convictions took place and, rather than trying to alter the historical context and to put right what cannot be put right, ensure instead that we never again return to those times.

On 26 July 2012, a bill was introduced in the House of Lords to grant a statutory pardon to Turing for offenses under section 11 of the Criminal Law Amendment Act 1885, of which he was convicted on 31 March 1952. Late in the year in a letter to The Daily Telegraph, ***the physicist Stephen Hawking*** and 10 other signatories including the Astronomer Royal Lord Rees, President of the Royal Society Sir Paul Nurse, Lady Trumpington (who worked for Turing during the war), and Lord Sharkey (the bill's sponsor) called on Prime Minister David Cameron to act on the pardon request. The Government indicated it would support the bill, and it passed its third reading in the Lords in October.

Before the bill could be debated in the House of Commons, the Government elected to proceed under the royal prerogative of mercy. ***On 24 December 2013, Queen Elizabeth II signed a pardon for Turing's conviction for gross indecency, with immediate effect.***

Announcing the pardon, Justice Secretary Chris Grayling said Turing deserved to be "remembered and recognized for his fantastic contribution to the war effort" and not for his later criminal conviction.

The Queen officially pronounced Turing pardoned in August 2014. The Queen's action is only the fourth royal pardon granted since the conclusion of the Second World War.

YES, THERE WERE SOME QUESTIONS/OBJECTIONS

In a letter to Prime Minister David Cameron after the announcement of the pardon, human rights advocate Peter Tatchell criticized the decision to single out Turing due to his fame and achievements when thousands of others convicted under the same law have not received pardons. Tatchell also called for a new investigation into Turing's death

A new inquiry is long overdue, even if only to dispel any doubts about the true cause of his death - including speculation that he was murdered by the security services (or others). I think murder by state agents is unlikely. There is no known evidence pointing to any such act. However, ***it is a major failing that this possibility has never been considered or investigated.***

NEW INFORMATION SINCE THE ARTICLE WAS WRITTEN

CODEBREAKER ALAN TURING TO BE THE FACE OF NEW BRITISH BANKNOTE

THE TURING BANKNOTE WILL ENTER CIRCULATION IN 2012

LONDON (AP) — Codebreaker and computing pioneer Alan Turing has been chosen as the face of Britain's new 50-pound note, the Bank of England announced.

Governor Mark Carney said Turing, who did ground-breaking work on computers and artificial intelligence, was "a giant on whose shoulders so many now stand."

During World War II Turing worked at the secret Bletchley Park code-breaking center, where he helped crack Nazi Germany's secret codes by creating the "Turing bombe," a forerunner of modern computers. He also developed the "Turing Test" to measure artificial intelligence.

After the war, he was prosecuted for homosexuality, which was then illegal, and forcibly treated with female hormones. He died at age 41 in 1954 after eating an apple laced with cyanide.

Turing received a posthumous apology from the British government in 2009, and a royal pardon in 2013.

The UK's highest-denomination note is the last to be redesigned and switched from paper to a more secure and durable polymer. The redesigned 10-pound and 20-pound notes feature author Jane Austen and artist J.M.W. Turner.

The Turing banknote will enter circulation in 2021. It includes a photo of the scientist, mathematical formulae and technical drawings, and a quote from Turing: "This is only a foretaste of what is to come, and only the shadow of what is going to be."

Former lawmaker John Leech, who led the campaign for a pardon, said he was "absolutely delighted" by the choice.

"I hope it will go some way to acknowledging his unprecedented contribution to society and science," he said.

"But more importantly I hope it will serve as a stark and rightfully painful reminder of what we lost in Turing, and what we risk when we allow that kind of hateful ideology to win."

THE CODE BREAKER

AND THE CODE MAKER (THE ENIGMA)