

# Alan Turing

“Sometimes it is the people no one can imagine anything of who do the things no one can imagine.”



ALAN TURING

# WHO IS ALAN TURING?

British Mathematician, Logician and Computer Scientist.

Alan Turing was born in London on 23<sup>rd</sup> June 1912.

At the age 1 year old, his mother moved to India to be with his dad. His dad worked for the India Civil Service. For this reason, his family travelled back and forth from India.

Alan grew up with his family and friends. The Turings were considered upper-middle class, connected to the British colonial system.

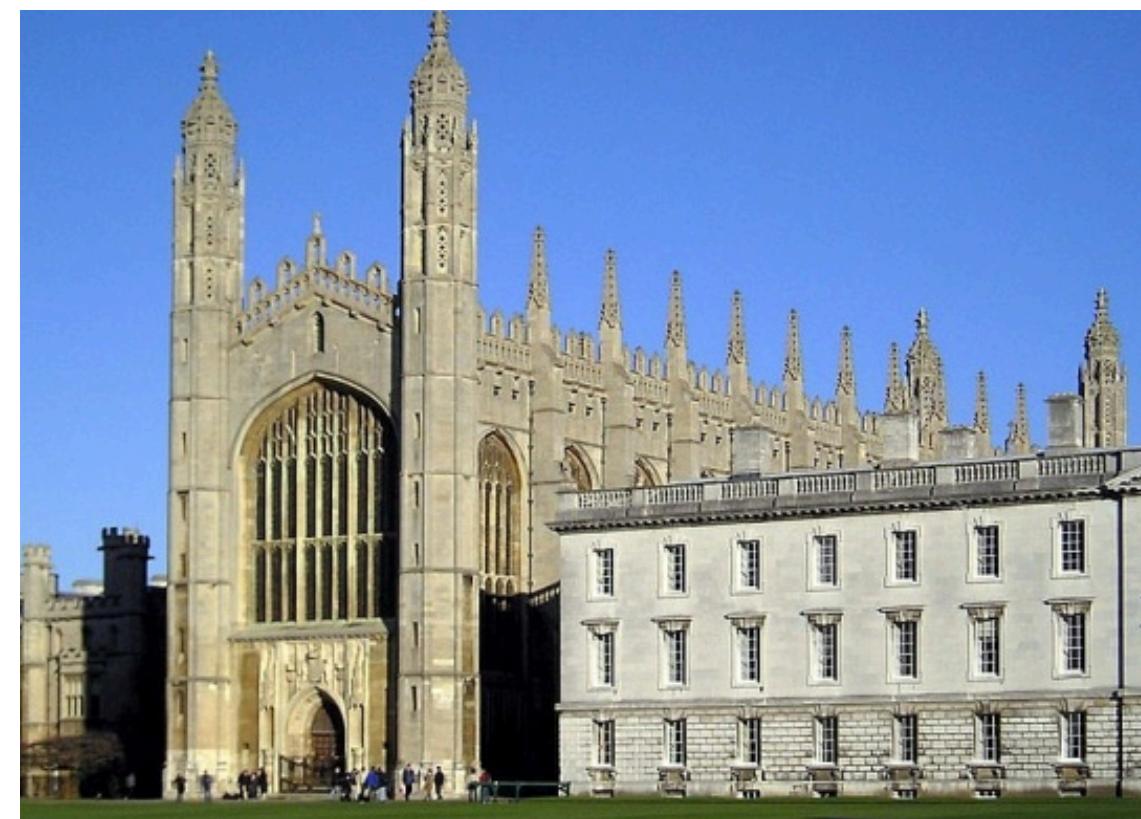
Education and service were very important in the family, which influenced Alan's early academic path.



# Alan Turing's Education



Sherborne School



King's College Cambridge

1934: First Class Degree

1935: Elected a Fellow of  
the College



Institute of Advanced  
Study, Princeton

1936-38 :  
Completes a PhD in  
Mathematics

# World War II





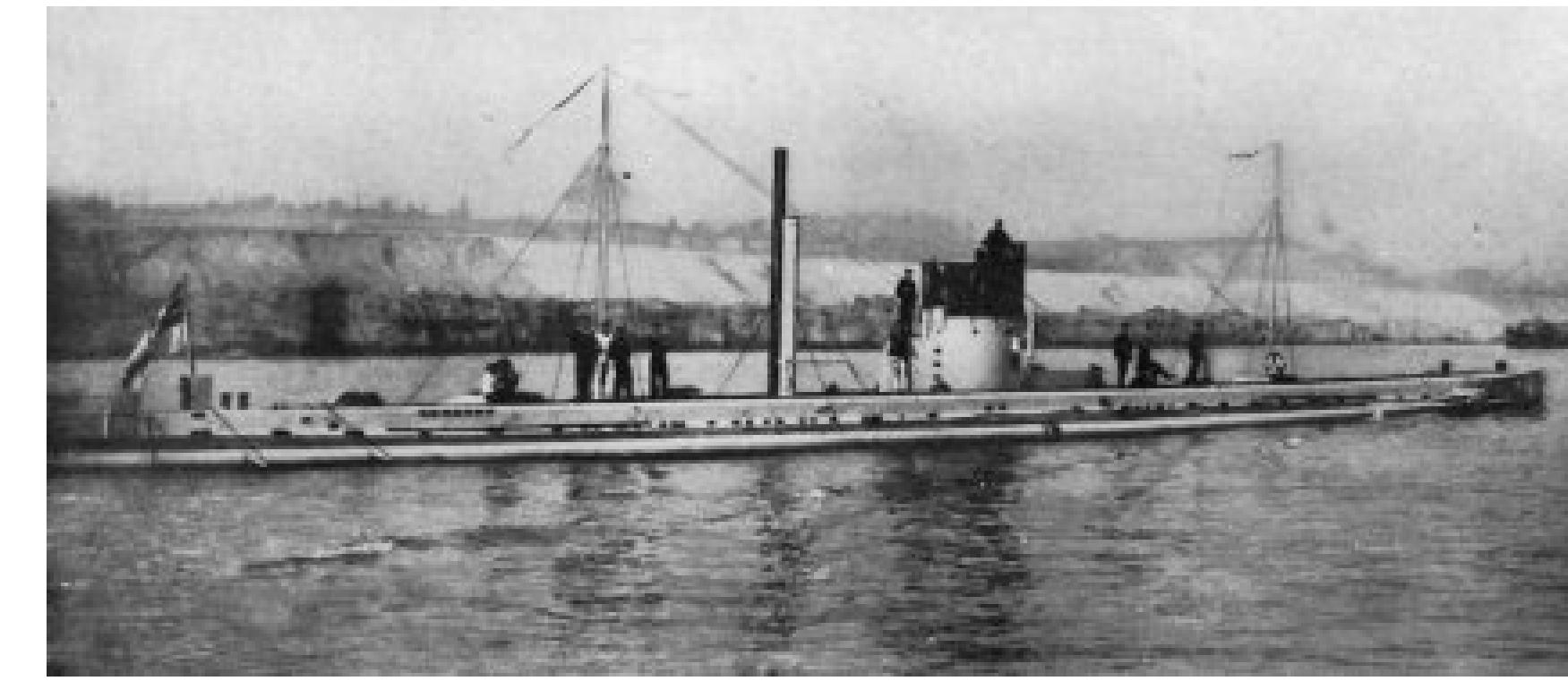


**Bletchley Park** was the focal point of the British codebreaking efforts during WWII. They would intercept 3 – 5000 enigma messages per day.

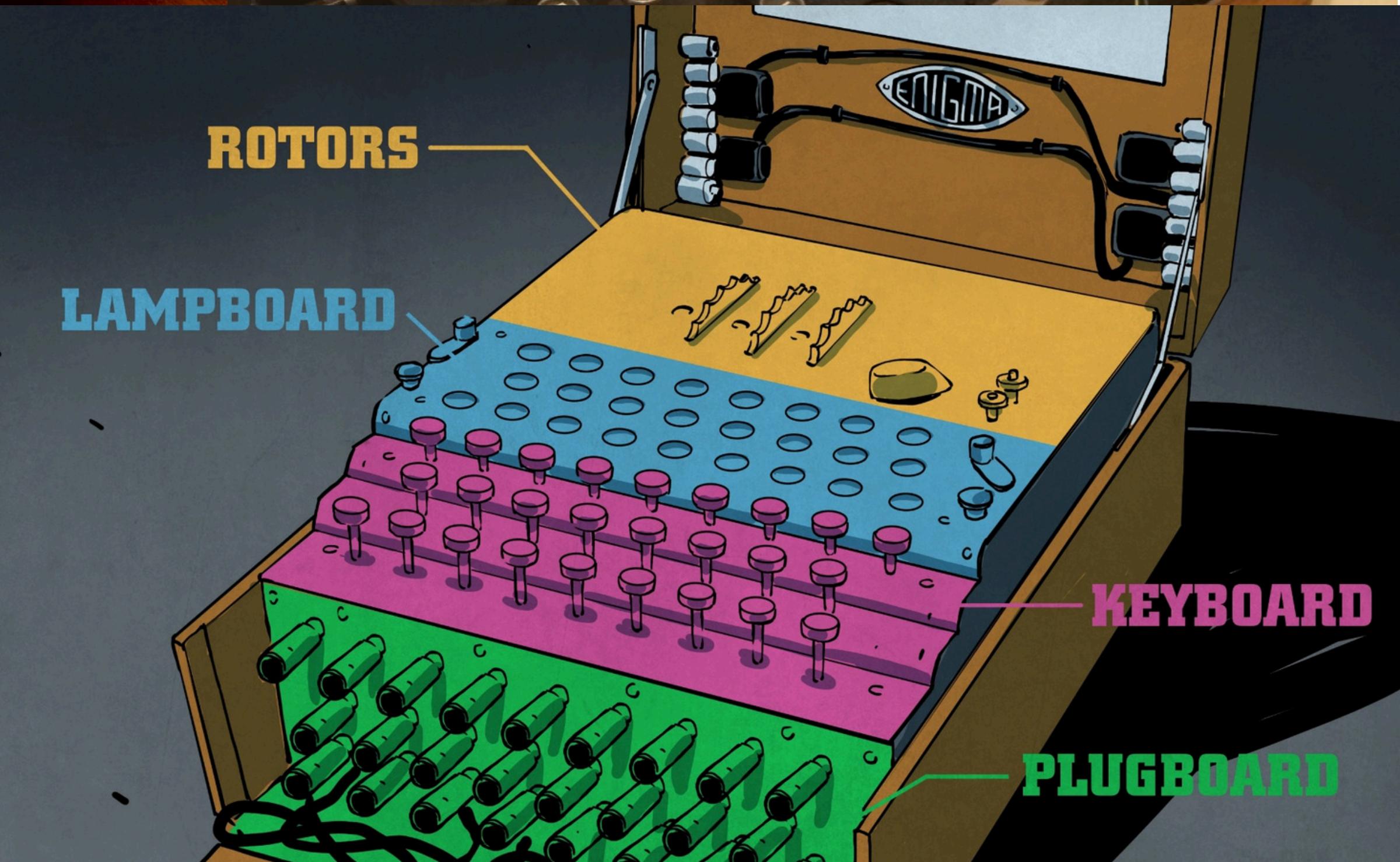
These messages were encrypted using an enigma machine. The only way to decrypt them was to use an enigma machine that was set to the correct settings

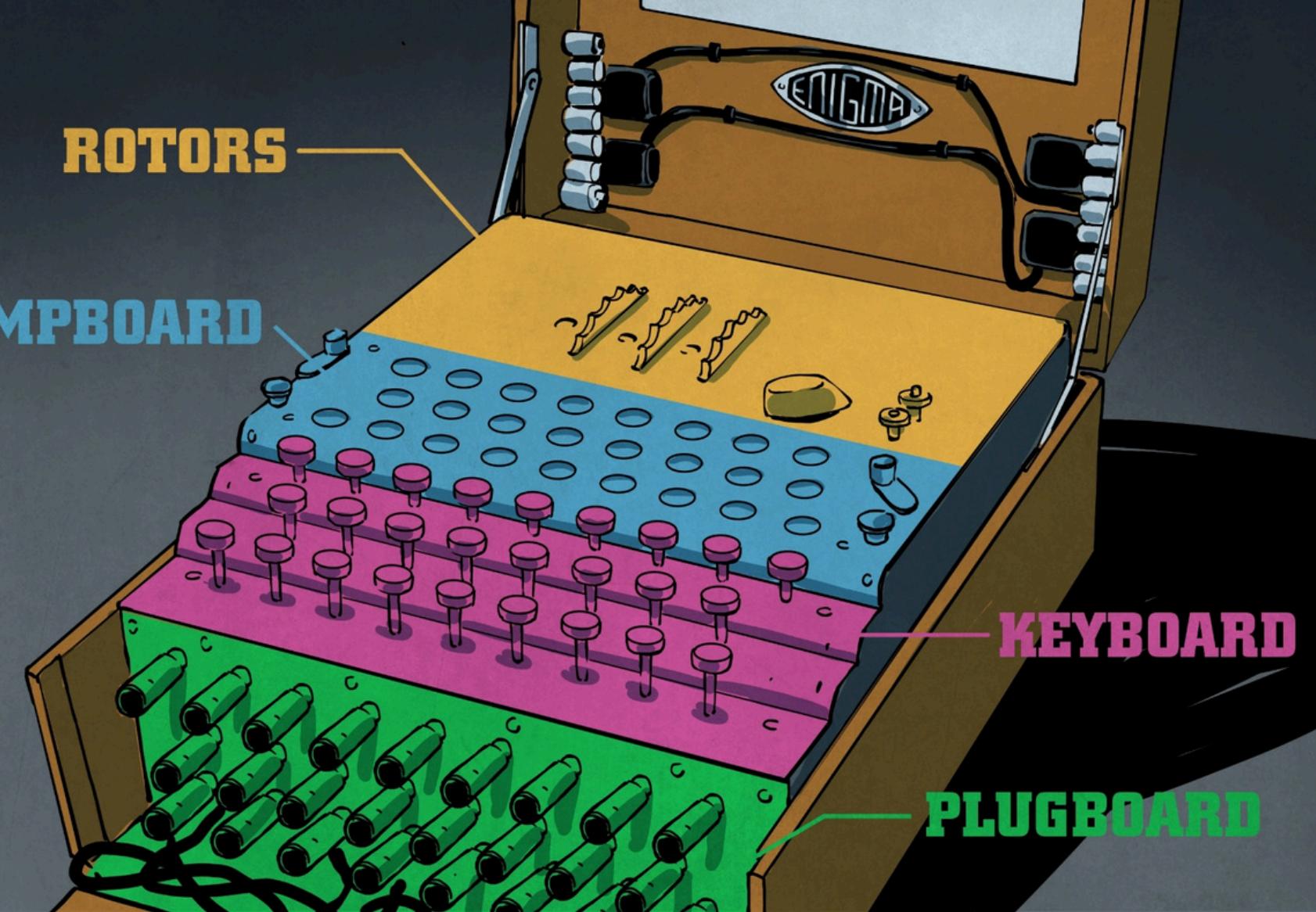


Naval Enigma  
Machine



Used to encode telegraph messages to and from German U-boats (submarines)





# HOW DID THE ENIGMA WORK?

- The Enigma was like a special typewriter that changed letters into different letters to make secret codes.
- When you pressed a letter, it lit up a different letter.
- Inside, it had rotating wheels (called rotors) that mixed up the letters in a new way every time you pressed a key.
- It also had a plugboard that swapped letters before and after the wheels.
- To read the secret message, the other person needed the same machine and the same settings.

# Turing designed the *bombe* – a tabulating machine which could be used to break the enigma code



- Guess a Piece:
- First, codebreakers made a smart guess about part of the real message (for example, "weather" might be in a weather report).
- Check Settings:
- The Bombe tested thousands of Enigma settings very quickly to find which one could match the guess.
- Find Mistakes:
- If the settings didn't match properly (a "contradiction"), the Bombe rejected that setting and tried the next one.
- Narrow Down:
- When the Bombe found settings without mistakes, it gave possible Enigma settings.
- Human Check:
- People then checked those possible settings manually to fully decode the message.

# The Secrets of Bletchley

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The work at Bletchley park remained a secret for over 50 years.

## COMPUTING MACHINERY AND INTELLIGENCE

BY A. M. TURING

### 1. *The Imitation Game.*

I PROPOSE to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'. The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words 'machine' and 'think' are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, 'Can machines think?' is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a definition I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words.

The new form of the problem can be described in terms of a game which we call the 'imitation game'. It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex. The interrogator stays in a room apart from the other two. The object of the game for the interrogator

# Accomplishments Achieved By Turing

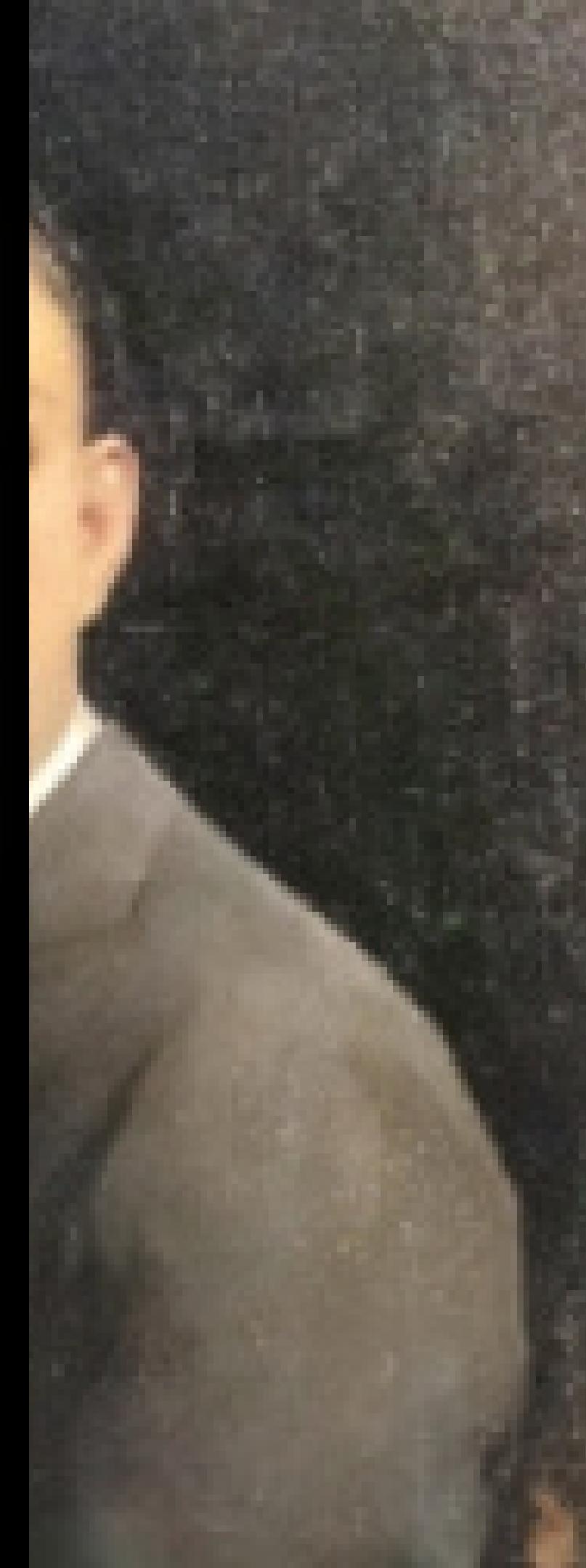
- Helped build the first programmable computer
- Developed modern programming techniques
- With his team at Manchester, builds the first stored programme electronic computer
- Worked on artificial intelligence, developing early programmes for a chess machine
- Used computers to study biological growth



# The Betrayal of Turing

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- In 1952 Turing was a victim of Theft.
- When he reported it to the police, he was arrested. But Why?
- Turing had identified the thief as Arnold Murray, a man he had ‘Spent the weekend’ with.
- Alan Turing was a Gay man.
- Until 1967, Homosexuality was a criminal offence in England



money the property of the said Tom Roberts in the said shop.

Alan Mathison  
Turing.

- |  |        |
|--|--------|
| 1.On the 17th day of December, 1951, at Wilmslow, being a male person, committed an act of gross indecency with Arnold Murray, a male person.                      | Guilty |
| 2.On the 17th day of December, 1951, at Wilmslow being a male person was party to the commission of an act of gross indecency with Arnold Murray, a male person.   | Guilty |
| 3.On the 12th day of January, 1952 at Wilmslow, being a male person committed an act of gross indecency with Arnold Murray, a male person.                         | Guilty |
| 4.On the 12th day of January, 1952, at Wilmslow, being a male person, was party to the commission of an act of gross indecency with Arnold Murray, a male person.  | Guilty |
| 5.On the 2nd. day of February 1952 at Wilmslow, being a male person committed an act of gross indecency with Arnold Murray, a male person.                         | Guilty |
| 6.On the 2nd. day of February, 1952, at Wilmslow, being a male person, was party to the commission of an act of gross indecency with Arnold Murray, a male person. | Guilty |

# The Death of Turing

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- On 8 June 1954 Turing was found dead in his home
- The post-mortem showed he'd died of cyanide poisoning



# Enigma genius Turing in 'gay crime' pardon

'Fitting tribute to an exceptional man'



**RENNOMED**  
Code-breaker  
Alan Turing

Read more about  
Alan Turing  
**FREE**  
[mirror.co.uk](http://mirror.co.uk)

His code-cracking shortened war by two years



**TOP SECRET** Bletchley Park

ALAN Turing's brilliance may have shortened the war by up to two years, experts believe.

He devised ground-breaking techniques along with a team of top mathematicians to crack German military codes at

top-secret Bletchley Park, Bucks - the forerunner of GCHQ.

The Nazis relied on a typewriter-style Enigma machine to encrypt messages using 158 quintillion possible settings. Turing created the

world's first primitive computers, huge machines known as "bombe", to decrypt them. The intelligence helped beat Rommel in North Africa and warded off the U-boat threat to Atlantic convoys.



ENIGMA German encrypting machine

BY TOM MCTAGUE  
Political Correspondent

**SECOND** World War hero Alan Turing will today be officially pardoned for his "crime" of being gay.

The renowned scientist, who cracked Germany's Enigma Code, was convicted of gross indecency and sentenced to "chemical castration" in 1952.

He died two years later, aged 41, of cyanide poisoning, which an inquest determined was suicide although his family believed that it was accidental.

After a long campaign to wipe the conviction from his record, the Queen will now grant Turing a posthumous pardon under the Royal Prerogative of Mercy.

The pardon finally clears the name of the man who has often been described as the "father of modern computing".

It follows a request from Justice Secretary Chris Grayling, which was backed by MPs and leading scientists, including Professor Stephen Hawking, and received huge public support. Mr Grayling said: "Dr Alan

Turing was an exceptional man. His brilliance was put into practice during the Second World War.

"He was pivotal to breaking the Enigma Code, helping to end the war and save thousands of lives.

"His later life was overshadowed by his conviction for homosexual activity, a sentence we would now consider unjust and which has now been repealed.

"Dr Turing deserves to be recognised for his fantastic contribution to the war effort and his legacy to science.

"A pardon from the Queen is a fitting tribute to an exceptional man."

PM David Cameron said: "Alan Turing was a remarkable man who played a key role in saving this country in World War Two. His action saved countless lives."

Lib Dem peer Lord Sharkey, who proposed a private members' bill to grant the pardon, said the move "made some amends for the cruelty and injustice with which Turing was treated".

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VOICE OF MIRROR: PB

**He deserves recognition for his part in the war & his legacy to science**

CHRIS GRAYLING MP  
WHO REQUESTED PARDON

# attitude

THE  
GAY  
MAN  
WHO  
SAVED  
THE  
WORLD

POSTHUMOUS  
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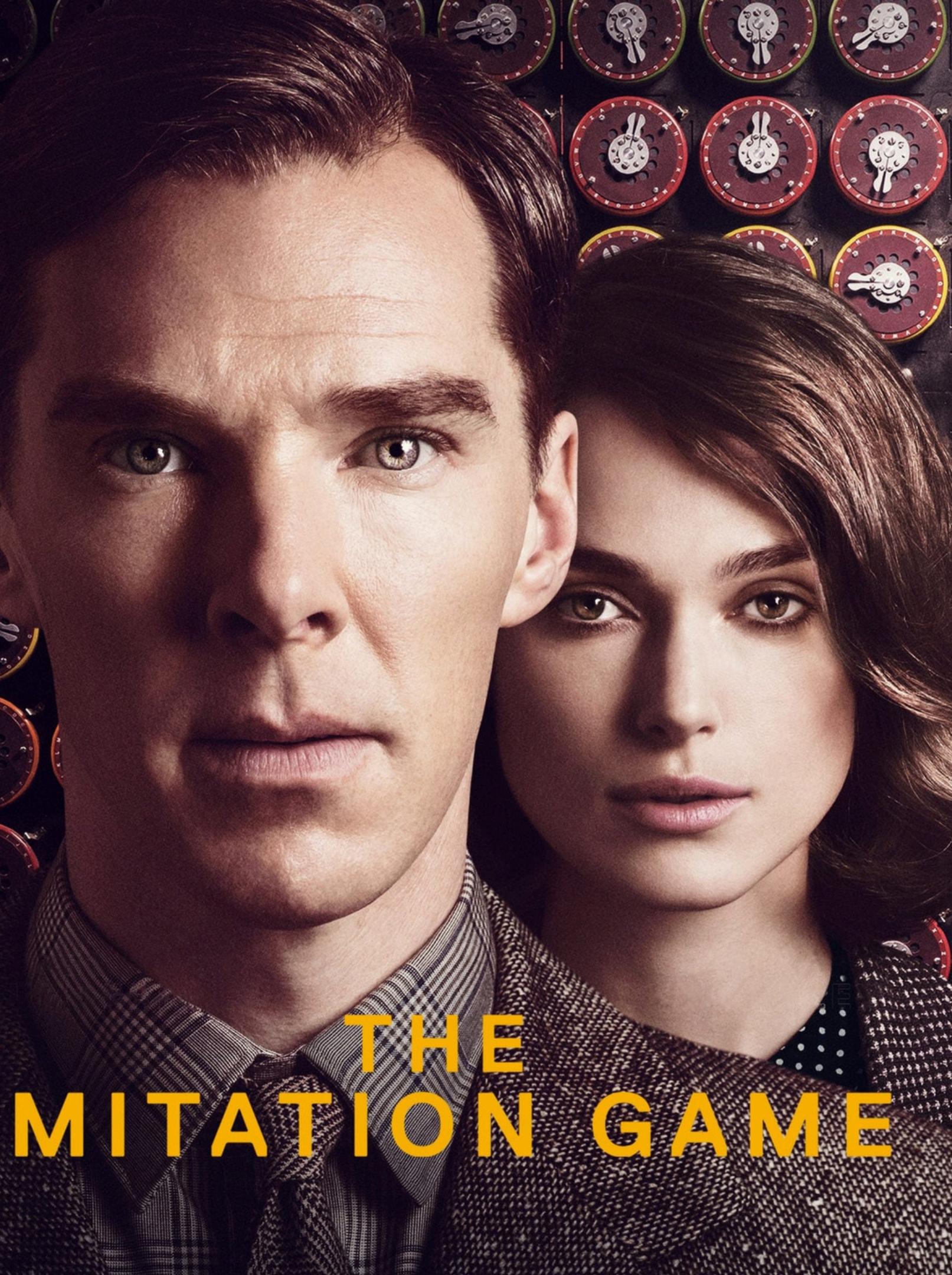
1912-1954







A



# Alan Turing

1912 - 1954

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