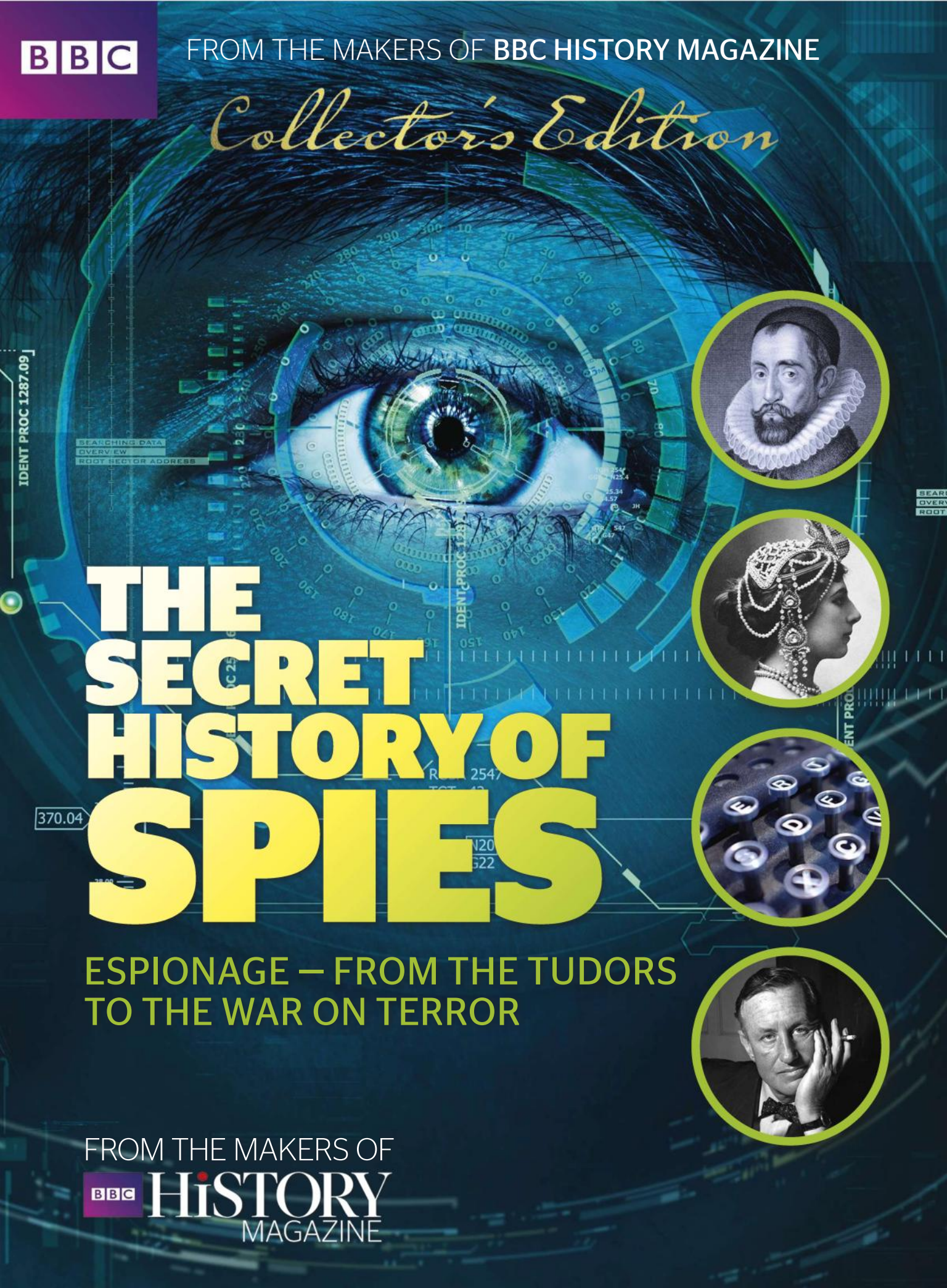
BBC

FROM THE MAKERS OF **BBC HISTORY MAGAZINE**

Collector's Edition



THE SECRET HISTORY OF SPIES

ESPIONAGE – FROM THE TUDORS TO THE WAR ON TERROR

FROM THE MAKERS OF

BBC HISTORY MAGAZINE

Collector's Edition

THE SECRET HISTORY OF SPIES

ESPIONAGE – FROM THE TUDORS TO THE WAR ON TERROR

WELCOME

Spies are everywhere. Or, at least, the fictional ones are. Every year a host of new books, films and television series tell the stories of secret agents who engage in thrilling adventures in the world of shadows. As for the real spies, their faces may be less recognisable – for good reason! – but their stories are just as fascinating, and they have been shaping great events in history for many thousands of years.

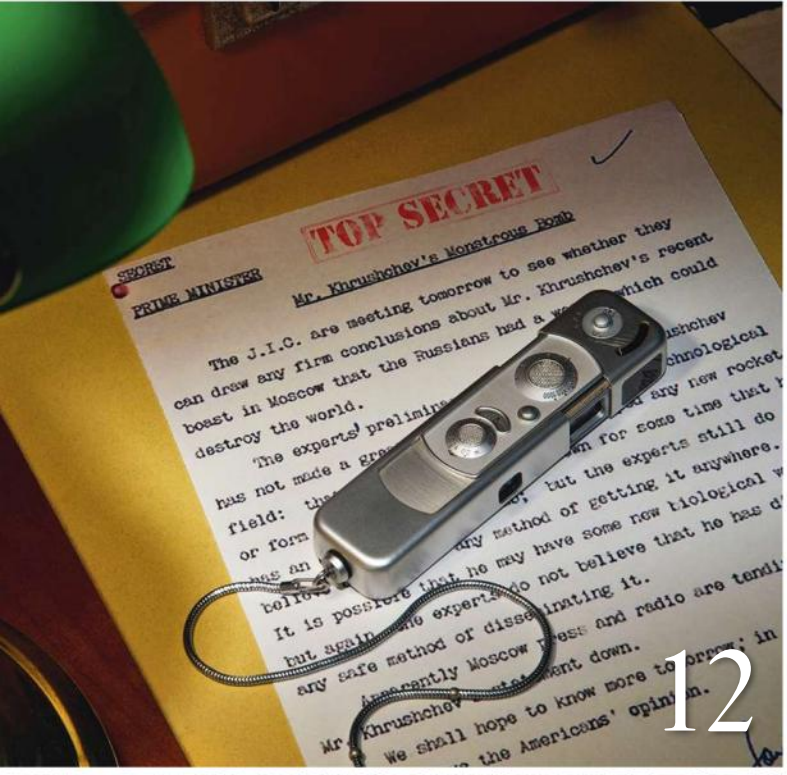
In this new collector's edition from *BBC History Magazine*, we will introduce you to some of the world's most daring agents and double agents, from the Tudor court to the modern world of digital espionage. You will discover the intelligence wars behind the major conflicts of the past two centuries and learn the tricks of the trade that spooks have used to stay ahead of the game. Expert historians will guide you through amazing tales of espionage, separating the truth from the legends that surround these colourful characters.

I hope that you enjoy this collector's edition and please be aware that, for security reasons, it will self-destruct 30 minutes after you have finished reading...

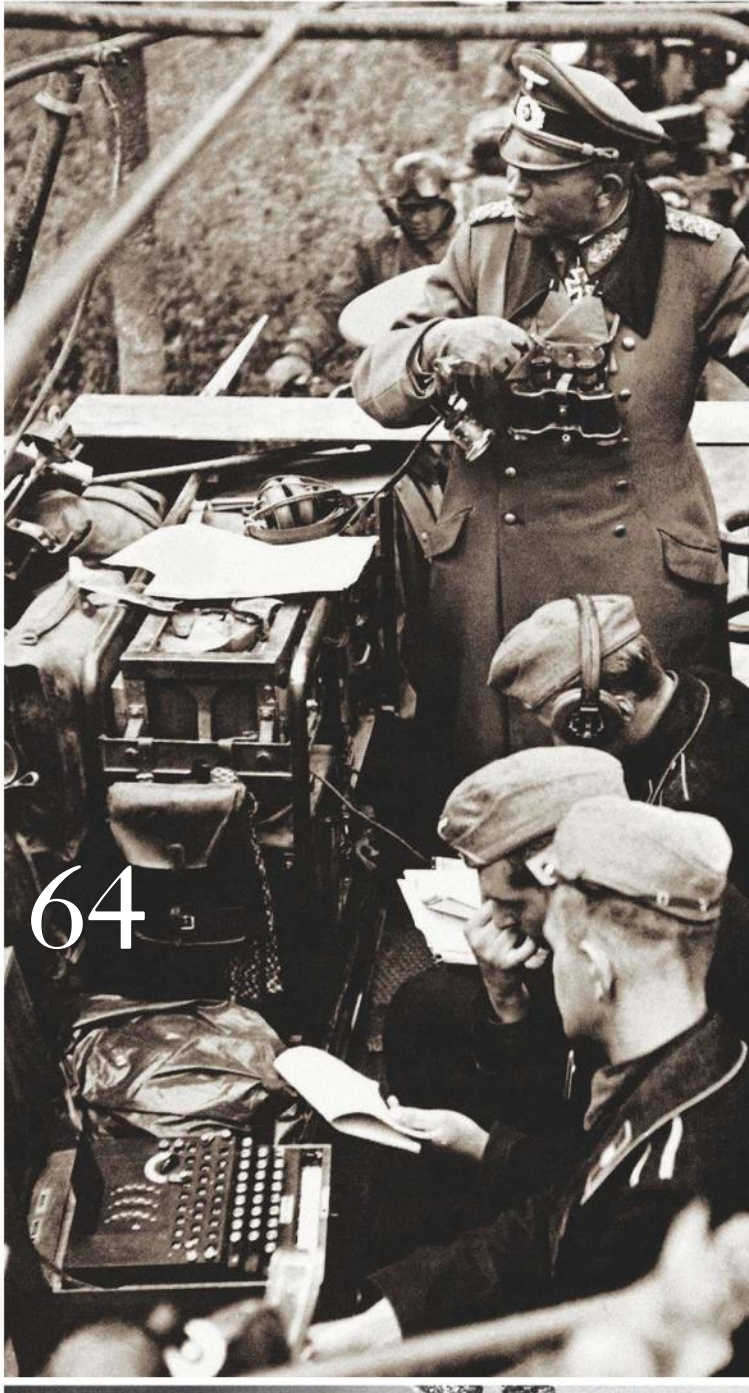
Rob Attar, Editor

FROM THE MAKERS OF BBC HISTORY MAGAZINE

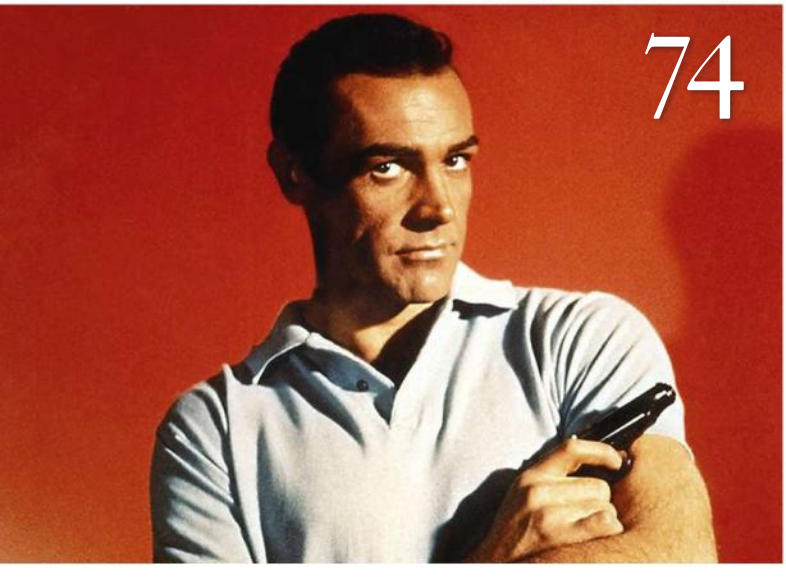
CONTENTS



12


64


90


74


104

VICTIM OF ESPIONAGE
Antoine Dufour's c1505 portrait of Joan of Arc, an early victim of a spy sting. English-backed informants helped secure the evidence that sealed Joan's fate

GETTY IMAGES

Spying through the ages

From Old Testament espionage to Roman ciphers and medieval spies, **Michael Goodman** *traces the early history of covert activities*

Born to peasant parents at the start of the 15th century, Joan of Arc was able to secure her place in history despite being executed before her 20th birthday. She grew up in Lorraine, in what is now north-eastern France, near the border with Germany. From an early age, Joan claimed to have been given a divine vision to protect France from English domination, at a time when the two countries were locked in the Hundred Years' War. Her tactical prowess was impressive and she was actively involved in a number of important victories. Such was the scale of these that she met the prince who would later become Charles VII of France; it is claimed that the meeting inspired him to greater confidence and belief in the French cause.

Unsurprisingly, Joan's exploits came to the attention of the English. That someone so young, of peasant stock and illiterate, could achieve such successes was unfathomable, and the simple answer was that she must be a witch. In May 1430, she was captured in Compiegne in northern France and passed on to Pierre Cauchon, the bishop of Beauvais, to extract a confession.

Cauchon was, however, an English spy. The year before, the French army had threatened his diocese in northern France and he had turned to the English for help. He repaid this debt in his role with Joan of Arc. Cauchon stage-managed her trial and used a number of his own contacts for espionage purposes by getting them to don disguises and befriend Joan to gain her trust and obtain details that could be used against her. These ploys were ultimately successful: Cauchon was pivotal in ensuring that she confessed to the crime of heresy. Joan of Arc was burned at the stake in 1431, but remained a heroine to many. She was canonised by Pope Benedict XV in 1920.

Intelligence and espionage is often referred to as the second oldest profession, younger only than prostitution (to which it has often been linked). Its first reference comes from the Old Testament, when Moses is told to "Send men to spy out the land of Canaan" (Numbers 13). There are other references to similar activities in the Bible, for instance: "And Joshua the son of Nun sent out of Shittim two men to spy secretly, saying, Go view the land, even Jericho. And they went, and came into a harlot's house, named Rahab, and lodged there" (Joshua 2:1).

We know from classical times that espionage and intelligence were active parts of both warfare and statecraft. This was evidenced in the fifth century BC, when the ancient empires of Athens and Sparta locked horns. The Peloponnesian War, as it became known, was a ferocious contest, lasting on and off for more than 25 years. At the heart of the war was a naval contest, ultimately decided by the destruction of the Athenian fleet in 404 BC. In his account of the war, Greek historian Thucydides recreates the battle for naval supremacy. In doing so he refers to 'intelligence' being gathered, not only in terms of the locations of the enemy ships, but also relating to the composition and nature of the boats themselves.

> Intelligence and espionage is referred to as the second oldest profession, younger only than prostitution

During the rule of Julius Caesar in the first century BC, it became increasingly important to be able to deliver military messages securely, so that even if the messenger was intercepted and captured, the message's

SECRET SOCIETY
Bernardo Celentano's depiction of Venice's Council of Ten, whose meetings were held in secret and whose methods – thought to include poisoning – were feared. From 1310 to 1797 they used a large network of informants to counter threats to the state

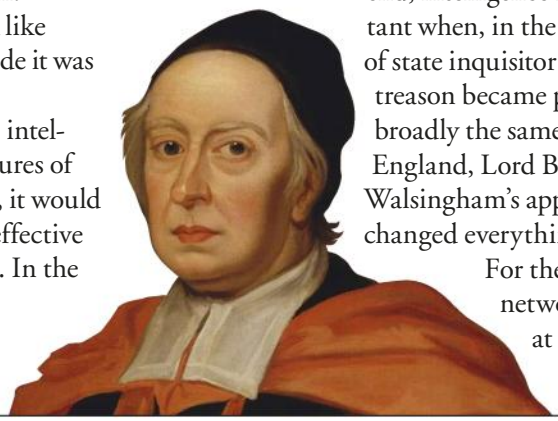
content would not be revealed. The rather ingenious solution to this problem was the creation of the 'Caesar cipher'. Details come from a Roman historian called Suetonius, writing in the first century AD. In his biography of Caesar, he describes the process. It was, by all accounts, remarkably straightforward but, given that most individuals were illiterate at that time, it was potentially quite successful. It used a simple substitution code where letters were shifted either to the right or left by a number of places, so A became D, B became E, and so on. While the encrypted result might look like gibberish, for anyone who knew the code it was quick to decipher.

With the fall of the Roman empire, intelligence, like a great many modern features of its statecraft, mostly vanished. Indeed, it would not be until the 16th century that an effective intelligence process was re-established. In the centuries in between, intelligence had often been employed in localised conflicts or in the form of messengers and informers, but these were sporadic and barely resembled an organised system. Notable examples include the role played by informers in events like the Spanish Inquisition, or the way in which influential figures like Machiavelli wrote about the role of intelligence in protecting statecraft.

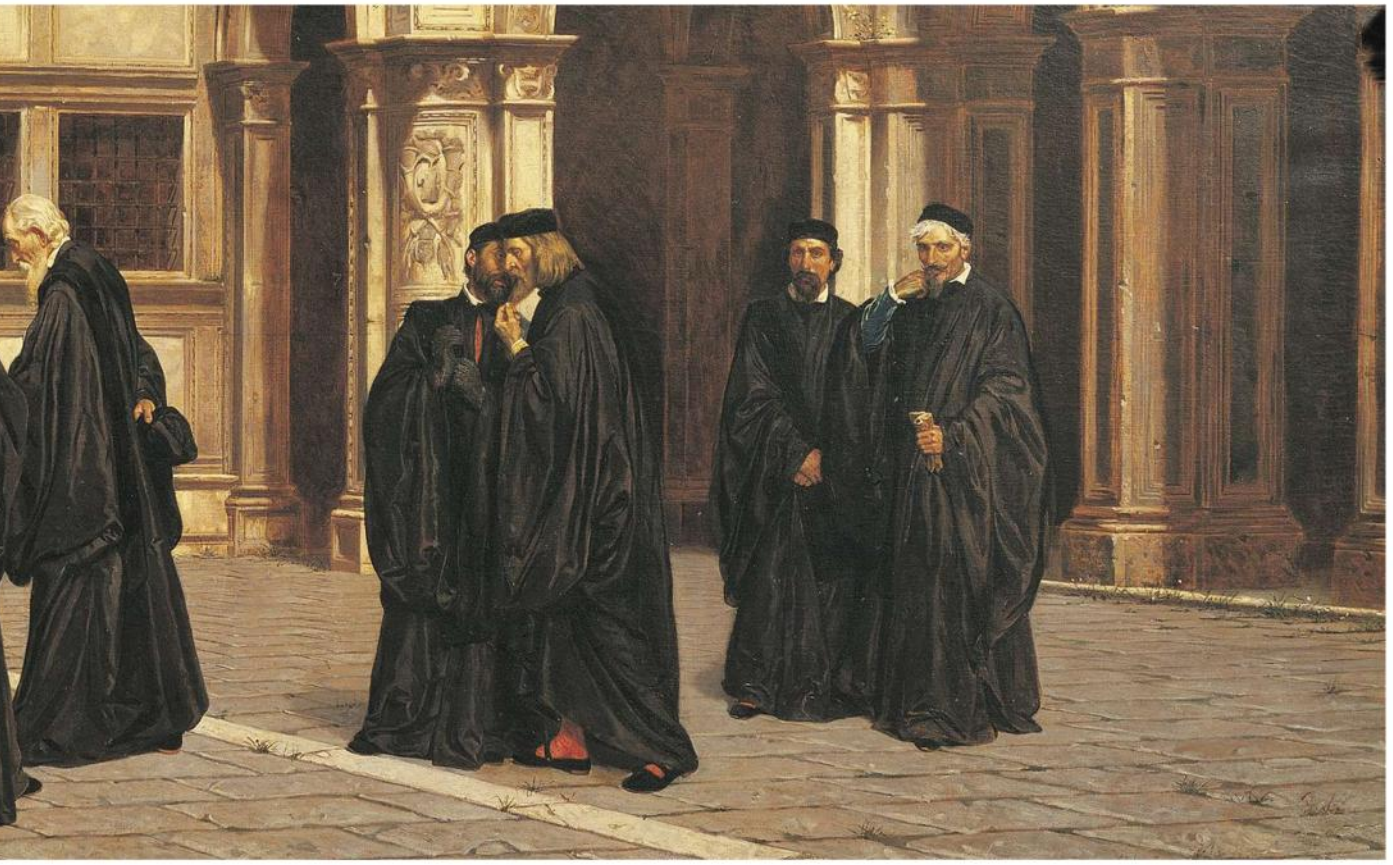
In the 14th century, the Council of Ten was created in the Republic of Venice. A hugely secretive organisation, its role was to protect the Doge (the Venetian leader) and the republic. To this end, intelligence increasingly became important when, in the mid-16th century, the role of state inquisitor was created and the crime of treason became punishable by death. At broadly the same time in Elizabethan England, Lord Burghley and Sir Francis Walsingham's approach to intelligence changed everything.

For the first time, a successful network of agents, operating at home and overseas, was

Mathematician John Wallis was parliament's cryptographer during the Civil War



BRIDGEMAN ART LIBRARY / NATIONAL PORTRAIT GALLERY



co-ordinated toward common goals. Different types of intelligence-gathering were employed and, in Walsingham's position, officially the Queen's principal secretary, intelligence was combined with statecraft.

Following this period, it would be the never-ending succession of wars in Europe that would highlight the value of intelligence, both in a national and international context. During the Civil War, both sides – the Roundheads and the Cavaliers – deployed spies to provide details of what the other side was plotting.

This period coincided with the creation of the post of 'Chief Cryptographer to Parliament and the Court'. The first incumbent of this short-lived position was John Wallis (who occupied it from 1643 to 1689). A noted mathematician, Wallis used his considerable skills both to create codes and to decipher enemy transmissions.

> During the Civil War, both sides deployed spies to find out exactly what the other side was plotting

By the 18th century – and with the development of the nation state system – intelligence had become a commonly featured aspect of diplomacy and statecraft. Its function was to protect the leader from internal and external threats, as much as it was to enable a secure means of communication. Its expansion in the 19th century and beyond was therefore the evolution of a process that had begun several thousand years before.

Humankind has always been inquisitive and a covert intelligence service is the perfect means of providing information. As warfare changed and as threats intensified and expanded, it became ever more vital to use whatever means were necessary to gather information on the plans of the enemy. While the technology used to secure this has changed markedly over the centuries, the central rationale of intelligence has remained true to its original composition. ■

SPYCR

THE METHODS OF THE SPYMASTERS

- **TRICKS OF THE TRADE:** sneaky subterfuge
- Espionage in the time of the **TUDORS**
- A short history of **INFORMATION INTERCEPTION**

AFT

THE EYE IN THE SKY
Able to fly at an altitude of 70,000 feet, the American U-2 reconnaissance airplane was designed to evade enemy missiles and radar

CORBIS

During the 1960s, East Germany issued its agents with these microdot cameras, which could take a picture of an entire document before reducing the image to the size of a dot

TRICKS *of the* TRADE

In the world of international espionage, keeping one step ahead of the enemy requires truly innovative thinking. From exploding rodents to pellet-firing umbrellas, **HUW DYLAN** unveils some of the extraordinary methods adopted in order to gain a crucial advantage

COURTESY OF THE INTERNATIONAL SPY MUSEUM

The bug fitted into the heel of a shoe and would broadcast any noise to listening spooks

1 Shoe bug

How the KGB made strides in the espionage game

Bugging embassies was part and parcel of the Cold War espionage game. The Soviets bugged western premises in Moscow, while former counterintelligence officer Peter Wright reminisced about how the British "bugged and burgled" their way across London. Sensitive areas were thus regularly swept for bugs. Then, in the 1960s, the Soviet KGB and their allies in the Romanian Securitate decided that the best way to avoid their bugs being discovered was for them not to be there when the sweeps took place. So they developed a bug that fitted into the heel of a shoe. Diplomats often had their shoes posted from the west, so they were intercepted en route. The transmitter would pick up any noise in the local area and broadcast it to listening spooks. One was apparently planted on the US ambassador to Czechoslovakia.

2 Minox camera

The snap-happy spy's favourite piece of kit

The Minox camera is the quintessential item in the Cold War spy's toolkit. The original was manufactured in 1936, but the design evolved throughout the Second World War and beyond. Intelligence agencies in both the east and west adopted the camera because it was small and slim, and its excellent macro lens was ideal for photographing documents. The micro film was also far easier to conceal than a sheaf of paper. Some of the most notorious spies of the Cold War used Minox cameras. John Walker Jr, one of the USSR's most significant American spies, used his to compromise the secrets of the US navy. Oleg Penkovsky, a Soviet military intelligence colonel in the service of Britain, used one to photograph papers on Soviet nuclear missiles.

Small, slim and discreet, the Minox – and its micro film – was easy to conceal

COURTESY OF THE INTERNATIONAL SPY MUSEUM / ALAMY

It looks like a fanciful, fictional piece of apparatus, but the Bulgarian umbrella has been deadly

3 Bulgarian umbrella

When is an umbrella not an umbrella? When it shoots deadly pellets

The 'Bulgarian umbrella' is perhaps the most clichéd of spooky assassination devices. Developed by the Bulgarian secret services and their allies in the KGB, it boasts a small, pneumatic firing mechanism, generally designed to fire pellets at very short range. One was famously used to assassinate the Bulgarian dissident Georgi Markov in London in 1978. He was shot in the leg with a poisoned pellet as he waited for a bus on Waterloo Bridge. Markov apparently did not realise what had happened and died four days later. This method was used again that same year against another dissident, Vladimir Kostov, this time in Paris. He survived. The Markov case remains open more than 30 years on.

4 The Great Seal Bug

The true purpose of this Soviet gift defied American security forces for years

In 1945, Averill Harriman, the US ambassador to the Soviet Union, accepted this large, carved seal from a delegation of Soviet youth in an apparent gesture of friendship. Looking back, it is surprising that a man in his position would take a gift from his Soviet hosts and then hang it up in his study. But security specialists could not detect anything amiss with it. In fact, it contained a very sophisticated bug, designed by the inventor Leon Theremin. The genius of the bug was that it needed no internal power source. It transmitted only when targeted by a specific radio frequency, apparently delivered from a van outside the embassy. This meant it could stay in place for years. It eavesdropped on US ambassadors until its discovery in 1952. So mysterious was the device that it was christened simply 'the thing'.

US ambassador to the United Nations Henry Cabot Lodge Jr (left) reveals the Great Seal Bug to the UN Security Council in 1960

COURTESY OF THE INTERNATIONAL SPY MUSEUM / PRESS ASSOCIATION

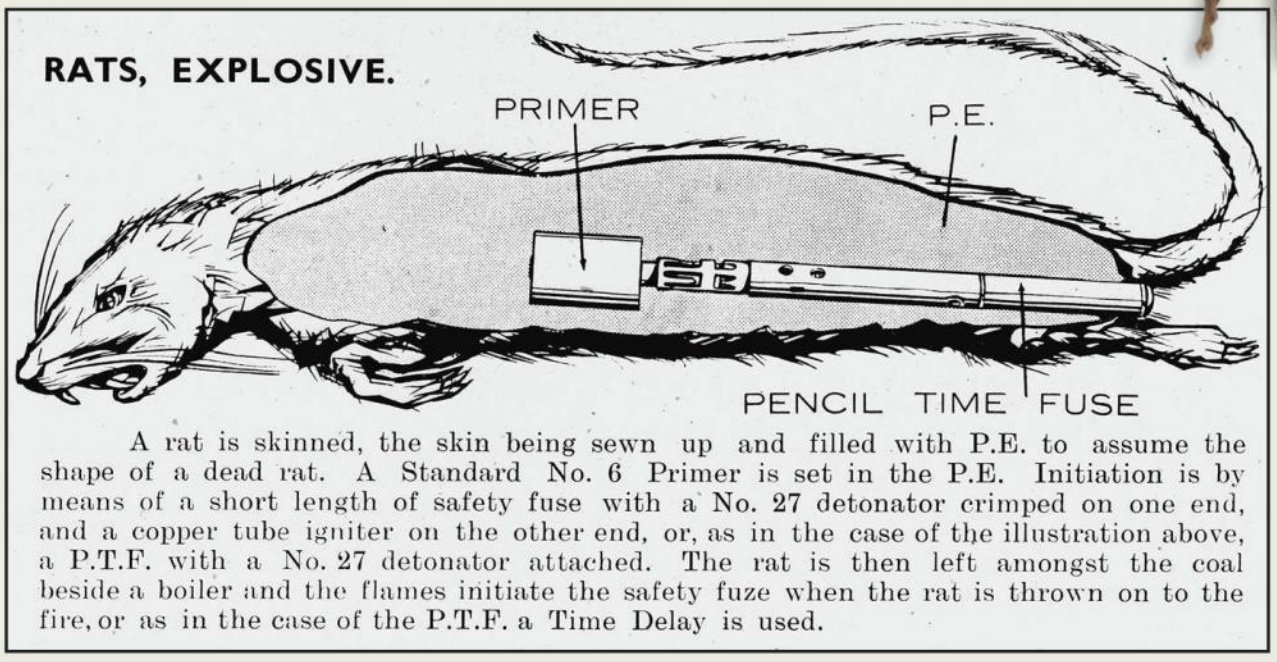
5 The exploding rat

The creativity shown by the espionage world knows no bounds, as evidenced by these rupturing rodents

Winston Churchill created the Special Operations Executive (SOE) in 1940 to "set Europe ablaze". SOE operatives worked undercover in occupied Europe, gathering intelligence, creating resistance networks and launching sabotage operations. The ability to remain undiscovered in occupied territory was vital, so they utilised a number of creative devices. These included several ingenious bombs and booby-traps. SOE engineers built bombs disguised as coals, logs, bars of soap and bottles of wine. They also built rat-bombs: dead rats filled with plastic explosive. The idea was to distribute them in railroad yards and factories. It was hoped they would be disposed of by being thrown into furnaces or boilers, where they would explode. They were never used, as the first delivery was intercepted. But the Nazis wasted a great deal of energy searching for similar sneaky sabotage schemes.

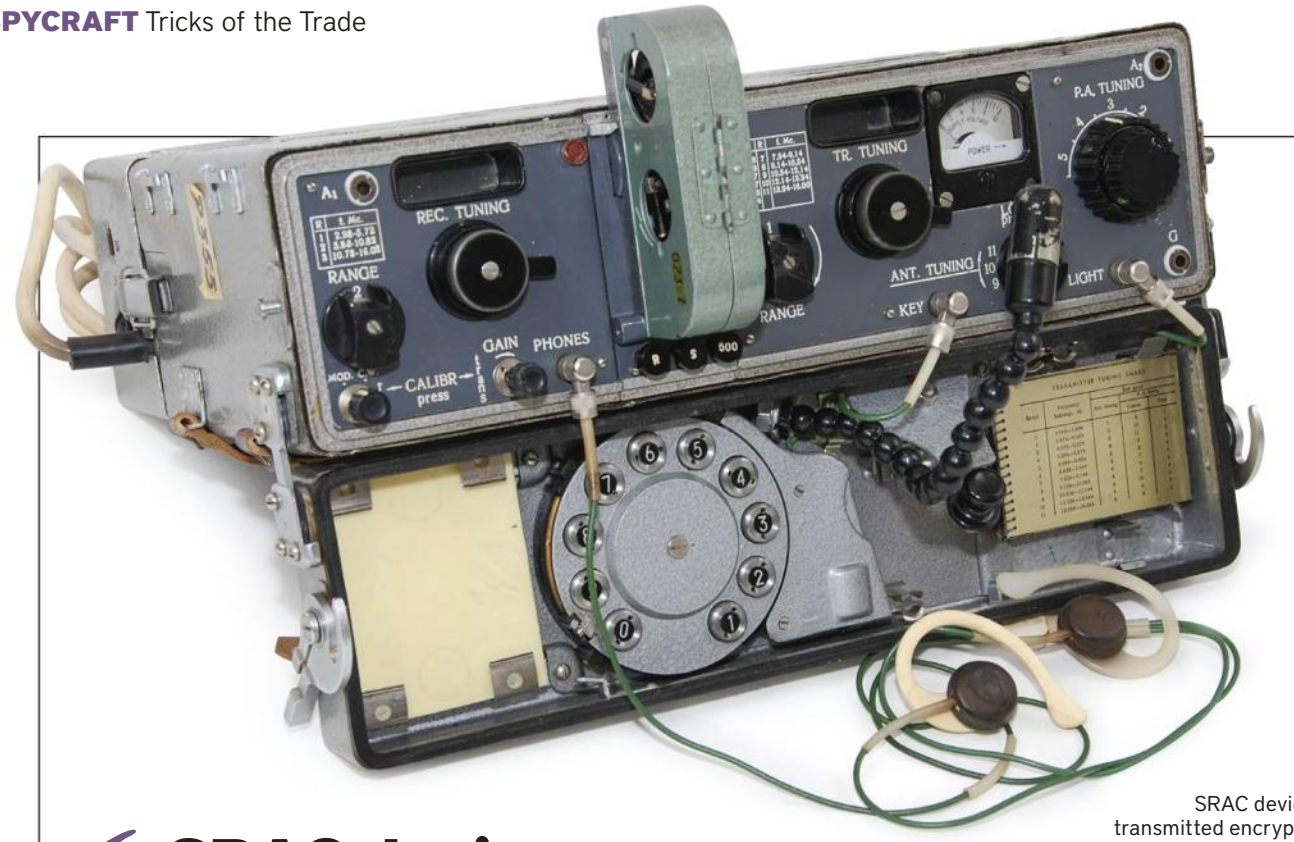
Explosive-filled dead rats (a later replica of which is shown here) were to be disposed of in the enemy's furnaces, causing huge explosions

The first batch of rats was intercepted by the Nazis, but it caused them to waste a great deal of energy searching for similarly sneaky sabotage schemes



This diagram shows – and the accompanying words explain – the science behind the explosive rats theory

GRIMEBOX-WAR RELICS FORUM / THE NATIONAL ARCHIVES



SRAC devices transmitted encrypted messages whenever their users passed a designated spot

6 SRAC devices

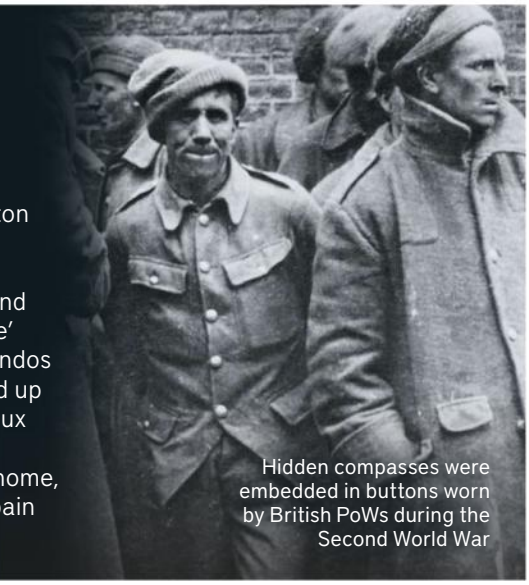
These miniature wireless gadgets reduced the need for dangerous face-to-face meetings

Cold War intelligence officers faced a critical problem: how could they communicate with their agents without compromising them? In hostile operating environments like Moscow, arranging a meeting was a painstaking process, one definitely not to be rushed. Various techniques to cut out meetings were deployed, but developments in radio technology in the 1970s provided the answer. Engineers in the CIA's Office of Technical Services created SRAC (Short-Range Agent Communication) devices. These stored a limited amount of text in a memory and then sent it as a 'burst'. The agent could pass through a designated spot transmitting as he/she walked. The devices were used throughout the world, perhaps most notably by the Americans' long-term spy in the USSR, Dimitri Polyakov. They have also survived into the 21st century: in 2006, the Russians exposed an alleged British SRAC system in Moscow, the infamous 'spy rock'.

7 Button compass

The way home for those behind enemy lines

During the Second World War, all sides needed to design escape and evasion kits for soldiers, spooks or airmen trapped behind enemy lines. In Britain, a key component was the button compass. One model was invented by Christopher Hutton, who worked for MI9, the British prisoner escape outfit. Hidden in the back of tunic or fly buttons, the cover unscrewed the wrong way, so that if the Nazis tried to remove it, they would only tighten it. Button compasses were smuggled to prisoners of war and issued to personnel likely to end up behind the lines. This included 'Blondie' Hasler and his team of commandos who, in France in 1942, paddled up the Gironde estuary to Bordeaux harbour to mine Nazi blockade runners. Two of them made it home, navigating across France to Spain using button compasses.



Hidden compasses were embedded in buttons worn by British PoWs during the Second World War

CRYPTO MUSEUM / GETTY IMAGES

8 Black Hornet Nano

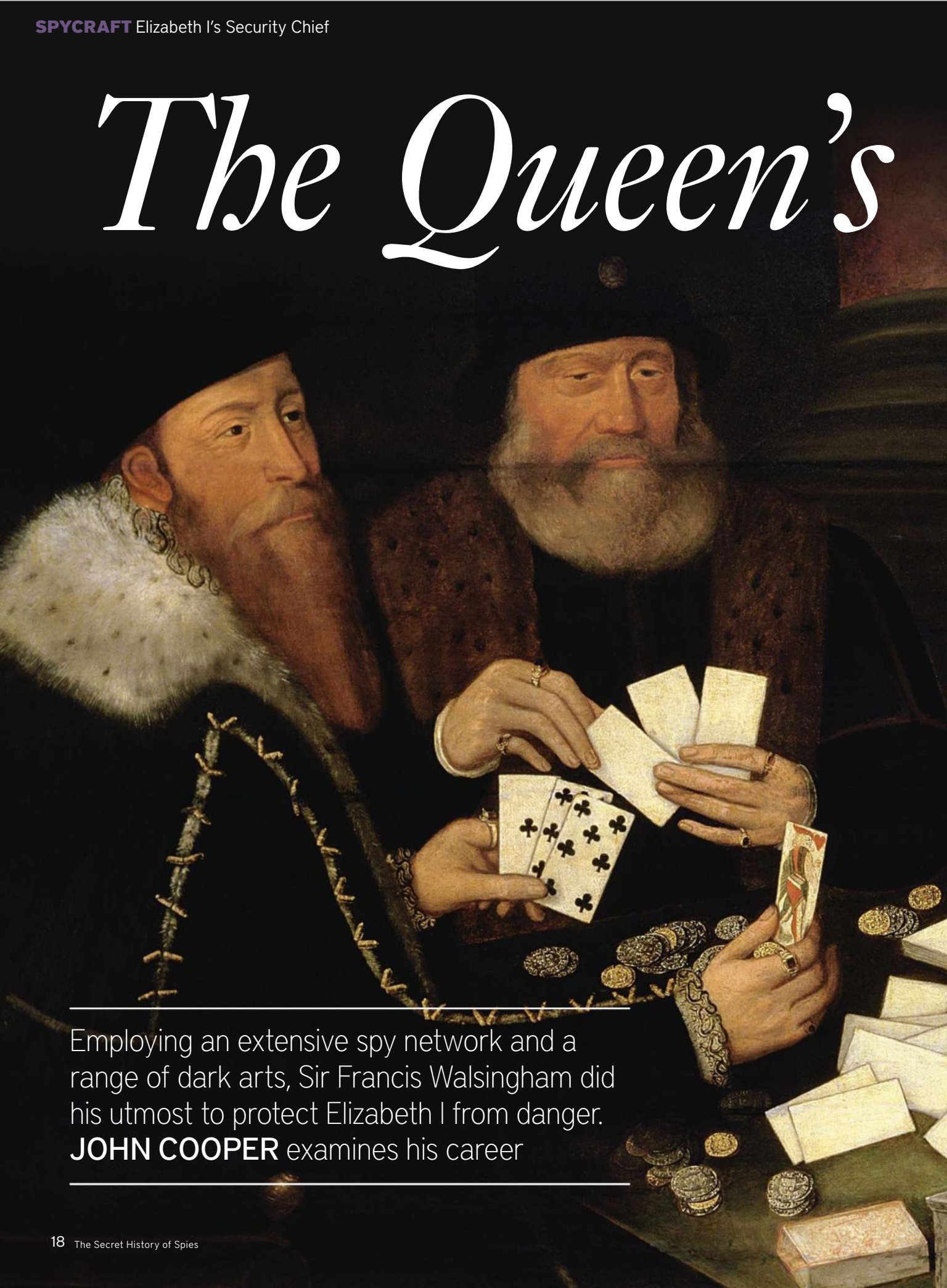
The high-tech era of the tiny spy in the sky

Intelligence has always been vital for soldiers operating in dangerous environments. Two centuries ago, the celebrated British soldier and statesman the Duke of Wellington once noted that the key to success was "knowing what was on the other side of the hill". And, over the past decade, soldiers in Iraq and Afghanistan have been supported by a great number of technologies to help them do just that. Some of the most important have been airborne. These range from the large Reaper and Predator systems to the tiny Black Hornet Nano. Developed by a Norwegian company, the Nano has been used in the field by British armed forces since 2012. It is light, about four inches long, can be packed away easily and is fitted with a camera that can send still or moving images to a hand-held screen. It represents a new generation of micro-drone spies that soldiers can use for vital situational awareness. ■

The Nano is light, about four inches long and can send still or moving images to a hand-held screen

The Nano has been used in operations in recent years by the armed forces of both Britain and Norway

The Queen's



Employing an extensive spy network and a range of dark arts, Sir Francis Walsingham did his utmost to protect Elizabeth I from danger. **JOHN COOPER** examines his career

Spymaster

BRIDGEMAN ART LIBRARY

PLAYING FOR HIGH STAKES
An oil-on-panel painting, from 1567–69, showing a group traditionally identified as Francis Walsingham, William Cecil, Henry Carey and Walter Ralegh playing the card game primero

Looking around him in the winter of 1583, Sir Francis Walsingham saw treason lurking in every corner. A young gentleman named John Somerville had been picked up on the road from Warwickshire in the English Midlands, waving a pistol and threatening to see the queen's head stuck on a pole. Renegade Catholic priests were spreading their 'poison' among subjects in both the north and the west of England. A Jesuit mission was trying to tempt King James VI to invade from Scotland. In London, Francis Throckmorton was caught in the act of selling secrets to hostile foreign powers. His interrogation in the Tower of London revealed that an army had begun to assemble in Normandy, bankrolled by Philip II of Spain and co-ordinated by English exiles in Paris. A rebellion of the Catholic nobility had been timed to coincide with the invasion.

As Queen Elizabeth I's security chief, Walsingham was haunted by the fear that England would succumb to the tyranny of Rome. His advice to the queen sounded a constant alarm, to wake up to the Catholic threat at home and abroad. One of his earliest surviving letters, written when he was working as an agent of Elizabeth's chief advisor William Cecil, warned that "there is nothing more dangerous than security" – what we would call a *false* sense of security.

Appointed principal secretary to the queen, Walsingham saw it as his God-given role to protect her from harm. Time after time, that meant convincing Elizabeth to take action when all her political instincts told her to delay. Why was Elizabeth in danger? We think of the Virgin Queen, the magnificent 'cult of Elizabeth' at the royal court and popular celebrations in the towns and countryside. No previous monarch had inspired the bonfires and bell ringing that marked the anniversary of Elizabeth's accession day each 17 November. But public displays of loyalty were organised in the knowledge that her rule was less secure than it appeared. Broad as it was, the Elizabethan church settlement (which restored England to Protestantism) still excluded those who believed in the real presence of Christ in the mass, or who could not accept the queen as supreme governor of the church.

By the mid-1570s, Catholic recusants (from the Latin for 'to refuse') were cutting themselves off from English parish life. They turned instead to missionary priests ordained in France and Italy. The majority wanted simply to be left alone to practise their religion in private. But a smaller number of radicals were not prepared to wait until all memory of the old faith had faded away. Encouraged by their spiritual leader, Cardinal William Allen, they began to plot as well as pray for revolution.

Walsingham's psychology was deeply rooted in his Protestant belief. His lawyer father had died when he was an infant, leaving Francis in the care of his mother's family. His uncle Sir Anthony Denny was close to Henry VIII during the 1540s, keeping Protestant hope alive at court when the king's own enthusiasm had waned.

Walsingham's faith was quickened by his studies at King's College Cambridge and his legal training at Gray's Inn during the short reign of Edward VI, Henry VIII's son. Unlike his future colleague William Cecil, Walsingham chose exile in mainland Europe rather than accept Catholicism – restored by Queen Mary when she came to the throne in 1553.

The burning of Protestant preachers and laypeople forever linked Catholicism with persecution in Walsingham's eyes, a world view terrifyingly confirmed when he witnessed the St Bartholomew's Day massacres of Protestants as ambassador to Paris in 1572. When he joined the privy council as secretary to the queen the following year, Walsingham had the chance to put his Protestantism into action.

Researching my book *The Queen's Agent*, I was struck by Walsingham's ability to recruit agents from deep within the Catholic community. His undercover operations were accompanied by a relentless campaign of propaganda and violence, but it was his success in placing agents and building a spy network that made it impossible to know who to trust. The state papers in the National

Walsingham was **haunted** by the fear that England would **succumb to the tyranny of Rome**

PROTECT AND SERVE
An engraving of Francis Walsingham from Edmund Lodge's *British Portraits* (1823). The spymaster saw it as his God-given role to protect Elizabeth I, shown above in a portrait from around 1575

GETTY IMAGES

MARLOWE MYSTERY
Playwright and poet Christopher Marlowe is often alleged to have acted as a spy for Walsingham

Archives and the British Library introduce some remarkable characters who worked in the Elizabethan secret service. Some were godly Protestants, but others were motivated by power or the chance for profit.

For example, Nicholas Berden's credibility in Catholic circles left him free to circulate among English exiles in Rome and Paris, and whatever he learned was passed on to Walsingham. Berden claimed to be inspired by "the safety of my native country", but he also enriched himself with bribes from Catholic gentlemen desperate to protect their families at home. Anthony Tyrrell, arrested as a Catholic priest, chose to defect rather than to die, turning informer on the congregations attending his secret masses. Stool-pigeons (informers) were also dropped into jails to see what they could learn from the Catholic prisoners.

Most enigmatic of all is Gilbert Gifford, the boyish Catholic missionary who convinced the Catholic Mary Stuart, Queen of Scots – effectively a captive in England since her attempt to seek asylum in 1568 – that he could smuggle letters out of her country-house prison without them being read by her enemies. As Mary discovered at her 1586 trial, the operation was a sting: a group of Catholic plotters thought they were about to liberate Mary and depose (or even kill) the queen. In fact, Walsingham had a man on the inside from the start. His chief cryptographer, Thomas Phelippe, triumphantly drew a gallows on Mary's letter activating the plot.

Gifford subsequently slipped back to Paris to be ordained as a priest. Perhaps he had hoped to cut the political radicalism out of English Catholicism, gambling that Elizabeth would never allow Mary to be executed; or maybe he simply wanted to save his own skin. Whatever lay behind his bargain with Walsingham, his moral flexibility contrasts with the stoicism of many Catholic priests on the scaffold, facing death with a calm that soon saw them venerated as martyrs.

Was the playwright Christopher Marlowe a Walsingham spy? Marlowe was mysteriously absent from his Cambridge college for a period in the mid-1580s, when the Catholic mission to reclaim England was at its most intense. The case rests on the order of the privy council to award Marlowe his master's degree on the grounds that he had been involved "in matters touching the benefit of this country". Beyond this is mainly rumour, but there is some intriguing circumstantial evidence to link him to Walsingham. Marlowe was close to Francis's cousin Thomas Walsingham, a literary patron who saw some service as a courier for the crown. Richard Baines, a turncoat Catholic priest who alleged that Marlowe was both an atheist and a homosexual, was Walsingham's mole in the English seminary in Reims.

My hunch is that Marlowe was already too well known to have gone undercover in France. But he could certainly have informed on the connections between the university and the Catholic community in exile.

Walsingham's London house in Seething Lane no longer exists, but a handwritten inventory gives us a glimpse into the contents of his study. Lists of the recusant Catholics in every county were filed with a 'box of examinations' of papists and priests. There was a 'secret cabinet' where Walsingham's will was found the day after his death. Secretaries guarded his cipher-alphabets and conducted experiments with invisible ink. Maps of the fortifications at Dover harbour and the English plantations in Ireland testify to the breadth of his responsibilities in government, while documents relating to "the discovery of unknown countries" remind us that he was patron to the explorer Sir Humphrey Gilbert.

When the royal court moved up the river Thames to Richmond, Walsingham had another house at Barn Elms:

GETTY IMAGES

As Mary discovered at her trial, the operation was a sting: Walsingham himself had set it up

PARIS BLOODSHED François Dubois' painting of the St Bartholomew's Day massacre of Protestants by Catholics in August 1572. Witnessing the slaughter cemented Walsingham's lifelong conviction that Catholicism was a religion of persecution

GETTY IMAGES / TOPFOTO

TRUSTED ADVISORS The frontispiece of Sir Dudley Digges' *The Compleat Ambassador* (1655) shows Elizabeth I flanked by the creators of her highly effective intelligence service: Walsingham (right) and William Cecil. The latter became Lord Burleigh in 1571

SIGNING HER LIFE AWAY
Francois Clouet's c1559–60 portrait of Mary, Queen of Scots who, with the help of double agent Gilbert Gifford, fell into a trap set by Walsingham

GETTY IMAGES

Plots foiled, failed and imagined

Three plans thwarted by Walsingham's secret service...

The Ridolfi Plot

Walsingham was introduced to intelligence work by William Cecil. When **Roberto di Ridolfi** was arrested in 1569 for laundering money for the Queen of Scots, Walsingham was entrusted with his interrogation. Elizabeth allowed Ridolfi back to Italy, where he persuaded the pope to fund a Catholic uprising under the **Duke of Norfolk**. But news of the plot leaked, Norfolk was executed, and the Queen of Scots revealed in her true colours. Was Ridolfi the first of Walsingham's double agents?

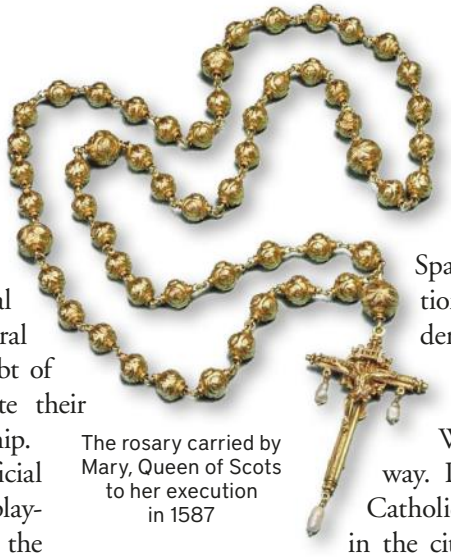
The Throckmorton Plot

We can be more certain about **Francis Throckmorton**, caught up in a conspiracy between Philip II and the Duke of Guise to restore Catholicism to England. When Walsingham's men broke into his house in November 1583, they discovered a letter to Mary Stuart and a list of English harbours where foreign troops could land. "Somewhat pinched" on the rack, he revealed that English nobles planned to support the invasion. The plot sealed the fate of **John Somerville**, a young man jailed for threatening to shoot the queen. The government seized on his story as further evidence of treason among Catholics. When he was found strangled in his cell, the crown tried to claim it was suicide.

The Babington Plot

The facts of the 1586 Babington Plot have been established beyond reasonable doubt. Walsingham authorised a dead-letter drop for the Queen of Scots; Mary used it to plot Elizabeth's assassination with **Anthony Babington**. Yet mystery still surrounds **Gilbert Gifford**, the double agent who persuaded Mary that she was safe to talk to her supporters. Gifford was subsequently ordained as a Catholic priest in Paris: still spying for Walsingham, or to atone for Mary's execution?

modest by the standards of Cecil's mansions, but boasting a garden full of exotica and enough stabling for his formidable postal system. Elizabeth visited on several occasions, acknowledging her debt of gratitude to Walsingham despite their often-turbulent personal relationship.



The rosary carried by Mary, Queen of Scots to her execution in 1587

Walsingham's control of official correspondence made him a key player in what is sometimes called the 'monarchical republic' of Elizabeth I. Like Cecil and the Earl of Leicester, he believed it was his duty to govern for the queen if her womanly 'irresolution' left her incapable of taking the necessary steps to ensure her own safety.

Her councillors' exasperation at Elizabeth's reluctance to commit took dramatic form in February 1587, when a meeting at Seething Lane secretly authorised the release of Mary Stuart's death warrant. Elizabeth's fury when she found out is legendary. But Walsingham had achieved the outcome for which he had been working since his days as ambassador to France.

Security meant more than protecting the queen's person from an assassin's bullet. It was intricately bound up with foreign policy, which for Walsingham was based on the principle of taking the fight to the enemy. Her duty to God, as well as her own safety, demanded that Elizabeth become protector to the embattled Protestant communities in the Netherlands and France. But Cecil was painfully aware that England could not sustain a lengthy military campaign.

The voices of her two closest councillors can be heard giving conflicting advice to the queen, Cecil playing to Elizabeth's natural sense of caution while Walsingham urged her to stand up to Spain. Cecil was nearly always the favourite, but his disgrace following Mary's execution gave Walsingham enough space to argue that the naval hero Francis Drake should be unleashed "to annoy the king of Spain". The resulting raid on Cadiz was a spectacular success, delaying the Armada for a year while also revealing the massive scale of Spanish mobilisation. Walsingham's construction of a new fortified harbour at Dover suddenly seemed worth all the expense.

The death of Mary Stuart and the sea war against Spain were major victories for Walsingham, but he didn't have it all his own way. Paris was the nerve-centre of the English Catholic resistance, yet Walsingham's spy network in the city was repeatedly disrupted by Elizabeth's ambassador to the French court. Sir Edward Stafford was a gambler, in politics as well as his private life. To keep his creditors at bay, Stafford struck a cash-for-secrets deal with his Spanish counterpart and France's Duke of Guise, who had hoped to lead the invasion of England in 1583. Walsingham knew that Stafford was leaking statistics about Elizabeth's navy, and yet Stafford remained in post, protected by his mother Lady Dorothy's position as a gentlewoman of Elizabeth's privy chamber.

When Walsingham lost his long struggle against illness in 1590, he had little to show for his 20 years in royal service. The offices that the queen had grudgingly granted him barely covered his costs as principal secretary, let alone the debts which he inherited from his son-in-law Sir Philip Sidney. William Cecil founded a political dynasty, but there was no one to inherit Walsingham's network of agents or carry forward his legacy. His enemies condemned him as the agent of a tyrannical state, while even his allies preferred to forget about his methods.

There is no denying that his role as Elizabeth's security chief led Walsingham into some very dark places. However, for him the ends justified the means: entrapment, blackmail and torture were all legitimate tactics in the war against the Antichrist. "Above all things," he told Leicester in 1571, "I wish God's glory and next the queen's safety." Queen Elizabeth survived, and Walsingham's conscience was clear. ■

BRIDGEMAN ART LIBRARY

For him, the ends justified the means: **entrapment, blackmail and torture** were all legitimate tactics

Valves on the groundbreaking Colossus codebreaking machine (see page 28)

The secret history *of* ELECTRONIC ESPIONAGE

The dawning of the digital age transformed the intelligence landscape. The BBC's security correspondent **GORDON CORERA** identifies some key moments when computers changed the rules

ALAMY

1 First World War signals intelligence

August 1914

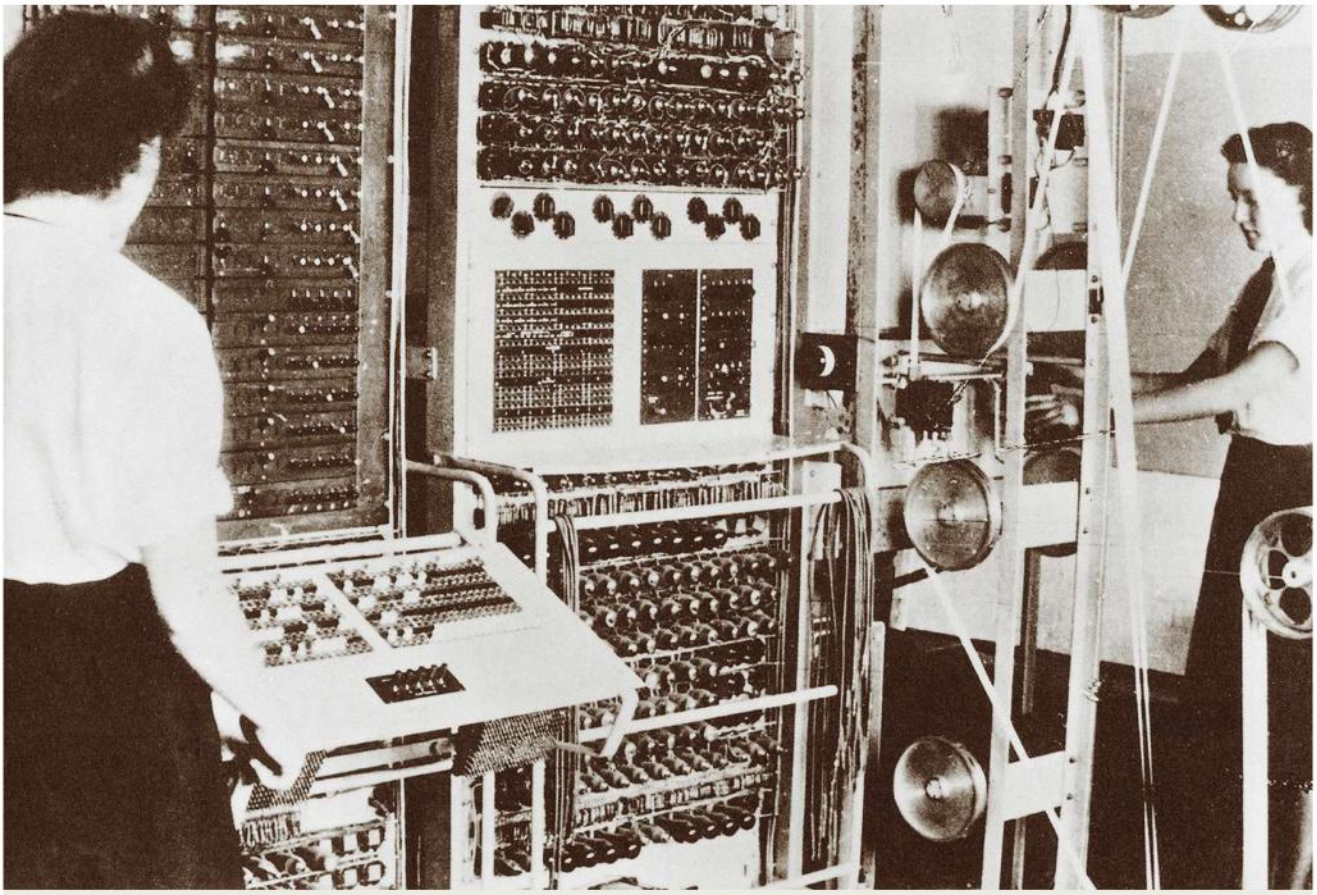
How the enemy's messages were intercepted in the pre-electronic age

As war was declared in 1914, the British cable ship *Alert* was sent out on a nighttime mission to cut the underwater telegraph cables that carried German communications traffic. At the same time, a system of wartime "censorship" was established in which international telegrams and letters passing through Britain and its empire were checked by hand to look for signs of the enemy communicating. The scale of interception was huge – 630 million letters passed through the system, and 1.3 million of these were read if they were either to or from someone on a watch list. This being the pre-electronic age, the process was laborious and undertaken by hand. With their cables cut, the Germans also turned to radio to communicate. Since radio can be easily picked up, they used secret codes to hide the true meaning. This led to Britain establishing a team of codebreakers at Room 40 of the Admiralty. While computers were not yet in use, what we think of as modern signals intelligence – spying on your enemy's communications – was emerging.

British postal workers sort mail by hand during World War I, intercepting any letters sent to or from individuals under suspicion

The scale of interception was huge; 630 million letters passed through the system

GETTY IMAGES



The Colossus computer, designed by Tommy Flowers. Early computers such as this proved invaluable for the Allies

2 Colossus and codebreaking

5 February 1944

The computing age dawned, with the express mission of deciphering enemy codes

In a small pocket diary, Tommy Flowers wrote a note on 5 February 1944. "To Bletchley Park with team," it reads. "Colossus did its first job. Car broke down on the way home." In a low key-way, Flowers was recording the birth of the computer age – and the birth of the first computer born to spy, one built to break the codes protecting Nazi Germany's most secret messages. Alan Turing had conceived of a computer a few years earlier – a mechanical machine that could follow instructions – but it took the pressures of war to see one built. At the British Post Office's research facility in London, Flowers built Colossus, the first semi-programmable electronic computer that could perform mathematical calculations at a speed no human could manage.

More machines were built and these were used to break Tunny, the high-level code that carried Hitler and his leading generals' own communications (and which was far more secure than the better-known Enigma code). These machines played a vital role in helping win the Second World War. But a veil of secrecy was cast over this remarkable achievement in the hope that such techniques could be employed during the Cold War. Most of the Colossus machines were destroyed, but a few were taken to the Government Communications Headquarters, aka GCHQ.

A German Lorenz cipher machine, known as Tunny by the British codebreakers

ALAMY / REX FEATURES

3 Black Friday and Cold War computing

29 October 1948

The west attempted to understand postwar Soviet communications

On a day that became known as Black Friday, the Soviets changed the secret codes they used to protect their communications. Until then, American and British spies had been able to read many of the messages, as they had with German communications during the Second World War. Now they were blind – and so they turned to computers. They hoped that, by building more powerful machines, they might be able to crack the codes. This drove the computer industry, especially in the US which had proved particularly adept at building partnerships between companies and the secret state.

US president Harry S Truman and Soviet foreign commissar Vyacheslav Molotov meet at the White House in November 1946. Within two years, the Soviets had altered the secret codes on their communications to outfox the west

But while breaking Soviet codes proved almost impossible, the spies learned to do something else. They used computers to collate information about Soviet communications even though they could not read the actual content. A vast system of collecting signals around the world was created; by studying patterns, working out what normal behaviour was and looking for changes over time, they hoped to be able to provide advance warning of the Soviets preparing for war. This process – known as 'traffic analysis' – marked the real birth of the modern world of 'big data' and data mining, now a staple of private-sector companies.

4 The Anderson Report

October 1972

The first warnings of the dangers of networked computers

Through the 1960s, the US Air Force had begun to connect up – or network – its computers around the world so they could talk to each other. These computers were also performing increasingly important tasks, even controlling nuclear-tipped missiles. A few insiders worried that these systems could be vulnerable to infiltration or subversion; that these computers could do something they were not supposed to do, such as spy or even send the missiles back to where they came from. The largely forgotten 1972 Anderson Report was the first real study into this and is the forerunner of every modern report warning of the dangers of computer security. Almost all the threats of modern cyber-espionage are described in its pages. These include trapdoors (where a program's designer leaves a secret entry point for them to circumnavigate security) and trojan horses, where cyber-attackers offer something so enticing to a computer user that they allow an enemy through their gates and into the system.

At this time, a prototype internet was just emerging as a method for researchers and academics to share information and this report sounded a pessimistic warning that computers are so complex that it may be impossible to eliminate all vulnerabilities. One of those involved in writing the report, Roger Schell, soon began to worry that the KGB might be able to exploit the US's dependence on computers to spy and steal information.

Networked computers were able to control and launch fearsome missiles

GETTY IMAGES

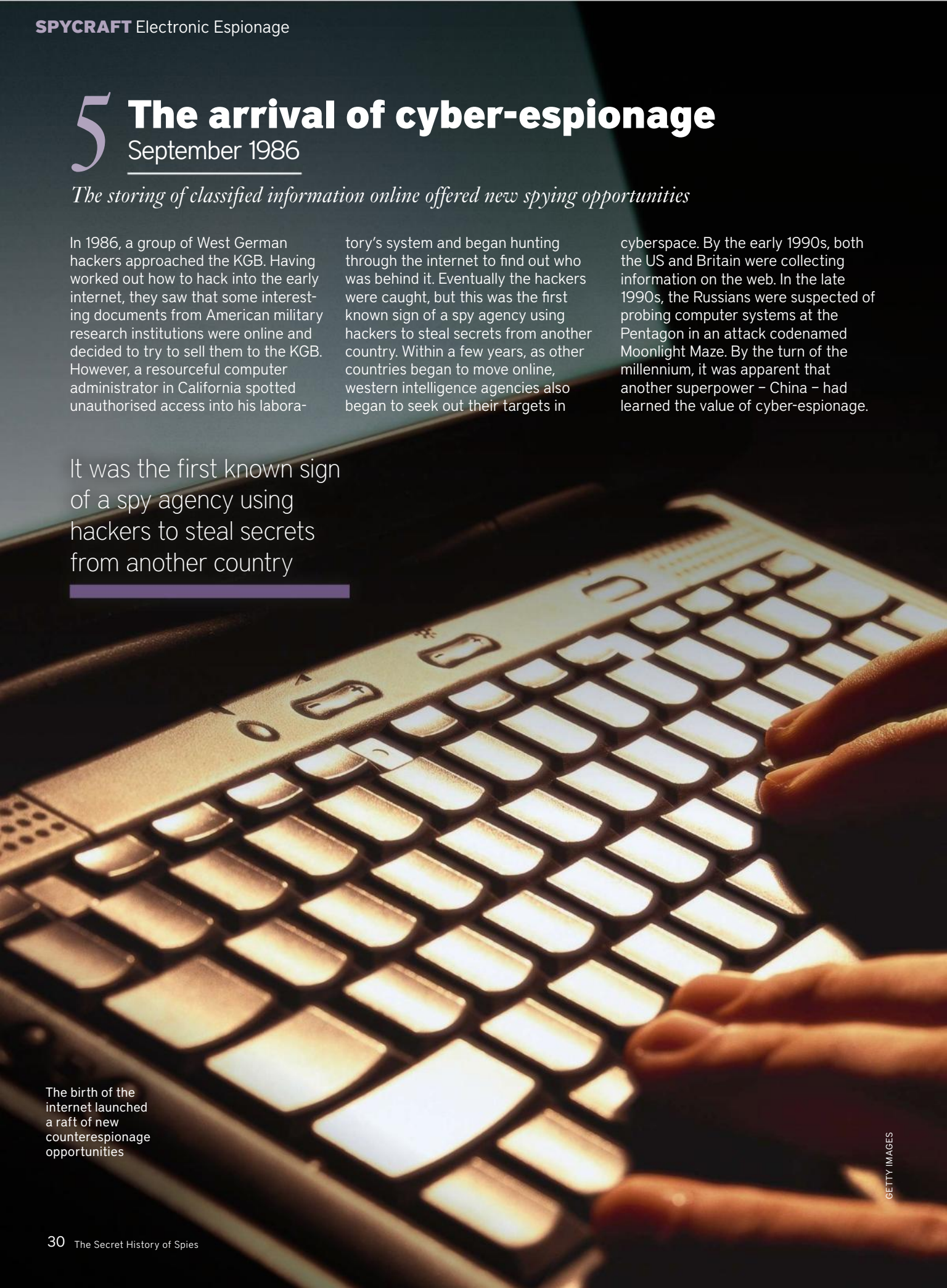
5 The arrival of cyber-espionage

September 1986

The storing of classified information online offered new spying opportunities

In 1986, a group of West German hackers approached the KGB. Having worked out how to hack into the early internet, they saw that some interesting documents from American military research institutions were online and decided to try to sell them to the KGB. However, a resourceful computer administrator in California spotted unauthorised access into his laboratory's system and began hunting through the internet to find out who was behind it. Eventually the hackers were caught, but this was the first known sign of a spy agency using hackers to steal secrets from another country. Within a few years, as other countries began to move online, western intelligence agencies also began to seek out their targets in cyberspace. By the early 1990s, both the US and Britain were collecting information on the web. In the late 1990s, the Russians were suspected of probing computer systems at the Pentagon in an attack codenamed Moonlight Maze. By the turn of the millennium, it was apparent that another superpower – China – had learned the value of cyber-espionage.

It was the first known sign of a spy agency using hackers to steal secrets from another country



The birth of the internet launched a raft of new counterespionage opportunities

GETTY IMAGES

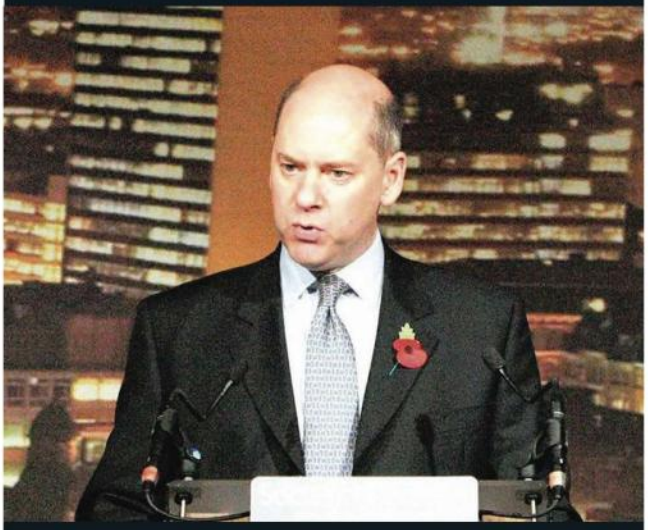
6 China enters the scene

October 2003

The west started to point the finger of suspicion towards the far east

In October 2003, a diplomat at Britain's Foreign Office in London opened an email that appeared to be about a recent Tibetan conference in Prague. But hidden in a picture attached to the email was a virus. This was the first time foreign cyber spies had broken into the British government network (or at least the first time anyone knew about it). "How long it had been going on for, we didn't know," a senior official later recalled. The perpetrators were thought to be in China and, the more that British cyber defenders looked in the following years, the more malicious attacks targeting the government they found. Intelligence showed that Britain was not immune from what the Americans had christened Titan Rain, a huge cyber-espionage campaign by China that targeted government and defence industry secrets.

In 2007, Jonathan Evans, the then head of the British secret service MI5, warned the chiefs of 300 UK companies of "electronic attack sponsored by Chinese state organisations". There was concern that intellectual property was being stolen and that advantage in business negotiations was being obtained by gaining access to companies' systems. The Chinese denied they were behind the attacks, but in subsequent years the US began to go public with what it was seeing. In 2012, Keith Alexander, the then head of the National Security Agency, described China's alleged theft of economic information as "the greatest transfer of wealth in history".



In 2007, British secret service chief Jonathan Evans warned private companies of potentially catastrophic cyber attacks

GETTY IMAGES

The digital lives of suspected terrorists were examined in minute detail after the devastation of the London attacks in 2005

7 The data-driven terrorist hunt

July 7, 2005

Big Data started to be used in order to recognise potential terrorist threats

On 7 July 2005, terrorists struck London during the rush hour. Just like the US after 9/11, the question was how many more terrorists were out there and how they could be found. In the US, this led to new intelligence programmes to collect email and phone records. In the UK, a new, powerful and secret capability employing data, telecoms and computing would be built and was classified to the highest level. One of the revelations that surprised investigators looking into the backgrounds of the four 7/7 suicide bombers was how much of their lives had been lived online. To find their new targets, the spies believed they needed to uncover patterns and connections in digital lives. A system was required to investigate the richness of the trail people left online; even, perhaps, building a pattern of terrorist behaviour before asking a computer which individuals matched it. For instance, who was communicating between Britain and Pakistan while also viewing extremist websites?

To identify targets whom MI5 could then investigate, such methods required access to both data and massive computing power. The world of spying had met the world of big data. And much of the data, especially in the US, was held by the private sector. This precipitated an American program called PRISM, technology that tapped into the growing ascendancy of Silicon Valley tech firms and the way in which they collected and often stored data from their customers around the world.

8 Google
January 2010

When the tech giant claimed it had been hacked by the Chinese state

Chinese citizens show solidarity with Google after the cyber attacks at the beginning of 2010

In 2010, Google became one of the first major companies to publicly acknowledge it has been hacked. It believed China was responsible, declaring that the "primary goal of the attackers was accessing the Gmail accounts of Chinese human rights activists". The revelation marked a major escalation in a simmering battle between the American tech giant and the Chinese state. For China, American tech companies – with their ideas of the free flow of information – were potentially dangerous and subversive, supporting dissenters and activists. For Google, China was a test case of its principles, but it also became a wider sign of a struggle as American dominance of the internet was challenged by others. China – and other countries – would increasingly push to control the internet within their borders and limit US influence.

9 Stuxnet
June 2010

The first instance of a state covertly using a computer virus to launch a cyber-attack

In 2010, computer security researchers revealed the discovery of a new virus, christened Stuxnet, which signalled a new moment in information warfare. According to former NSA director Michael Hayden, it had the "whiff of August 1945", comparing it to the first use of the atom bomb. When Britain wanted to blow up a German heavy water plant in Norway that might have helped the Nazis build an atomic bomb, they had to send agents undercover to lay explosive charges. But 70 years later, when the US (and Israel) wanted to have the same effect on Iran's nuclear programme, they instead turned to Stuxnet.

The virus was the first sign that electronic spying had moved on from just stealing secrets by gathering intelligence, to the other field of espionage activity – that of covert action, where those behind an act want their role to remain hidden. Destructive attacks on computers picked up pace after this episode, with Iran thought to have targeted energy companies in the Middle East, while in 2014 North Korea was accused of wiping the computers – and publishing sensitive data – of the Sony film studio. The move succeeded in delaying the cinema release of a film depicting the North Korean leader being killed.


Ralph Langner, the computer security expert who discovered Stuxnet's existence

GETTY IMAGES / AP–PRESS ASSOCIATION IMAGES

Although still in hiding in Russia, Edward Snowden has become the most recognisable whistle-blower of recent times

10 Edward Snowden's revelations

6 June 2013

The man who leaked classified information that shocked the world

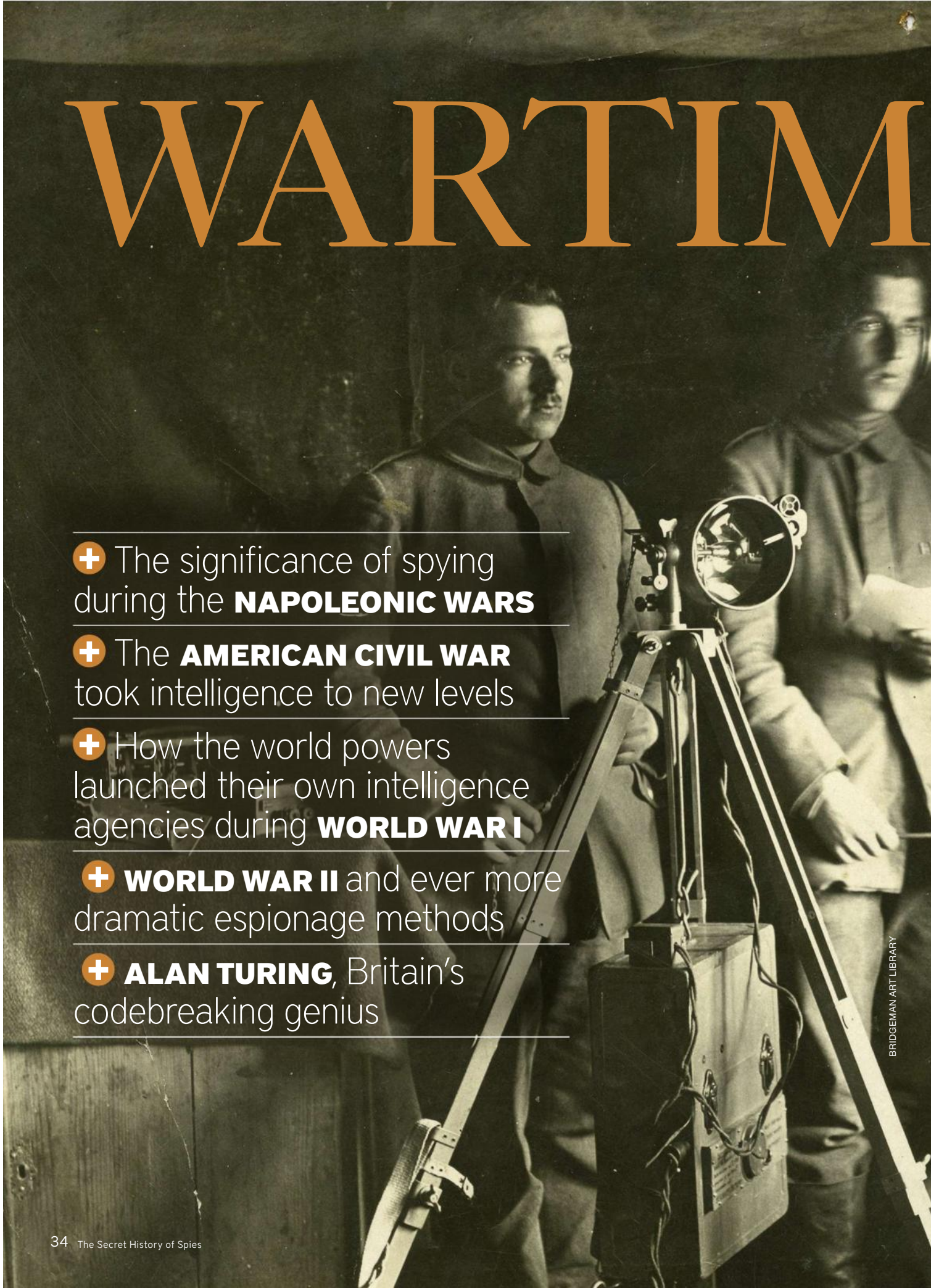
In June 2013, British newspaper *The Guardian* revealed that the National Security Agency had been secretly collecting millions of phone records from ordinary Americans as part of its hunt for terrorists. The revelation was taken from material acquired by former NSA contractor Edward Snowden and revealed, to the world, some of the most classified intelligence programmes. One of these is Tempora, which can be seen as the modern equivalent of the First World War cable-tapping programme, only this time it is undersea fibre-optic cables carrying data that are being monitored, rather than telegraph cables.

The scale of information flow has grown massively over the intervening century; modern cables can carry up to 60 trillion 'bits' or 'ones and zeroes' of computer information every second. But rather than having to search them by hand, computers allow the filtering of this information at high speed to look for emails from those on a watchlist or traces of a malicious cyber attack. This is but one example of the ways in which the computer has transformed signals intelligence and the whole business of espionage. ■

The National Security Agency had been secretly collecting millions of phone records from ordinary Americans as part of its hunt for terrorists

GETTY IMAGES

WARTIM

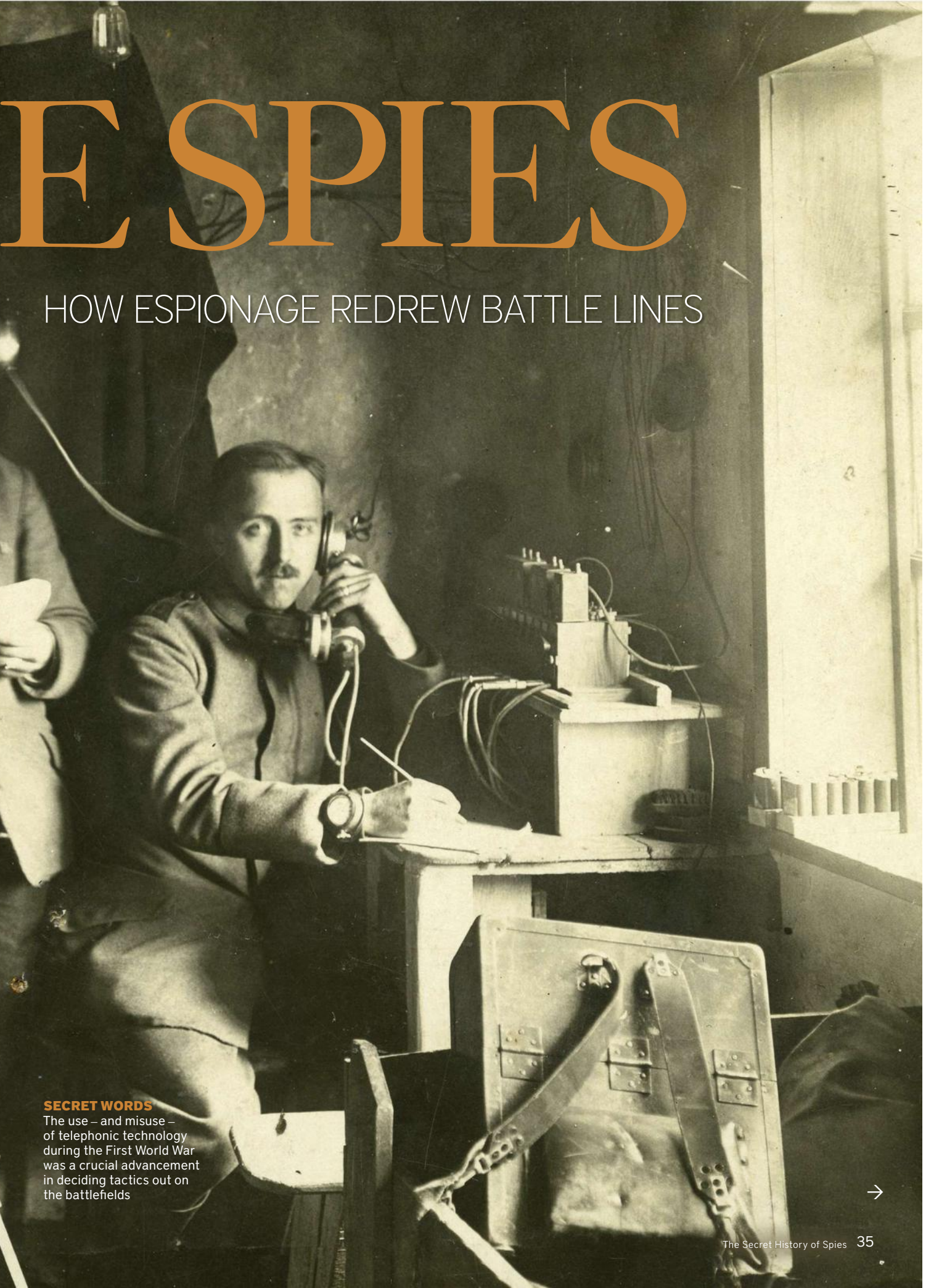


- The significance of spying during the **NAPOLEONIC WARS**
- The **AMERICAN CIVIL WAR** took intelligence to new levels
- How the world powers launched their own intelligence agencies during **WORLD WAR I**
- **WORLD WAR II** and ever more dramatic espionage methods
- **ALAN TURING**, Britain's codebreaking genius

BRIDGEMAN ART LIBRARY

E SPIES

HOW ESPIONAGE REDREW BATTLE LINES



SECRET WORDS
The use – and misuse – of telephonic technology during the First World War was a crucial advancement in deciding tactics out on the battlefields

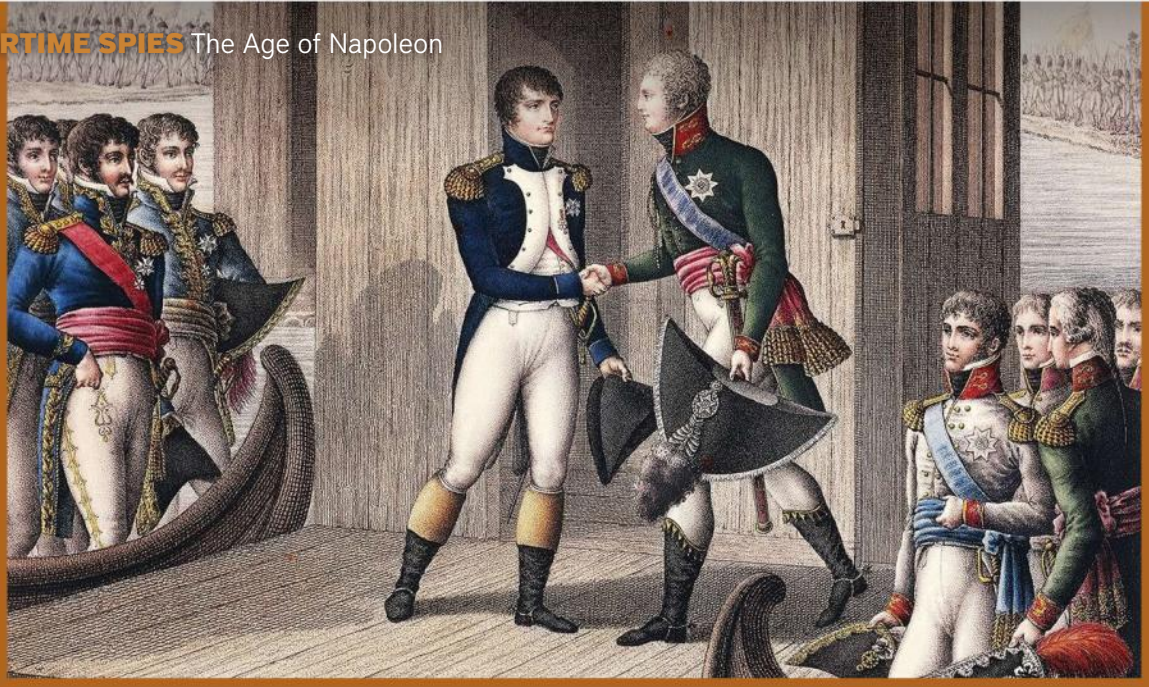
ESPIONAGE *in the age of* NAPOLEON

Gathering intelligence during wartime didn't begin in the 20th century. **HUW J DAVIES** explains how vital spying became during the Napoleonic Wars of 1803–15

BRIDGEMAN ART LIBRARY / CORBIS

IMPERIAL MIGHT
Napoleon Bonaparte (1769–1821) in Andrea Appiani's 1805 portrait. The legendary military strategist deployed intelligence-gathering and agent networks in a way that presaged practices of the early 20th century

OPPOSITE PAGE: A French imperial eagle, the symbol of Napoleon's empire always carried into battle by his armies



RUSSIAN TRUCE Napoleon meets Tsar Alexander I on a raft in the Neman river, Tilsit, Poland in 1807 to agree a new alliance against the British. Napoleon was exploiting intelligence that revealed growing Russian annoyance with Britain

Charles Vitel was 27 when he was executed in Paris by firing squad on 27 April 1807, having been convicted as a British spy. A French emigré, Vitel had grown up in England after his family had fled France following the 1789 French Revolution. In the late 1790s, probably when he turned 18, he had joined the British Army and been sent to India, where he served under the command of Major General Arthur Wellesley, the future Duke of Wellington. Upon his return to England in 1806, Vitel's uncle, the prominent French emigré and British intelligence agent Louis Fauche-Borrel, had sent Vitel to Paris to make contact with Charles Perlet, the leader of a secret committee apparently dedicated to the overthrow of Emperor Napoleon Bonaparte.

But Vitel had walked into a trap. There was no secret committee and Perlet was a double agent, directing an operation to encourage the British to send emigré agents to France, where they were unmasked and used to embarrass the British regime.

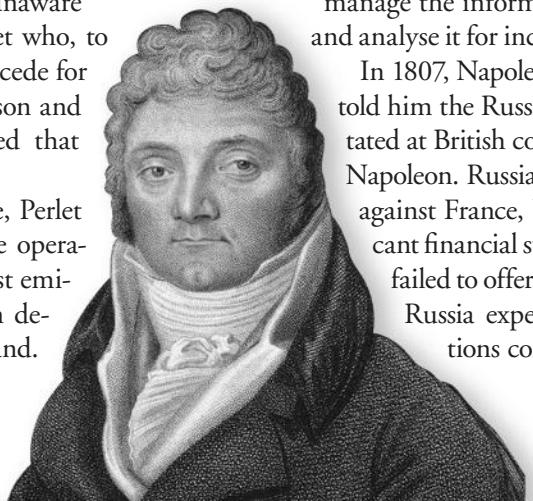
Arrested and imprisoned, Vitel was unaware even that he had been betrayed by Perlet who, to get more information, pretended to intercede for him. As a result, Vitel was tried for treason and found guilty: Napoleon himself ordered that "this wretched agent" should be shot.

A member of the French secret police, Perlet was responsible for a counterintelligence operation directed against a network of royalist emigrés (the French monarchy having been deposed in the revolution) based in England. This emigré network included people such as General Charles-François Dumouriez, who provided useful strategic intelligence to the British on the French army and navy. Also among the emigrés was General Auguste Danican, whose loyalty to the royalist cause was questionable, but who nevertheless provided access to a network of agents between Normandy and Paris.

As well as monitoring the emigrés, the French secret police were also responsible for keeping a close watch on activities against the Napoleonic regime from within France itself, and consequently maintained informants throughout Paris, Lyon and Lille – and, once French domination spread throughout Europe, in key strategic locations in Germany, Austria, Poland and Italy.

These informants proved militarily useful to Napoleon as well, although he relied on local intelligence when he commanded his army in war. His military organisation specialised in the transmission of information quickly and efficiently. The backbone of a successful intelligence network resided less on colourful characters that collected the information than with the infrastructure upon which reliance was placed to manage the information, disseminate it quickly and analyse it for inconsistencies and value.

Louis Fauche-Borrel, who mistakenly sent his nephew into a Napoleonic trap



In 1807, Napoleon exploited information that told him the Russian tsar, Alexander I, was irritated at British commitment to the war against Napoleon. Russia had fought alongside Britain against France, but, despite providing significant financial support, Britain had repeatedly failed to offer the level of military assistance Russia expected. In subsequent negotiations conducted in Poland, Napoleon

BRIDGEMAN ART LIBRARY / ALAMY

COPENHAGEN 1807
News of Napoleon's plan to acquire Denmark led Britain to push – and then bombard – the Danes into handing over their navy

BRIDGEMAN ART LIBRARY

secured an alliance with Russia in which the two powers agreed to work together to undermine British dominance of the oceans, and even south Asia. When the British learned of this through intelligence channels, it caused considerable panic.

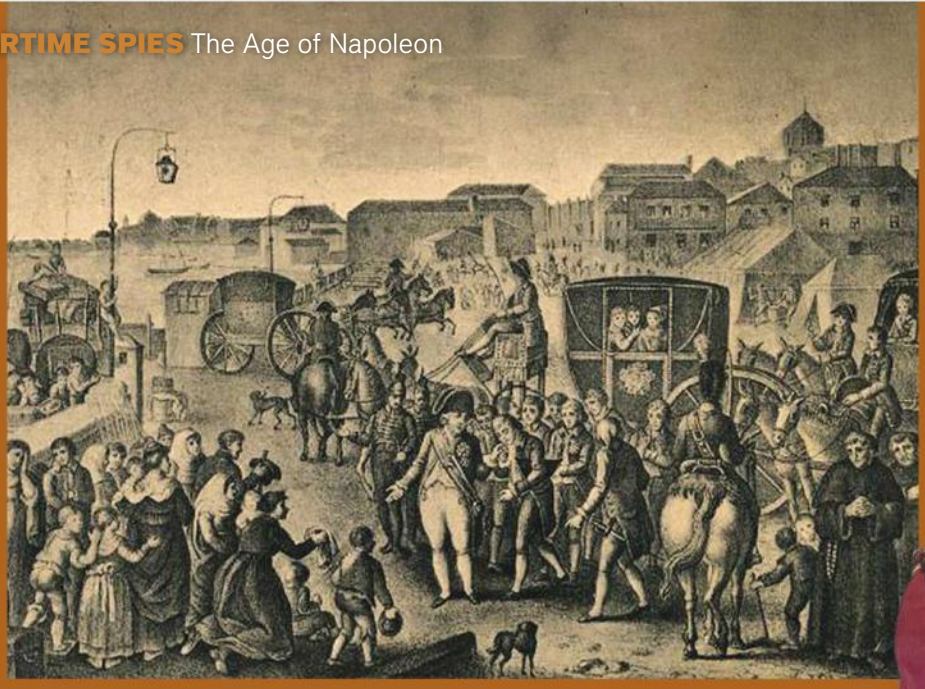
Vitel's execution passed relatively unnoticed. Fauche-Borrel was devastated, but still believed Perlet was a conspirator against Napoleon and proposed to go to Paris himself to make contact. In Whitehall, Edward Cooke, the undersecretary of state at the Foreign Office remained unconvinced and instead sent General Danican to find out what he could through his informant network. Smelling a rat before he even got to Paris, Danican fled to Normandy where he picked up intelligence of Napoleon's peace treaty and alliance with Russia, including news that the emperor planned to capture the Danish and Portuguese navies.

When this intelligence was received in London, it contributed to a shift in British strategy against Napoleonic France. The British foreign secretary, George Canning, orchestrated a military expedition to Denmark to pressure the Danes into handing over their navy to British protection. When they failed to succumb to the pressure, a naval bombardment of Copenhagen commenced. Although highly successful, the operation was criticised as illegal. Denmark had done nothing to warrant such unprovoked aggression, and this proved a propaganda triumph for Napoleon. Strategically, though, he was denied access to a very good navy.

At the same time, Canning and the war secretary Viscount Castlereagh received confirmation that Napoleon was applying pressure to the Portuguese government, seeking to persuade them to close their ports and hand over their navy. An army of some 30,000 troops was sent through Spain to occupy Lisbon. A Royal Navy squadron sailed for Portugal and in the nick of time extracted the Portuguese royal family, its treasury and – most importantly for Britain – the Portuguese navy, sailing them to Rio de Janeiro. Napoleon had been foiled again.

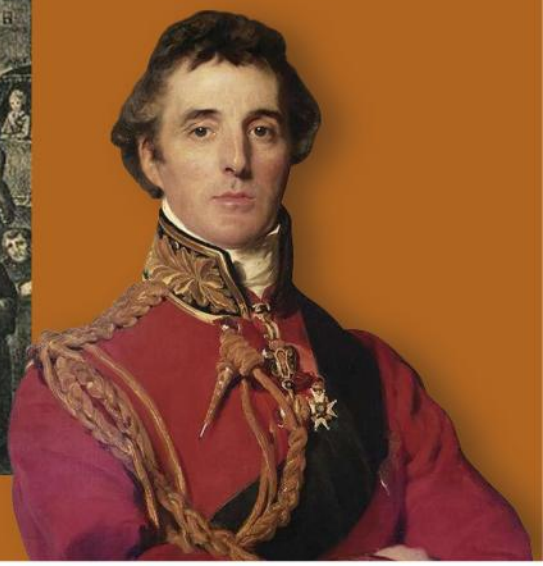
Vitel's execution had actually had a surprising impact. The subsequent attempt to establish contact with the double agent Perlet had unearthed the true nature of the counter-intelligence operation he was orchestrating, while Danican's escape had provided intelligence to the British government that steered Whitehall's strategy-makers in a new direction. Arguably, these decisions were likely to be taken anyway, but the intelligence from Normandy hastened them considerably. In particular, it is difficult to see how the Copenhagen expedition could have been assembled so rapidly and successfully otherwise.

Danican's escape provided intelligence that steered Whitehall's strategy-makers in a new direction



CITY ESCAPE In November 1807, just days before Napoleon's forces take Lisbon, Queen Mary I of Portugal, the royal family and its court of nearly 15,000 people flee to Brazil

INSIDE LINE
Wellington (below) relied on a network of informants to receive advance warnings of Napoleon's attacks in Spain and Portugal



BRIDGEMAN ART LIBRARY

The French emigrés in England were just one source of intelligence for the British. Alongside this somewhat haphazard outfit, the British diplomatic network orchestrated a widespread intelligence collection network throughout Europe. Each ambassador was expected to establish correspondences with informants in foreign courts, and even employ agents to engage in specific intelligence collection operations. The utility of this network was never more apparent than during the Peninsular War.

Following the extraction of the Portuguese navy, the French occupied Lisbon, and used the pretence of sending reinforcements to build up a huge force in Spain. In May 1808, Napoleon orchestrated the abdication of the Spanish royal family, and an underhand occupation of the whole Iberian peninsula appeared to be completed with little bloodshed. The Spanish population rose against the French occupation, however, and an insurgency spread throughout the country. The British took the opportunity to deploy an army to Portugal, with the hope that this could invade Spain and strike a blow against the French army there.

By 1810, following a successful descent on the Portuguese coast that forced the French to evacuate Lisbon, and abortive invasions of Spain in late 1808 and mid-1809, Arthur Wellesley, Viscount Wellington, settled down in Portugal to await an inevitable French counterattack. Intelligence was vital to the success of his defensive plan and for this he relied on a network of agents and informants controlled by the British minister to Lisbon, Charles Stuart.

Having arrived in Lisbon in early 1810, Stuart established a relay system of agents who traveled between the Portuguese capital and the French border. This ensured that there was always one agent on the border, one agent traveling to Lisbon carrying intelligence, and one agent returning to the border to relieve the current spy. The system proved remarkably effective and Stuart was able to provide Wellington with timely intelligence on the numbers of French troops entering and leaving Spain on a monthly basis.

Only one agent signed his reports: a Spaniard named Leon Roblado. Not much is known about Roblado, but it appears he was a guerrilla. How he became an agent in Stuart's network is unclear but, between 1810 and 1811, he signed regular intelligence reports detailing French troop movements.

Having received a series of reports from Roblado between February and June 1810, Stuart confirmed that the number of "troops which passed into the Peninsula [since] the month of February 1810… tally exactly with

Stuart established a relay system of agents who travelled between Lisbon and the French border

UPPER HAND
The battle of Buçaco in September 1810 was a major victory for an Anglo-Portuguese army against French forces. Wellington's spies helped make triumphs such as this possible

the accounts I have received from other agents I have employed on the French frontier… I have no doubt they are correct". Reliable information of this nature was crucial to success and enabled Wellington to plan his defense accordingly. In the autumn of 1810, the French army of Portugal arrived before the Lines of Torres Vedras, a virtually impregnable line of fortifications outside Lisbon. Britain's Torres Vedras campaign was highly successful and within six months the French army was in retreat.

Besides the agent network, Wellington also relied on a group of "observing officers", volunteers who went behind enemy lines in uniform to spy on the French. If caught, their uniform protected them from the gallows. One such observing officer, Captain Charles Cocks of the 16th Light Dragoons, volunteered to undertake this dangerous work. Having decided to do so, he wrote to his family asking them to send out "a two-foot portable military telescope… a pocket compass" and the "largest maps of Spain and Portugal done on canvas and folding in a case". In order to record his findings, Cocks asked for "a writing case of Russian leather" filled with paper, pencils, Indian ink and camel hair brushes". Cocks became one of Wellington's most effective spies and, when he died during the siege of Burgos in October 1812, Wellington reputedly wept at his funeral.

Colonel Colquhoun Grant, another prolific spy, regularly ventured behind enemy lines, and in April 1812, visited the French-held city of Salamanca in Spain to ascertain enemy intentions. Although he was able to send a report to Wellington that the army of French commander Auguste Marmot was no threat at that stage, the alarm that a British spy was in Salamanca went up and Grant had to be smuggled out of the city by Spanish peasants.

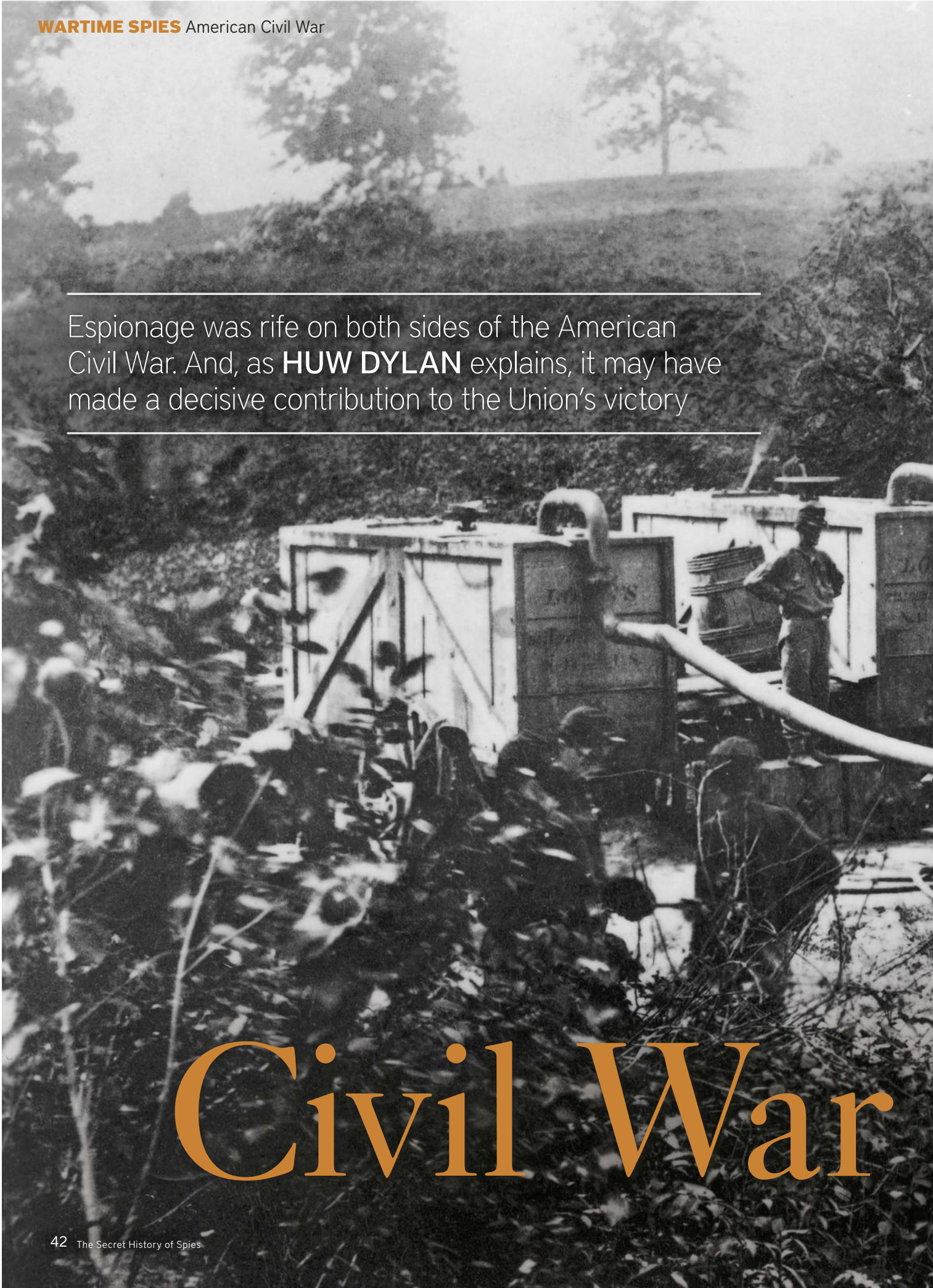
Despite this narrow escape, Grant was captured a few weeks later and sent to Paris. En route, he escaped and managed to make contact with informants who told him of Napoleon's plans for the invasion of Russia, as well as the subsequent plan to maintain the status quo against Wellington until Russia was defeated. This intelligence gave Wellington a small window of opportunity to go on the offensive.

Napoleon was, of course, finally defeated at Waterloo in June 1815. In the wake of the Napoleonic Wars, the intelligence networks established by the British government were effectively disbanded – or at least pared back to the smallest expenditure. Attempts to formalise the organisation of intelligence and information collection had failed because of shortages of manpower, office space and funds. Forty years later, the British military faced similar intelligence-gathering challenges in the Crimean War, and there is little evidence that lessons had been learned from the experience of war in the Peninsula.

Many historians can see evidence of modern intelligence collection and analysis practices in the age of Napoleon and Wellington. Indeed, the parallels between the early 19th-century networks and those of the early 20th century are striking. In reality, though, these were merely shadows of the more effective and better-organised intelligence agencies established in the years preceding the First World War. ■

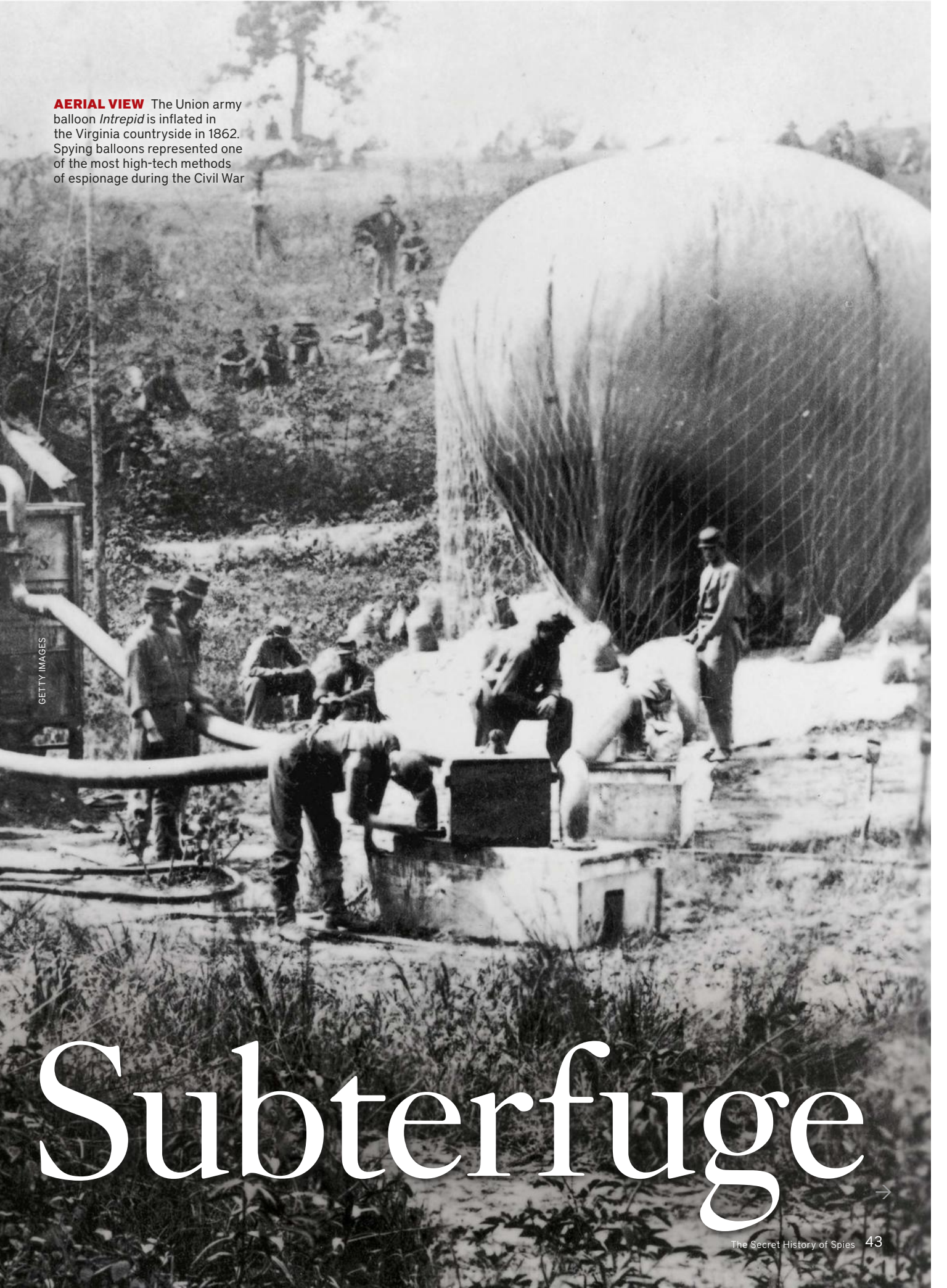
Intelligence officer Colquhoun Grant sent countless crucial reports to Wellington

BRIDGEMAN ART LIBRARY / NATIONAL PORTRAIT GALLERY



Espionage was rife on both sides of the American Civil War. And, as **HUW DYLAN** explains, it may have made a decisive contribution to the Union's victory

Civil War



AERIAL VIEW The Union army balloon *Intrepid* is inflated in the Virginia countryside in 1862. Spying balloons represented one of the most high-tech methods of espionage during the Civil War

GETTY IMAGES

Subterfuge

In November 1860, Abraham Lincoln was elected as the 16th president of the United States. He was 51 and destined to lead the country through the most turbulent and violent crisis in its history, the Civil War. By his assassination, in April 1865, at the hand of John Wilkes Booth, an occasional Confederate spy, he had all but won the war and set in motion the abolition of slavery. His presidency was already historic; Booth's actions made it legendary. It happened too easily. The president was wary of ostentatious levels of security and his bodyguard was in a nearby tavern. Ironically, the root of this wariness was a failed assassination plot.

Almost five years previously, Lincoln's election prompted South Carolina's succession from the Union, followed by a clutch of other Southern states. Civil war was inevitable. Perhaps equally inevitably, as the country began to rip itself apart, plots and conspiracies abounded, prompting federal army officers and detectives in Washington to spy on secessionist congressmen, soldiers of questionable loyalty, and Northerners who opposed the war (so called 'copperheads'). One detective, Allan Pinkerton, uncovered a plot to assassinate Lincoln on the journey to Washington for his inauguration, probably as he changed trains in Baltimore. One of his spies, he claimed, had observed a meeting where eight would-be killers had drawn lots for the role. But the ritual was rigged; each man left believing himself the assassin.

In a Philadelphia hotel room on 21 February 1861, Pinkerton briefed Lincoln on the discovery. At first sceptical, the president eventually altered his plans, changed trains in secret, and accepted the protection of armed detectives. He slipped into Washington safely, having suffered little more than a sleepless night and the dented pride of a president-elect forced to sneak into his own capital ("like a thief in the night", he later remarked). His prudence notwithstanding, the press seized the opportunity to satirise the unorthodox arrival: some claimed he entered the city in the garb of an old woman. And the stories persisted throughout his presidency, making him reluctant to invite further mockery by accepting robust protection. His life was saved by one spy, but cut short by another.

One of the defining characteristics of the Civil War that dominated Lincoln's presidency was violence. It was a bloody harbinger of the First World War, decades distant. Rifled artillery and repeating rifles, machine guns, ironclad warships, trench warfare, the railroad and the telegraph: all melded with deep-seated passion on both sides to lay waste to the young nation.

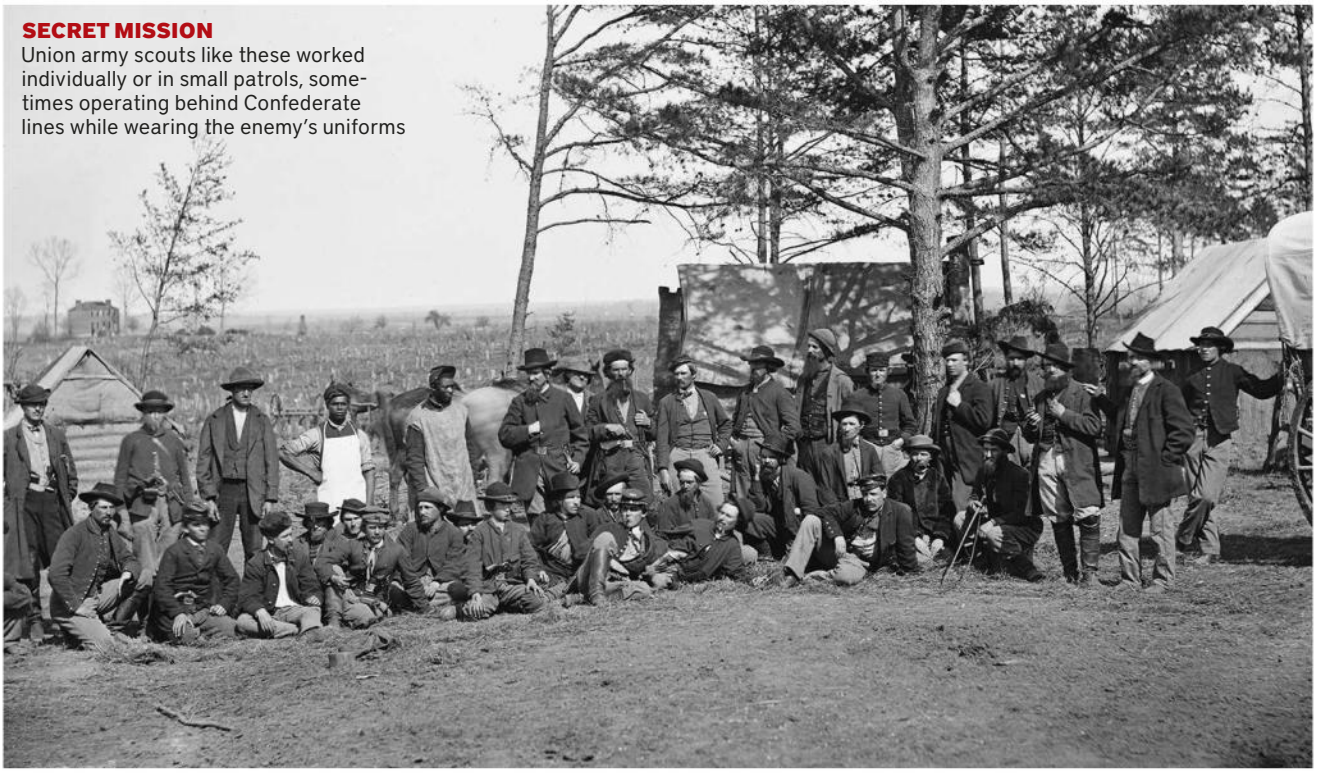
To win, the North had to defeat the Confederate states on the battlefield. But this was easier said than done. The division of the country – from Virginia to Missouri – offered the Southern states some strategic advantages. Their northern frontier was but 40 miles from Washington, and within striking distance of several other cities. Meanwhile, Richmond, the Confederate capital, was protected by geography: the ocean, great rivers and sparse infrastructure.

The Union struggled to bring its economic and industrial superiority to bear, so the war became protracted. From April 1861 and the first engagement at Fort Sumter in Charleston Bay, the armies fought in small engagements. But, by 1862, these were eclipsed by larger battles at Shiloh in Tennessee and Fredericksburg in Virginia, and a Confederate incursion into the northern state of Maryland, threatening the federal capital itself. This was repelled and Northern forces ended General Robert E Lee's incursion into the North at the battle of Gettysburg in July 1863. The battle was the turning point. Union forces, united under the command of General Ulysses S Grant, advanced on the Confederacy, leading to the abandonment of Richmond and to Lee's eventual surrender at Appomattox in April 1865. By then, approximately 620,000 Union and Confederate soldiers, and some 50,000 civilians, had died.

PRESIDENTIAL PRECEDENCE
Public mockery had caused Abraham Lincoln to dispense with highly visible personal security

But it is often forgotten that, intertwined with this violence, was intelligence. Knowledge of the enemy's capabilities, intentions and, often, simply his location was vital for soldiers and politicians alike. Commanders on the battlefield needed to know when to fight and when to hide. Behind the lines, leaders worried about saboteurs and spies, what Lincoln termed "the enemy in the rear". Spies, informants and scouts worked secretly and in great peril throughout the country; codebreakers

GETTY IMAGES



SECRET MISSION
Union army scouts like these worked individually or in small patrols, sometimes operating behind Confederate lines while wearing the enemy's uniforms

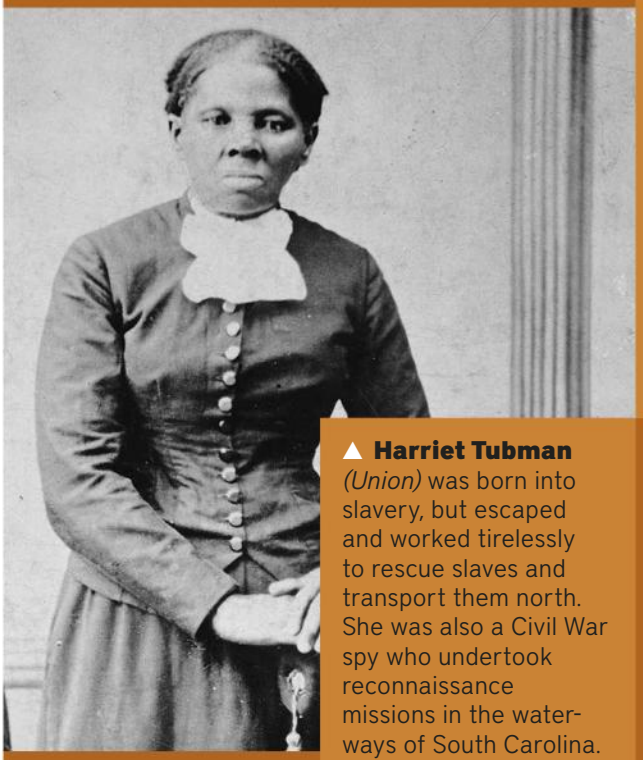
ENGAGEMENT OF HOSTILITIES
Information acquired through spying could shape the outcome of battles such as the Confederate victory at Bull Run in July 1861

GETTY IMAGES / LIBRARY OF CONGRESS

Intelligence was vital. Commanders on the battlefield needed to know when to fight and when to hide

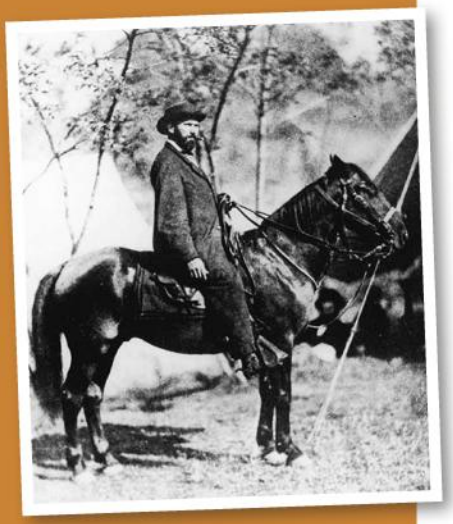
Behind enemy lines

The incredible lives of five of the most renowned Civil War secret agents

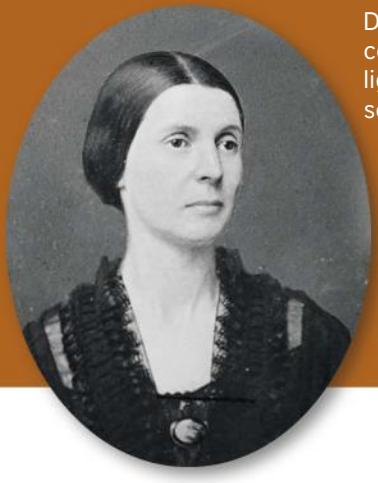


▲ Harriet Tubman *(Union)* was born into slavery, but escaped and worked tirelessly to rescue slaves and transport them north. She was also a Civil War spy who undertook reconnaissance missions in the waterways of South Carolina. Her intelligence led to the Combahee river raid in 1863, which rescued over 750 slaves. As was often the case for African-American spies, she struggled to gain recognition and reward after the war, not receiving her pension until 1899.

▶ Allan Pinkerton *(Union)* worked for the Chicago police force before establishing the world's first private detective agency in 1850: the Pinkerton National Detective Agency. In 1861, his spies informed him of a plot to assassinate Lincoln; thereafter his agency worked in Washington, hunting Southern spies, and on the battlefield, serving under Major General George McClellan. He captured the famous Confederate spy Rose Greenhow, but resigned after overestimating Southern troops during the Peninsula campaign.

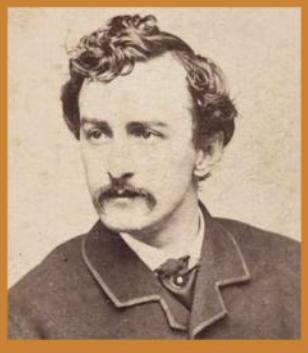


Rose Greenhow ▼ *(Confederate)* was a Washington socialite with Southern sympathies. She was recruited into Governor John Letcher's espionage ring by Confederate general Thomas Jordan, who also taught her how to encode her messages. She used her wide network of friends and connections to gather intelligence, which was smuggled south along the 'secret line'. Her intelligence helped the Confederates win their first major battle, at Bull Run in 1861, but she was arrested later that year by the Pinkertons.



▲ Elizabeth Van Lew *(Union)*, sometimes known as 'Crazy Bet', was the Union's 'Lady in Richmond'. She supported Union prisoners in Richmond's jails, but also used her social connections to gather intelligence and establish a network of spies in the War and Naval Departments. Her couriers spirited intelligence north through secret channels. Her intelligence on Southern defences led Lincoln to compliment her personally: "You have sent me the most valuable information received from Richmond during the war."

▼ John Wilkes Booth *(Confederate)*, Lincoln's assassin, had gained some fame in the early 1860s as an actor; Lincoln reportedly saw him perform in 1863. Firmly against the abolition of slavery, Booth's views aligned with the Confederacy and his work let him travel quite freely throughout the US during the war. He was involved in cloak-and-dagger actions, smuggling medicines to the South. And – while the extent of his work is debated among historians – he is believed to have engaged with the Confederacy's secret service activities, as a spy and a courier.



GETTY IMAGES / LIBRARY OF CONGRESS / NATIONAL PARK SERVICE

intercepted and deciphered enemy telegraph messages, while battlefield commanders even spied on enemy forces with specially equipped balloons. Like the technologies of war, intelligence in the Civil War was a unique mix of the old and the future.

Civil War generals would not have used the word 'intelligence'. What today is known as 'intelligence' work was then known as 'secret service'. At the outbreak of war, neither side had a permanent, centralised intelligence staff. The Confederacy came closest to establishing one with its Secret Service Bureau, which formed part of the Signals Corps. The Union's equivalent, the Bureau of Military Information, was founded under General 'Fightin'' Joe Hooker in 1863, but remained under his command rather than a national unit. And this was characteristic of much intelligence work during the war. By the time of Gettysburg, at least five Union commands operated individual intelligence networks.

The lack of centralised organisation and distribution caused plenty of problems in turning information into useful action. And even if it trickled down to some commanders, they refused to take heed. Hooker himself was defeated by Lee at Chancellorsville, Virginia in May 1863, despite being informed that Lee's forces were roughly half the size of his own. His provost marshal general later confided to his diary that Hooker had "treated our 'Secret Service Department' which has furnished him with the most astonishingly correct information with indifference at first, and now with insult…." Nevertheless, the often rather ad-hoc intelligence operations affected battles throughout the war. Such was the concern for the spy menace that a captured suspect could be hanged.

Curiously, some of the best intelligence came not from clandestine operations but from the press. In contrast to both armies' rather disorganised espionage, the press was efficient and widely circulated. Lincoln and his most senior generals, William T Sherman and Grant, were avid readers of Southern newspapers. And the South's Secret Service Bureau gathered as many Northern papers as possible. They contained valuable news, but also the occasional secret agent's message disguised in the personals column. Censorship was notoriously ineffective. Sherman compared journalists to spies and accused them of "sowing discord and discontent in the army". "Napoleon himself would have been defeated by a free press," he declared upon hearing that a number of journalists had been killed by artillery fire. "Now we shall have the news from hell before breakfast."

Unfortunately we will never know the full story of the South's Civil War spies: as Northern troops stormed Richmond, the Confederacy's secretary of state, Judah P Benjamin, burned whatever records he could find. But the South's intelligence activities included gathering military information to offset the South's relative weakness, and covert operations to damage Northern industry and feed anti-war sentiment. Washington, so close to the Southern frontier and replete with sympathetic men and women, was an ideal location for espionage. There were at least three networks in the city. One was managed by the former congressman from Virginia, John Letcher. His most notorious agent was Rose O'Neal Greenhow, whose court of admirers proved excellent intelligence. She and her fellow spies smuggled their information southwards through a network of postmasters and couriers known as 'the Southern line'. Her intelligence offered Confederate commander Brigadier General Pierre Beauregard early warning of Union movement towards Manassas, Virginia, leading to a Southern victory at Bull Run in July 1861.

Spies like Rose Greenhow worried Lincoln so much that he imposed martial law. By the end of 1861, several independent authorities were hunting spies. These included the department of state, the army, the navy, the US marshals and the infamous Pinkerton detectives. Allan Pinkerton managed a network of informers who uncovered several Southern spies, including Greenhow. However, the combined activities of the Union's counter-intelligence activities quickly struck Lincoln as excessive, notwithstanding his own suspension of *habeas corpus*. He

Such was the concern for the spy menace that a captured suspect could be hanged

SPY MASTER
General 'Fightin'' Joe Hooker commissioned the Union's Bureau of Military Information

suggested the arrests cease unless the case was "manifest and urgent".

These relatively unco-ordinated counter-espionage activities were mirrored in Northern espionage. Pinkerton ran his own agents, while the president himself even took to hiring agents on his own initiative (and dollar). One of them, William Alvin Lloyd, was imprisoned twice by Confederate forces, and, following the North's victory, issued court proceedings against the government for non-payment of salary. Others were more effective. The most significant agent in Richmond was probably Elizabeth Van Lew. A committed abolitionist, she supported Northern prisoners in Southern jails, occasionally helping them escape. She also gathered valuable information through her social connections; Lincoln apparently complimented her for having "sent me the most valuable information received from Richmond during the war".

Espionage from deep in enemy territory was supplemented by a number of other, technical sources. Both sides tapped telegraph lines. Lincoln was often found in the War Office's telegraph and cipher section, monitoring reports and orders, and taking in the scoops offered by his codebreakers. General Lee so distrusted the telegraph that he declared his officers should "send no dispatches by telegraph relative to… movements, or they will become known". Another new intelligence technology was the hot air balloon. In 1862, as Major General McClellan began his campaign on the Virginia Peninsula, he took with him three balloons. Observers mapped the location of Confederate troops and heavy weapons, providing commanders with invaluable local intelligence.

But the most important intelligence for both sides was low-tech: that gathered from spies and scouts on horseback or on foot, or from a prisoner's interrogation. The Confederate 'Stonewall' Jackson's masterful campaign in the Shenandoah Valley in 1862 was largely based on intelligence of the local terrain and his enemy's movements. Union forces also recognised the importance of better battlefield intelligence soon after the outbreak of the war. Surprised by Southern forces in the battle of Shiloh in April 1862, Grant instructed Brigadier General Grenville Dodge to form a "corps of scouts" to spy on Confederate troops. Hooker's bureau of military information was formed in the eastern theatre to perform a similar duty. By the time the siege of Petersburg began in 1864, it was so effective that a Confederate clerk complained to President Jefferson Davis that "the enemy are kept fully informed of everything transpiring here".

Union forces enjoyed one source the Confederacy simply could not emulate: freed or escaping slaves. Pinkerton instructed that runaways (known as 'contrabands') be carefully debriefed. As slaves in the South, men and women could often observe meetings unhindered as they conducted daily chores, as officers and officials would not acknowledge their presence. The best intelligence McClellan had when he embarked on his peninsula campaign came from WH Ringgold who had been forced to labour on a Confederate riverboat and delivered detailed knowledge of the peninsula defences to Union troops. Such information provided by escaped slaves was so substantial that it was placed in its own category – the 'black dispatches'. Even General Robert E Lee was forced to concede that "the chief source of information to the enemy is through our negroes".

Lincoln's interest in his spies, his codebreakers and his Southern newspapers was not matched by a determination to establish an effective centralised system, or indeed to insist on proper safeguards for himself. This was a particular and unnecessary weakness for the Union's war effort. And it cost Lincoln his life. Nevertheless, intelligence permeated every aspect of the war, often being the decisive factor in battle. The Union's spies allowed it to marshal its resources far more effectively than it might have, and often denied the Confederacy the advantage of surprise, perhaps the key commodity it needed to resist Northern power. ■

GETTY IMAGES

General Lee conceded that "the chief source of information to the enemy is through our negroes"

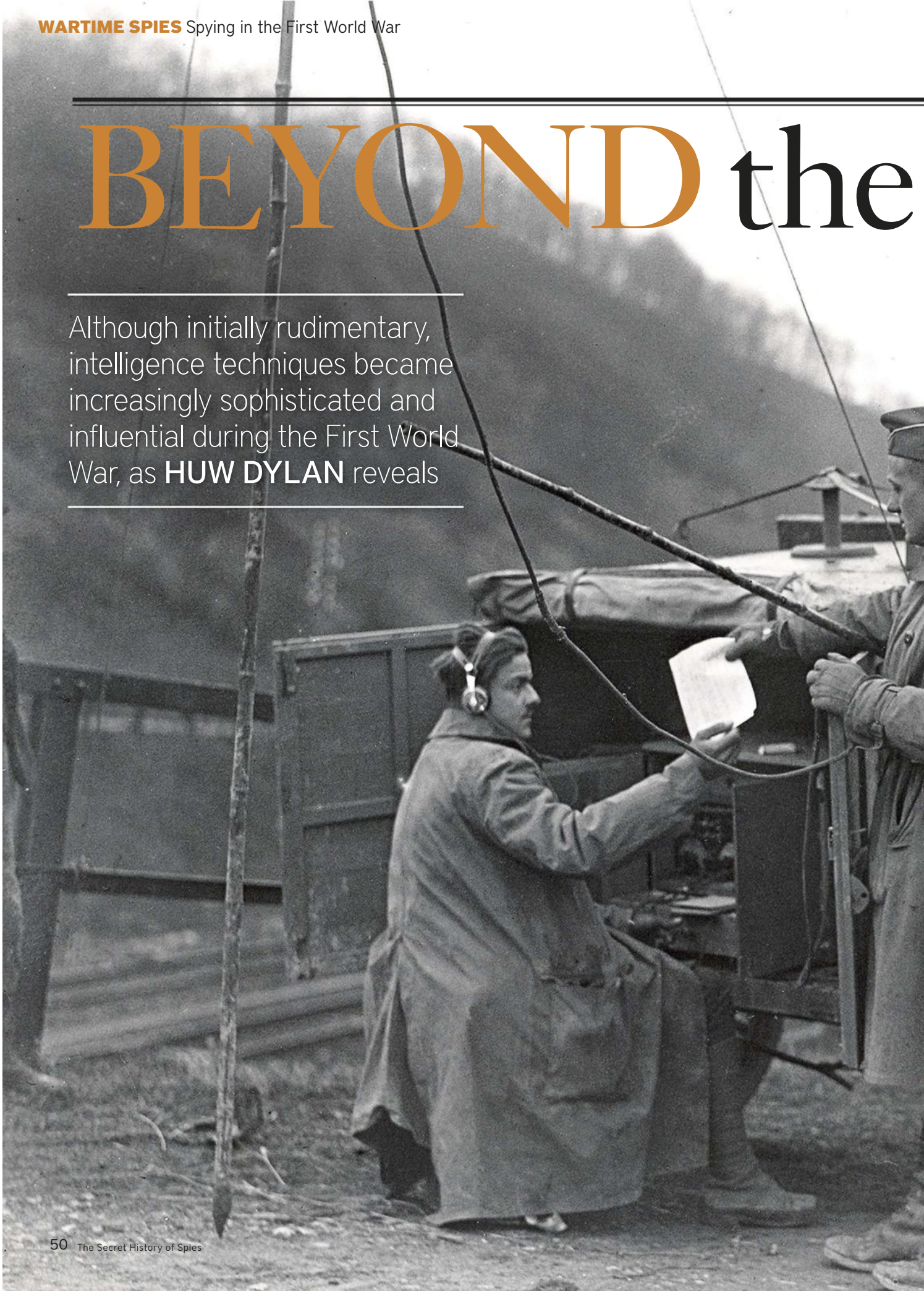
READ ALL ABOUT IT A news boy delivers the newspapers at Culpeper, Virginia. Both sides gathered as many of the enemy's newspapers as possible; sometimes the personals columns contained covert messages between secret agents

LIBRARY OF CONGRESS

LINES OF COMMUNICATION Troops lay telegraph wire at Fredericksburg, Virginia. Tapping of telegraph lines was rampant, making Confederate general Robert E Lee distrustful of the medium because of the ease with which messages could be intercepted

BEYOND the

Although initially rudimentary, intelligence techniques became increasingly sophisticated and influential during the First World War, as **HUW DYLAN** reveals



TRENCHES

OVER THE AIRWAVES
During the First World War, radio became a hugely effective – and mobile – medium by which intelligence was disseminated to officers on the battlefields

GETTY IMAGES

On 2 October 1914, Alistair Cumming, a lieutenant in Britain's newly formed intelligence corps, was racing a Rolls Royce through the French countryside. At his side was his father, the mysterious chief of British foreign intelligence, known in government as 'C'. They were returning to Paris having visited the headquarters of the British Expeditionary Force. While navigating the poor roads surrounding the north-eastern city of Meaux, a puncture caused them to lose control. The car overturned and hit a tree. Alistair was thrown clear but mortally injured, his father was trapped, his leg pinned by mangled metal. It is said that on hearing his son complaining of the cold, he struggled to wrench himself free, but failed. So he took out his pocket-knife and cut away at his mangled shin until he could move over to his son and cover him with his coat, leaving his foot behind. A contemporary noted simply, "That's the sort of chap old C is."

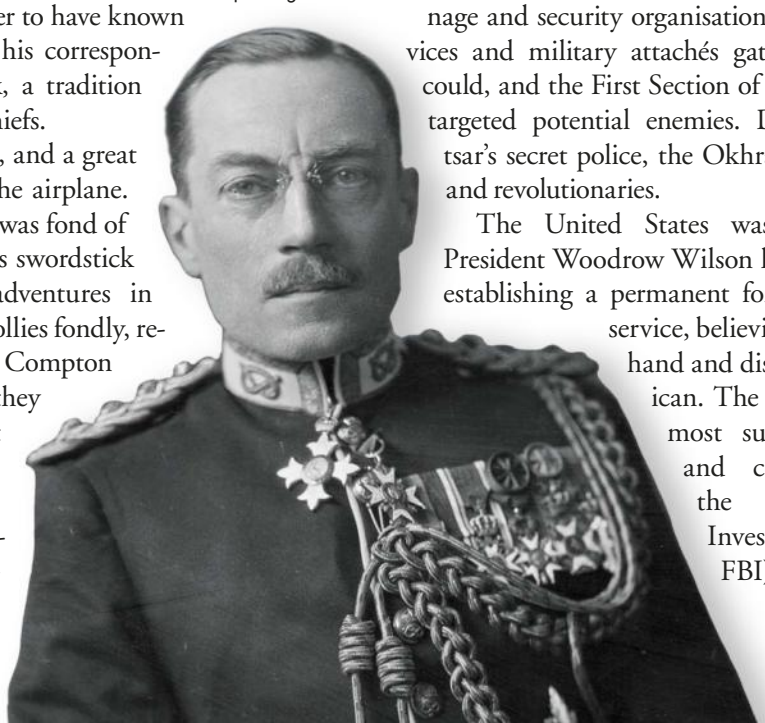
'C' was Mansfield Cumming, a remarkable man. A career navy officer, in 1909 he was asked to create the foreign section of Britain's first peacetime intelligence outfit, the Secret Service Bureau (SSB). From a humble beginning – his diary entry for the first day on the job notes "went to the office and remained all day but saw no one, nor was there anything to do" – he built a worldwide web of espionage and laid the foundation for Britain's Secret Intelligence Service (SIS, or MI6). He was a man of intrigue. Some of his agents claimed never to have known his real name. And he signed his correspondence simply 'C' in green ink, a tradition maintained to this day by SIS chiefs.

He also was a man of action, and a great admirer of the motorcar and the airplane. Before the First World War, he was fond of donning a disguise, packing his swordstick and taking off on spying adventures in France. He remembered these jollies fondly, remarking to his friend Compton Mackenzie that after the war they would "do some amusing secret service work together. It's capital sport!"

The First World War is remembered chiefly for its appalling brutality and casualties. It is not generally remembered as an intelligence war, certainly not in the same way as the Second World War is. The work of men like Cumming faded into obscurity after 1918. Strangely, however, before the war Britain was in the grip of 'spy fever'. The popular press and spectacularly successful (although equally poor) novels outlined dastardly German schemes to steal British secrets in preparation for an invasion. So infectious was the fever that the government's most senior defence body, the Committee on Imperial Defence, took steps to counter (the mostly imaginary) German actions: they established the Secret Service Bureau. The horror of the trenches has since overshadowed the espionage, spies and intrigue that were at the forefront of public consciousness at the beginning of the conflict. However, from spy-catching to listening to enemy radio messages on land and sea, intelligence was a vital component of the war.

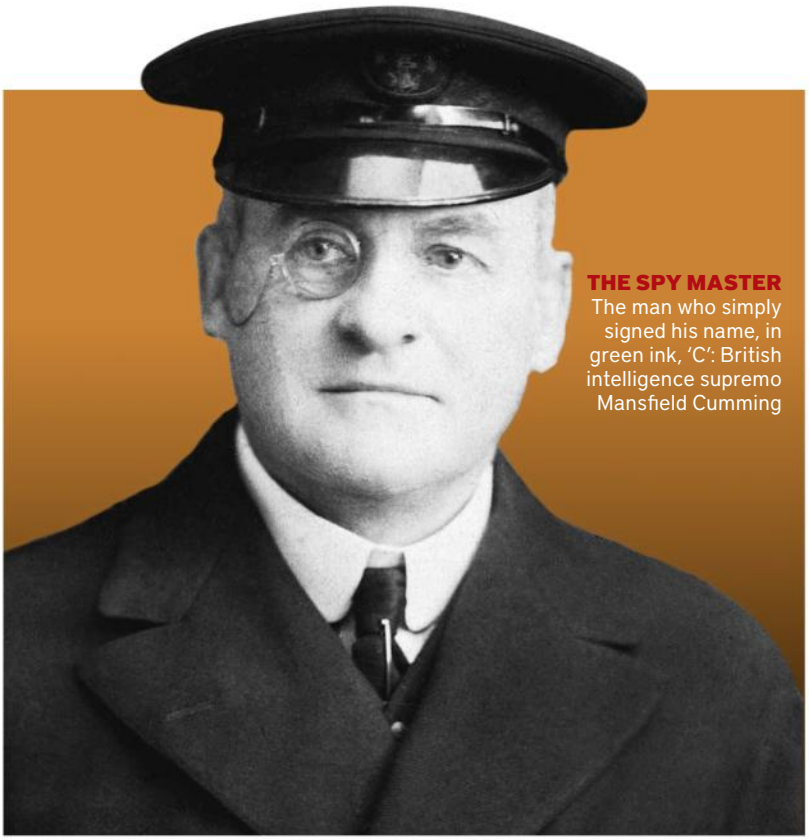
The European powers started the war with intelligence structures in place. The rise of Germany, particularly its navy, meant nobody wanted to be caught by surprise. Britain's SSB had two branches: a foreign branch under Cumming, and a home branch, under the army captain Vernon Kell, responsible for counter-espionage. In France, the Deuxième Bureau of the General Staff worked with the interior ministry to secure the republic. It achieved some espionage coups, like securing a copy of Germany's mobilisation plans in 1907. In Germany, the army and the navy supported intelligence organisations, the Abteilung III b and the Nachrichten-Abteilung, usually known as 'N'. Russia maintained a well-developed espionage and security organisation. Its consular services and military attachés gathered what they could, and the First Section of the General Staff targeted potential enemies. Domestically, the tsar's secret police, the Okhrana, hunted spies and revolutionaries.

THE MAN WITH THE PLAN
Vernon Kell was the army captain tasked with heading up Britain's counter-espionage activities

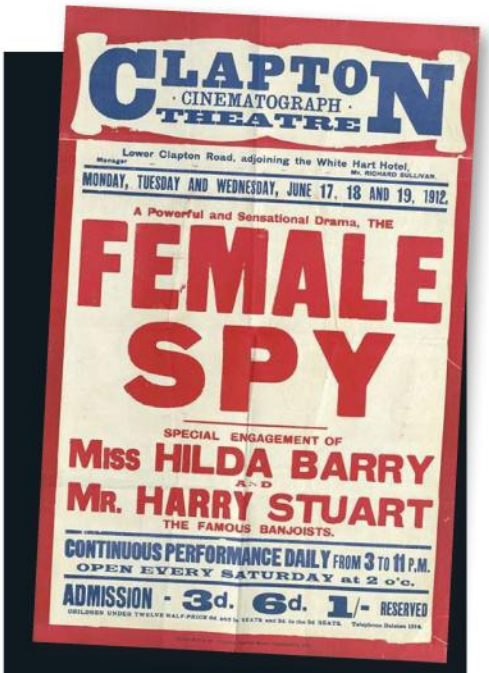


GETTY IMAGES

The United States was an exception. President Woodrow Wilson had no interest in establishing a permanent foreign intelligence service, believing it to be underhand and distinctly un-American. The American organs most suited to security and counter-espionage, the Bureau of Investigation (later the FBI) and the Secret



THE SPY MASTER The man who simply signed his name, in green ink, 'C': British intelligence supremo Mansfield Cumming



TOP BILLING Well before the outbreak of war, public fears about foreign spies were seized upon by newspapers and, as shown by the poster here, movie directors

IMPERIAL WAR MUSEUM / DR NICHOLAS HILEY

Service, had little experience in hunting spies. When the war was over, Wilson publicly acknowledged his innocence: "Let me testify to this, my fellow citizens. I not only did not know it until we got into this war, but I did not believe it when I was told that it was true, that Germany was not the only country that maintained a secret service."

It is unlikely that any of the powers foresaw how intelligence would develop and affect the war; they foresaw a rapid war of movement, rather than static trench-lines. But it was clear from the outset that it would be important. Nowhere was this more apparent than on the home front. In each nation, counter-espionage work led to executions. In France, the infamous Mata Hari was convicted and shot in 1917 (despite her effectiveness as a spy being highly questionable). Two years earlier, the Russians executed an alleged spy, Sergei Myasoedov, on similarly dubious evidence. The Germans struggled to secure occupied territories and arrested thousands. They executed several hundred in both western and eastern Europe.

In Britain, Vernon Kell's organisation had identified a small web of German spies. Some were distinctly amateur, others more serious, but at war's outbreak they were arrested, 22 in all. The kaiser was dumbfounded. Key to this success was the co-operation of local police forces, powers to intercept suspects' post, and a vast card-index of foreigners (or 'aliens') used to cross-reference suspects. (Individuals in this index were categorised according to their probable loyalty on a scale, from AA "Absolutely Anglicised – undoubtedly friendly", to BB 'Bad Boche – undoubtedly hostile').

Kell's success in creating this system did two things. First, it established the foundation of British counter-espionage for decades to come with the card-index system. Second, it identified many Germans who infiltrated wartime Britain. One, Carl Hans Lody, was identified after posting a letter to the address of a known German intelligence handler. Somewhat the amateur, he nevertheless gathered enough intelligence to warrant arrest. He went on trial and received a death sentence. His fortitude during his last moments ensured the admiration of the public and British spymasters alike; Kell thought him a "really fine man". And when he asked the officer escorting

Woodrow Wilson saw the establishment of a foreign intelligence service as distinctly un-American

FEMME FATALE Still probably the best-known female spy, Mata Hari was an exotic dancer who was convicted of being a German spy. She is pictured here just before her execution in France in 1917

MARITIME TRAGEDY A German spy boasted of having ordered the sinking of the British ocean liner RMS *Lusitania* in May 1915, causing great loss of life

GETTY IMAGES

BLAST ZONE The aftermath of mass explosions at the Black Tom Island munitions facility in New York Harbor in July 1916. The attacks were carried out by German secret agents hoping to prevent ammunition being shipped to the Allies

him from his cell for the final time whether he would shake hands with a German spy, the officer replied: "No, but I will shake hands with a brave man." Thereafter, trials were held in secret.

CONDEMNED MAN
German spy Carl Hans Lody was executed by the British, but many praised his courage

The nation least prepared to play this game of cat and mouse was the United States. German agents targeted the US as soon as the war started. Their objectives were to cease the flow of money and materials flowing across the Atlantic, and to keep the US neutral. Early operations drew the attention of the Bureau of Investigation, the Secret Service and British intelligence. These included attempts to plant pro-German stories in the US press, as well as involving sabotage and covert operations. The most serious early culprit was Franz von Rintelen. He recruited dock workers to smuggle explosives onto munitions ships bound for Europe. After his arrest, he boasted of ordering the sinking of the *Lusitania* in May 1915, killing over 1,100 people including 128 Americans. But he was not the last German agent on US soil. Occasionally they managed remarkable attacks, such as the bombing of Black Tom Island freight yard in New York Harbor in July 1916. The target was a shipment of explosives; it is claimed the blast broke every window in Jersey City.

Germany's actions were ultimately counterproductive. First, they undermined the neutrality Germany desperately wanted maintained. Second, they made the inadequacies of the Bureau of Investigation and Secret Service painfully obvious. This drove the US into the arms of British intelligence. Reginald 'Blinker' Hall, Britain's director of naval intelligence, thoroughly impressed his American contacts; Dr Walter Page, the US ambassador in London, wrote of him: "The man is a clear case of genius. All other secret service men are amateurs by comparison… For Hall can look through you and see the very muscular movement of your immortal soul while he is talking to you." On the other side of the Atlantic, Mansfield Cumming's man in Washington, Sir William Wiseman, even became a confidant of Woodrow Wilson himself. Their objective was to secure US involvement in the war, an objective they pursued with skill and guile.

Espionage and sabotage was part and parcel of international relations during the war. Gathering information about enemies' capabilities and intentions became a vital preoccupation for all powers. The reasons were obvious enough: nobody wished to be surprised on the battlefield, either by an unanticipated offensive or a new technology. But the nature of the war and the development of technologies presented two particular challenges: first, the new technologies were created hundreds of miles behind the lines; and, second, traditional reconnaissance scouts could not operate in no man's land between the rival trenches. There was nowhere to hide.

The first problem had been Cumming's concern since 1909. He quickly established contacts in the business community with access to German shipyards, gaining him valuable insights into naval developments. During the war, he recruited several agents, the most valuable of whom was probably the one codenamed TR/16. A naval engineer by trade, he was recruited in 1914 and supplied intelligence on German ports, including details about the damage German warships had sustained in battle. These were matters of the highest priority for Britain.

The French, the Belgians and the British solved the second problem by establishing reporting networks in occupied territory. They spied on the movements of German troops and arms; major movements indicated major offensives. The largest network was called La Dame Blanche (The White Lady) and, by 1918, had more than 800 members operating more than 80 railway-watching stations. They used ingenious techniques to record their intelligence, including coded patterns stitched into knitwear. And they demonstrated great courage in smuggling it to the British; one agent utilised her job as a midwife to move freely across the Belgian frontier with secret messages rolled around the whale-bones in her corset. They

GETTY IMAGES

British intelligence aimed to secure US involvement in the war, an objective they pursued with skill and guile

also used carrier pigeons, but (perhaps unsurprisingly) attracted the unwelcome attention of German authorities who threatened to shoot civilians caught handling the birds. An internal history of British military intelligence in France notes that the information on troop movements from La Dame Blanche had "a direct effect on the operations and movements of our own forces". It is judged to have been the single most successful British human intelligence operation of the war.

Human intelligence had an impact on every level of the conflict – from the deployment of secret agents to the interrogation of prisoners of war for tactical information – but the truly notable aspect of intelligence in the war is the impact of new technologies. Airplanes flying over the trench lines revolutionised the ability to understand opponents' defences. They also played their part in facilitating human intelligence, dropping crates containing homing pigeons by parachute for use by the train watchers. But the most significant development was the radio.

The radio provided great opportunity for intelligence gathering and for deception. The military potential of exploiting poor radio security became clear early in the war. Germany's interception of uncoded Russian radio messages allowed them to inflict a crushing blow on the Russians at Tannenberg in August 1914. Thereafter, all armies tuned in and monitored the to-and-fro of enemy communications to calculate which unit was where. This made achieving surprise much more difficult. But it also gave birth to a new mode of deception: Britain created a mass of false radio messages to dupe the Germans about their movements before the battle of Amiens in 1918. At sea, the impact of radio intelligence was even more significant. Britain's naval codebreakers – 'Room 40' – cracked three of Germany's main naval codes. Despite struggling to use the intelligence effectively, Room 40 ensured that the German High Seas Fleet was unable to surprise the Royal Navy, effectively confining the Germans to the Baltic Sea for the rest of the war.

Room 40's biggest coup was diplomatic. The US was key to both sides' calculations: the Central Powers (Germany, Austria-Hungary, the Ottoman empire and Bulgaria) wished them neutral, while the Allies wanted them to join the fight. Britain spared no energy trying to influence US opinion and, in 1917, Room 40 struck gold. They intercepted a message from the German foreign minister, Arthur Zimmerman, to his ambassador in Mexico. The message contained details of a plan for Mexico to join the war by attacking the southern US. The challenge was how to leak it without revealing that Room 40 was listening to neutral countries' messages (embarrassingly, this included US communications). 'Blinker' Hall's ingenious plan was to arrange for an agent to secure another copy of the message from its final destination in Mexico City. The plan worked perfectly, creating a massive anti-German scandal in the US.

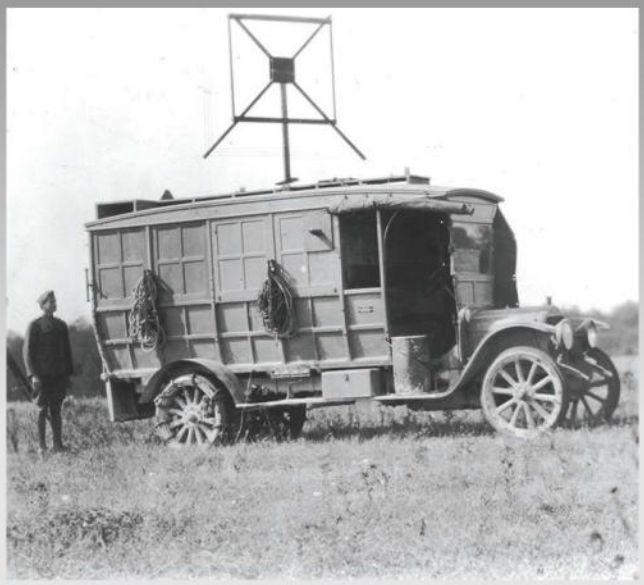
The secret war was fought by a motley assortment of characters. Their intelligence did not decisively alter the course of the war, but they made a broad contribution to the course of the fighting, and their budgets and staff grew significantly. MI5 finished the war with 844 employees, almost 50 times more than in 1914. This increasing professionalisation was linked to the scale of the threat, but also to the rapid development of technology. Developments like radio and aerial photography meant that intelligence work needed to be done by experts, accelerating the creation of distinct intelligence disciplines – human intelligence, imagery intelligence and signals intelligence.

Finally, the war brought intelligence much closer to decision-makers. They realised that, in an increasingly globalised world with powerful adversaries and radical ideologies, intelligence was a fundamental component of security. With the exception of the US, allied powers cut back their intelligence organisations with peace, but did not kill them. Intelligence in peace was needed to prepare for war. One man who knew this was Mansfield Cumming. He continued to work tirelessly as 'C', expanding his networks and focusing on revolutionary Russia. It was his life's work: he died on the sofa in his office in June 1923, having left an indelible mark on the world of secret service. ■

GETTY IMAGES

Decision-makers now realised that intelligence had become a fundamental component of security

SECRET FLIGHT The use of carrier pigeons was an effective method of updating intelligence. Here soldiers attach messages to birds about to fly to other positions



DOUBLE SPEAK A c1917 US field radio station. American forces often made dummy broadcasts in order to misinform German operatives intercepting messages

MOBILE MESSAGING
Russian troops pose with a portable Marconi wireless station. The German interception of uncoded Russian messages led to a heavy defeat at the battle of Tannenberg in 1914 that almost destroyed the entire Russian 2nd Army

SPYING *in* WORLD WAR II

The stuff of numerous books and films, the extraordinary reality of wartime spying, explains **MICHAEL GOODMAN**, was just as dramatic as the fictional accounts

Look 110 miles to the west of Oslo and you'll find the Norwegian county of Telemark. At the heart of it is Rjukan, a town built into the natural cleft between two gigantic mountains. The landscape is inhospitable: the sides of the valley are so steep that for six months of the year the sun cannot be seen. In the depths of winter the temperature can drop to as low as –4°F. On the night of 27 February 1943, the wind was blowing, everything was covered in snow and all was silent. The Nazis had occupied Norway for almost three years and had wasted no time in taking control of the Norsk Hydro plant. Situated on one side of the valley on the outskirts of Rjukan, great pipes, fed by natural waterfalls, used the vast energy of descending water to power great turbine engines. The Nazis had been putting these to use to help produce heavy water, a vital component in their atomic bomb programme.

Some time earlier, Norwegian saboteurs, assisted by British intelligence, had been dropped into the countryside and had skied through treacherous snowy paths. Surviving on just moss for days on end, they were fearful of capture and certain execution. That evening, the team made its way to the plant. Unable to cross the

GETTY IMAGES

TAKING AIM
A member of a Norwegian military ski patrol undertakes training in the snows of Scotland during 1942. The following year, such training bore fruit when covert British and Norwegian operatives targeted the Norsk Hydro plant in Rjukan, Norway

STATELY HOME Once described as "a maudlin and monstrous pile" for its mish-mash of architectural styles, Bletchley Park was nonetheless selected as the location for the headquarters of the British government's Second World War codebreaking community

single suspension bridge that led to the entrance, they were forced to clamber down a sheer rock face, cross an icy river, and then climb back up the other side. They broke into the plant and, evading capture, planted explosive charges. Desperate to ensure that they completed their mission, they reduced the timers from the original two minutes down to 30 seconds. Before they had got far, an explosion lit up the dark, impenetrable night sky.

The sounds of shouting in German and of gunfire spurred them on and all managed to escape, skilfully vanishing into the shadows. Despite the Germans flooding the area with thousands of extra soldiers in the ensuing days, the Norwegian saboteurs were able to escape. Their mission had been a success: the heavy water plant had been seriously damaged, though it would not be the last the Allies would hear of German atomic efforts.

The Second World War, unlike any other conflict before it, can be classed as an intelligence war. In every theatre, in every type of operation, and for each major country involved, intelligence became a central facet of war planning. From the breaking of codes, the recruiting of secret agents and the production of detailed assessments, through to the escape of prisoners of war, sabotage and destructive covert missions, the conduct of the war would have been dramatically different had intelligence not played such a vital role.

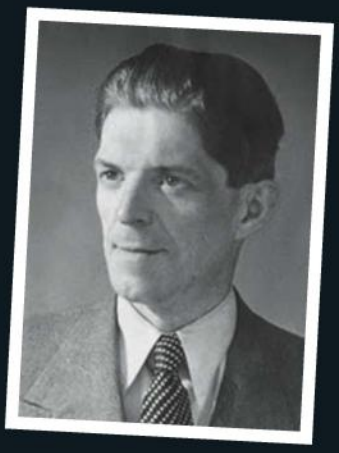
Each of the major powers at the outbreak of war – bar one – had significant intelligence structures in place. Each had a history of espionage and a tradition of cunning in the secret world. Britain's intelligence history stretched back to 1909, albeit with earlier roots; the Soviet Union had a hugely sophisticated internal and external system; the French had an established process; while the Germans, Italians and Japanese had all spent years focusing on producing an efficient intelligence machine. The exception was the United States, which had little in the way of an intelligence tradition and certainly had no effective intelligence community. By the end of the war, convinced of the value of intelligence, the US would proceed with the creation of the most costly and effective intelligence structure the world has ever seen.

In 1939, there can be little doubt that each of the major powers saw the value of intelligence in the war effort, yet none could have anticipated just how central it would become. One of the first intelligence triumphs occurred before the first shot was fired. It was secured by the Poles, who managed to supply British intelligence with a means of breaking the coding used by the Germans. The Enigma machine, and the Ultra intelligence derived from it, would

ALAMY

In 1939, none of the major powers could have anticipated how central intelligence would become

WEAK LINK German soldiers encipher a message on an Enigma machine. The intelligence that Bletchley Park devised from intercepting such messages was "the greatest coup of the war"



DEATH SENTENCE
When he was uncovered as a German agent, Josef Jakobs declined an offer to spy for Britain and was executed by firing squad

be the greatest coup of the war. At Bletchley Park in Buckinghamshire, British intelligence was able to develop a means of intercepting, deciphering, translating and assessing the contents of messages within hours of their transmission. The frequency with which the Enigma machine was used meant that the Germans relied upon it as a fast, secure and important means of communication. That its codes were broken therefore gave Allied military commanders an undoubtable advantage but, like any source of intelligence, it was not perfect.

Ultra intelligence was a secret almost unsurpassed in the war: its existence was very tightly controlled among those with a 'need to know'. In practice, this ensured a number of difficulties: military commanders fighting in Europe, the Atlantic, Africa and elsewhere could not be told how the intelligence had been obtained, so its provenance was usually concealed. Furthermore, the top levels of the German military and Nazi hierarchy were more reluctant to use it, so although tactical war-related plans could be revealed, little was known about the strategic aspects of what the Germans were up to. There were other difficulties too: having such a fantastic intelligence source was great, but often Allied commanders became over-reliant on it – and it still needed a good military brain to work out how to react. In short, it still required other means of intelligence to complement it.

Much like the military, British intelligence had to fight on all fronts during the war. Back at home, the security service MI5 was responsible for locating and identifying all German agents. Operating out of Wormwood Scrubs, a prewar prison in west London, MI5 officers were able to locate all German spies in the UK. The fact that Ultra could reveal much about them – and that there were around only 120 of them – meant that the task was considerably easier than first feared. Yet the real genius in this was in its application. The German spies were given a simple choice: work for British intelligence or face execution. Unsurprisingly, the majority opted for the first option, but not all did. Josef Jakobs chose not to become a British spy. Instead he was put on trial for committing an "act of treachery" in Huntingdonshire when he "descended by parachute with [an] intent to help the enemy". Although he pleaded not guilty, the charge was upheld and he was executed by military firing squad, becoming the last person to ever be executed at the Tower of London. Those who did become British spies were used by the mysterious sounding 'XX Committee', known as Double Cross, to deceive the Germans. At a tactical level, this involved feeding back inaccurate reports on a variety of issues; at a strategic level, it was used to great effect to confuse the Germans about the location of the D-Day landings and the performance of the V-weapon campaign against London.

From its headquarters in central London, the Secret Intelligence Service (SIS, or MI6 as it is frequently known) also operated a number of operations abroad. It ran a series of successful intelligence networks and individual agents, including a collection of train spotters in Belgium (codenamed 'Clarence') and the network masterminded by dashing officers like 'Biffy' Dunderdale in occupied Europe. Further aiding the human intelligence operations was the fact that the work at Bletchley Park, undertaken by the Government Code and Cipher School, was part of SIS itself.

GETTY IMAGES / G.K. JAKOBS

IN THE FIELD
A British agent from the Secret Intelligence Service collaborates with partisans in a 1945 mortar attack in Alba, a short-lived republic now part of northern Italy

GETTY IMAGES

On the continent, the most illustrative example of intelligence work in action was the Special Operations Executive, or SOE. Famously created by Winston Churchill to "set Europe ablaze", SOE had been hived off from SIS at the start of the war and its primary role was sabotage, reconnaissance and planned destruction. Although based in London, its main task was working with local resistance groups to foment opposition to Nazi and Fascist rule, while also hindering enemy activities. SOE worked closely with SIS and, though relations were tense in some parts of Europe, the abilities of both organisations and the expertise of their personnel created an effective force. In Denmark alone, more than 1,000 operations were conducted, ranging from detonating bombs underneath bridges to hinder German transport efforts, to rescuing Jews from certain death.

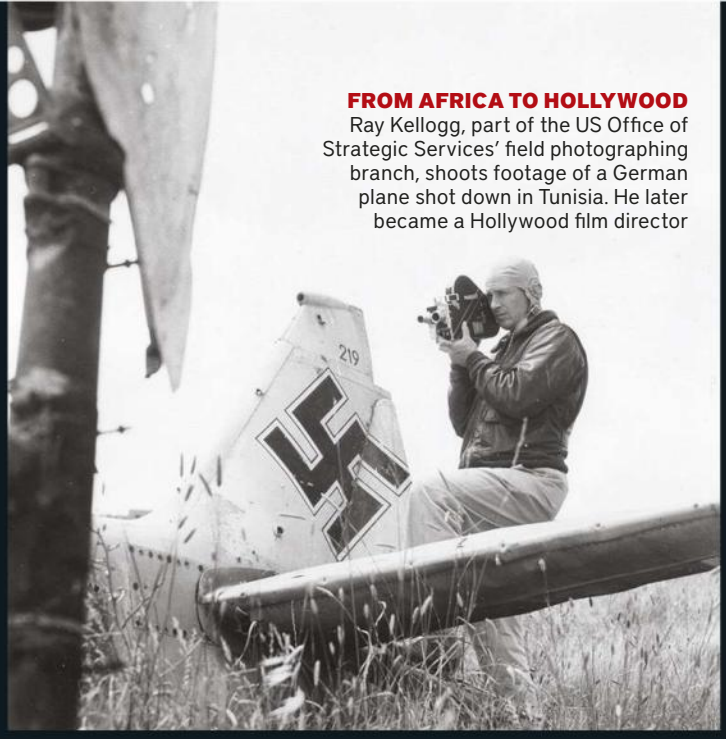
In addition to these organisations, a number of other elements within the British war effort focused on intelligence. The Joint Intelligence Committee was the pre-eminent assessment body, producing a range of papers on political and military subjects. Its assessments would be crucial to the actual timing for the D-Day landings. The Political Warfare Executive focused on propaganda efforts, while smaller organisations concentrated on specific aspects: for instance, MI9 worked on helping prisoners of war escape, while MI10 had a military-scientific focus. The experience and knowledge employed by British intelligence was used to great effect, not only in supporting the war effort, but also in educating other countries in the finer art of intelligence.

One country that undoubtedly benefited was the United States. Until the devastating attack on the naval base at Pearl Harbor in December 1941, which brought the US into the war, there was little in the way of effective intelligence. Specific parts of the US military had intelligence staffs, but there was neither a centralized function nor a specific organization for espionage. The bolt out of the blue that marked the Japanese attack not only signalled the start of the wholesale US military effort, but also its introduction to intelligence.

The result was twofold: an increased effort in the decipherment of the Japanese codes, and the creation of the Office of Strategic Services (OSS). The US had been reading Japanese diplomatic messages since the late 1930s but, with the outbreak of war, this took on an increased purpose, not least because none of the intercepted messages had hinted at the Pearl Harbor attack. This programme, codenamed Magic, was on a par with British successes against the German Enigma. The OSS had a broader remit than any of its British equivalents,

Pearl Harbor not only signalled the start of the US military effort, but also its introduction to intelligence

BOX OF TRICKS
A mobile radio unit, as used by operatives working for Britain's Special Operations Executive during the Second World War



FROM AFRICA TO HOLLYWOOD
Ray Kellogg, part of the US Office of Strategic Services' field photographing branch, shoots footage of a German plane shot down in Tunisia. He later became a Hollywood film director

encompassing espionage, sabotage and propaganda. Like SIS, it operated in Europe and Asia, but it employed significantly more personnel.

The other major powers also saw an expansion of their intelligence efforts as the war progressed. The Soviet Union was able to employ its vast machinery to great effect, utilising human and technical intelligence sources. Ironically, perhaps, it probably spent as much time spying on its wartime allies as it did the Axis powers. Germany's intelligence structures were efficient, but were characterized by internal competition, a typical sign of Hitler's rule. Meanwhile the French – under occupied rule for much of the war – attempted to employ a limited organisation from London.

In every theatre and conflict of the war, intelligence played a role. Sometimes it was significant; at other times, it was readily available but could make little difference to the military outcome. In other instances, it was conspicuously absent. Taken in isolation, there are clear examples of where intelligence did and did not play a role. Taken together, it is far harder to offer a broad conclusion on the importance of espionage to the conflict as a whole. Military historians are often quick to emphasise that one factor helped shorten the war by a certain number of years, but these are attention-grabbing headlines that often bear little resemblance to reality.

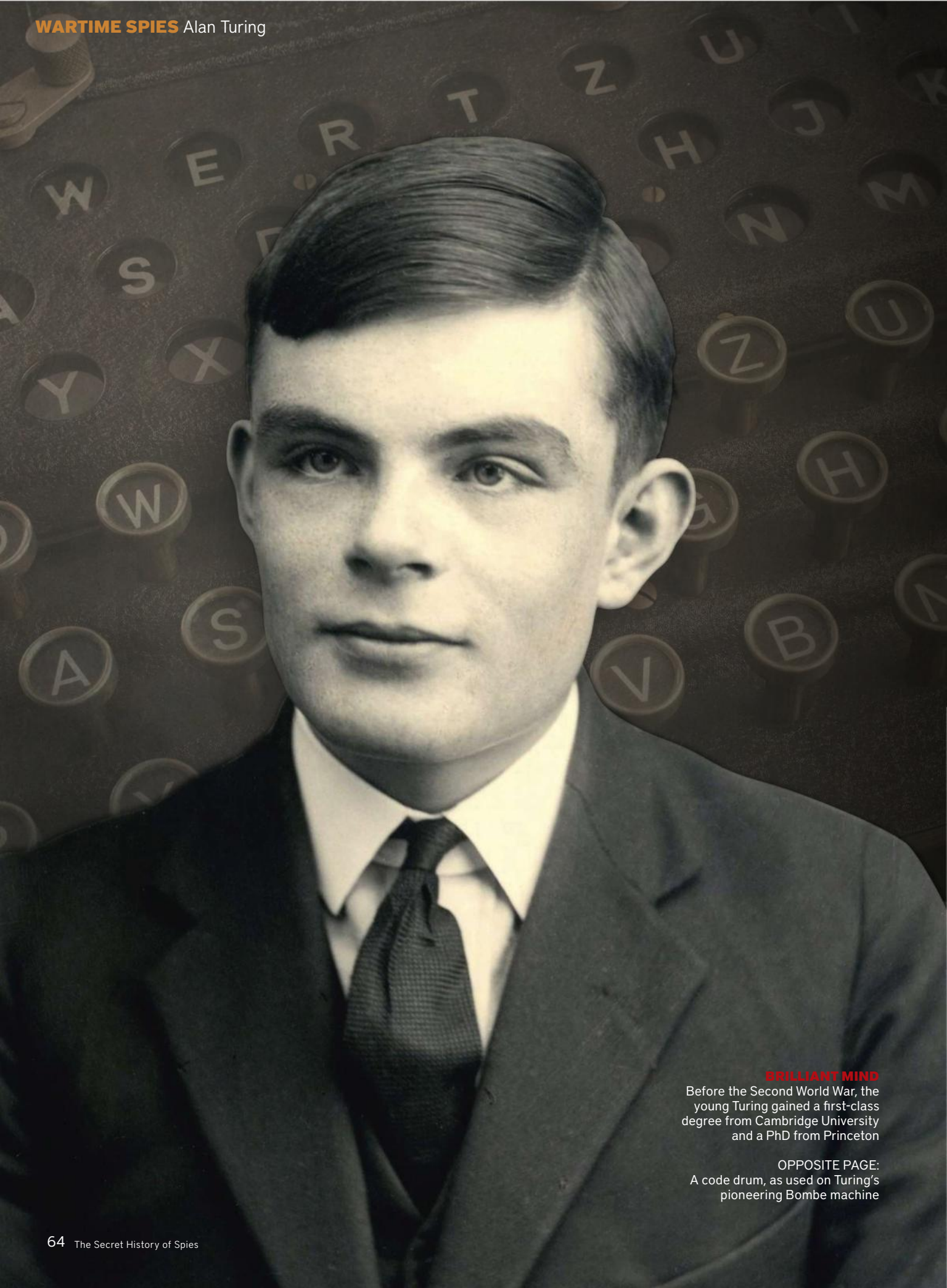
Perhaps the clearest sign that the intelligence services had played a truly important part in the war is the fact that the majority of organisations continued into the postwar world. The value of intelligence had certainly been recognised and powerful arguments were made to ensure its preservation. In the UK, in January 1945, the chairman of the influential Joint Intelligence Committee produced a blueprint for the postwar intelligence world. He persuasively argued that, as economic austerity set in, military budgets would be slashed and, accordingly, the value and importance of intelligence would grow. His arguments were met receptively and the postwar British intelligence community became central to military and diplomatic planning.

Other victorious powers took similar views. French intelligence was effectively recreated, while in the Soviet Union state security expanded out of all proportion. In the United States, the reaction was far slower to take hold. Initial postwar arguments about the US's place in the world were possibly to blame but, by 1947, the future course had been set on its path with the creation of the Central Intelligence Agency.

Modern intelligence structures certainly have their roots in the Second World War and that can only be testament to their value in that conflict. Once the war in Europe was over, Winston Churchill – by now deposed as prime minister – wrote to the chief of the SIS, recording how "the Services rendered, the incredible difficulties surmounted, and the advantages gained in the whole course and conduct of the war, cannot be overestimated … Will you, within the secret circle, convey to all possible my compliments and gratitude." Intelligence was, Churchill concluded, "a rock of safety". ■

British prime minister Winston Churchill saw intelligence as "a rock of safety"

GETTY IMAGES / ALAMY



BRILLIANT MIND
Before the Second World War, the young Turing gained a first-class degree from Cambridge University and a PhD from Princeton

OPPOSITE PAGE:
A code drum, as used on Turing's pioneering Bombe machine

ALAN TURING

THE MAN, THE ENIGMA

JOEL GREENBERG deciphers the brilliant but troubled life of Alan Turing, who famously helped to crack German military codes in the Second World War

GETTY IMAGES / ALAMY

In September 1939, just as war was declared, a young man arrived to stay at the Crown Inn in the hamlet of Shenley Brook End, Buckinghamshire. He was fit enough – an exceptional long-distance runner, in fact – and his new landlady, Mrs Ramshaw, voiced concerns that such a clearly able-bodied young man wasn't doing his bit for the war effort by joining up.

Mrs Ramshaw's indignation couldn't have been more misplaced. The man was Alan Turing, and his work at nearby Bletchley Park – the secret base of Britain's Government Code and Cypher School (GC&CS), the Foreign Office's codebreaking section – was to prove crucial in thwarting German military actions.

Turing had returned to England the previous summer after years of research at Princeton University, which led to his PhD. The University of Cambridge then renewed his fellowship at King's College, to which he had first been elected in March 1935 after earning a first-class honours degree there. In 1938, with the threat of conflict looming, Turing was among a number of British academics approached by GC&CS to undertake secret work for them in anticipation of the outbreak of war. He worked part-time for GC&CS, attending several training courses, and collaborated with Dilly Knox, a veteran First World War codebreaker, on attempts to break the Enigma machine.

On 4 September 1939, the day after Britain declared war on Germany, Turing reported for duty at Bletchley Park and stepped up his work on Enigma. He would go on to lead Hut 8, the team named after the wooden hut in which it was initially based.

Contrary to popular belief, there was no single "Enigma code." The Enigma machine – actually a family of portable encryption devices that substituted each letter of a message for another letter of the alphabet – was first developed in the 1920s and enhanced over subsequent years. By the late 1930s, different versions were used by the various branches of the German military. The Germans' operating procedures exploited the reciprocal nature of the machine. When two Enigma machines were set up the same way, if on one you typed 'A' and it turned it into 'B', on the other machine if you typed 'B', it would turn it into 'A'.

The setting that governed these substitutions was known at Bletchley Park as the daily key, because it was usually changed every 24 hours. If the Bletchley Park codebreakers could work out the daily key, they could decrypt and read all of the intercepted German messages sent that day. This was done using replica Enigma machines, manufactured in Britain. But the number of possible daily keys was almost too big to imagine. In the case of the German army and air force Enigma, there were 158.9 million, million, million possibilities. It was this daily key that Turing and his colleagues were trying to work out.

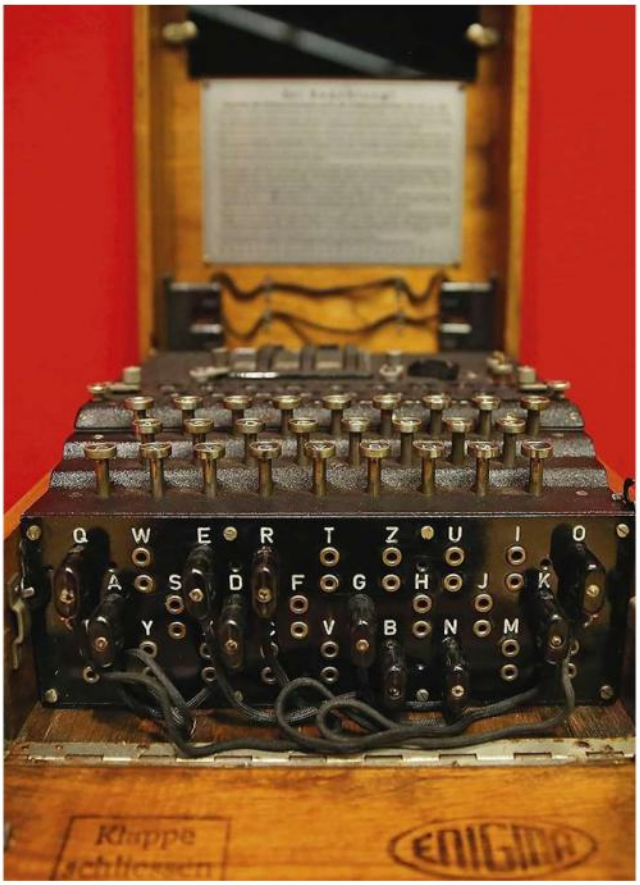
In the preceding months, Knox had met with members of the Polish Cipher Bureau who were collaborating with French intelligence. Having worked on Enigma for several years, the Poles had enjoyed some success in breaking the system used by the German army and air force in the 1930s, but their methods no longer worked because of changes made to Enigma by the Germans. They had also designed a semi-automatic machine – a *bomba kryptologiczna* (reputedly named after a Polish ice cream dessert called a *bomba*) – to determine the settings that were vital to deciphering the codes produced by Enigma, hugely speeding up the process. In July 1939, they shared their findings with Knox.

At Bletchley Park, Turing devised a new and more powerful electro-mechanical machine for determining the crucial Enigma settings. Another Cambridge mathematician working there, Gordon Welchman, made a crucial addition that increased the effectiveness of the machine – called the Bombe – providing Bletchley Park with a vital codebreaking tool. By the end of the war, some 211 machines had been produced.

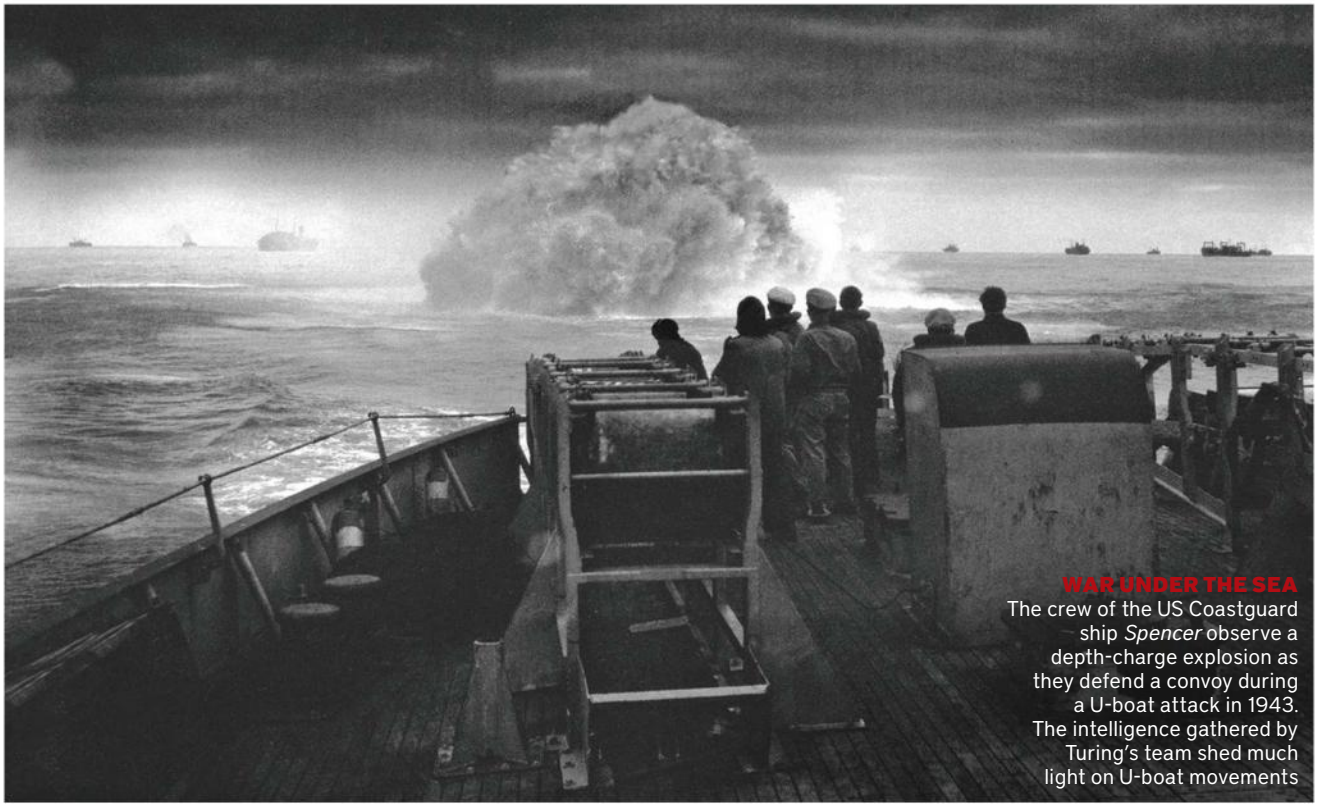
The Bombe, though, wasn't the complete solution to Enigma. Early in 1940, Turing was asked to take on the task of breaking the German navy's Enigma system, which used more secure procedures than those of the air

Turing was tasked with breaking the German navy's **Enigma system.** Many thought it couldn't be done

THE CODE MAKERS At the bottom of this picture, two German military personnel operate an Enigma machine, overseen by General Heinz Guderian



LETTERS AND NUMBERS This working Enigma machine, along with a 56-page notebook of Turing's, was sold at auction in April 2015. The notebook raised $1m, three times more than the machine



WAR UNDER THE SEA The crew of the US Coastguard ship *Spencer* observe a depth-charge explosion as they defend a convoy during a U-boat attack in 1943. The intelligence gathered by Turing's team shed much light on U-boat movements

GETTY IMAGES / ALAMY

TIMELINE

The life of Alan Turing

23 June 1912

Born Alan Mathison Turing in Maida Vale, London, the second son of Julius and Sara Turing

October 1931

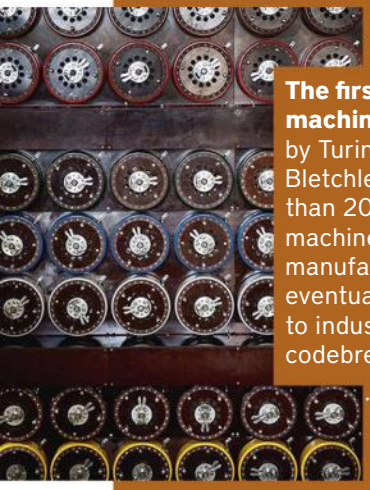
The young Turing takes up a **mathematics scholarship at King's College Cambridge**, earning a first-class honours degree. In 1935, he is elected to a junior research fellowship

January 1937

He publishes a paper which introduces the concept of the Turing Machine and that is later recognised as **laying the foundation of computer science**

At the age of 25, Turing **receives his PhD** from Princeton University for his dissertation 'Systems of Logic Based on Ordinals'

June 1938



The first Bombe machine, designed by Turing, arrives at Bletchley Park. More than 200 Bombe machines would be manufactured, eventually helping to industrialise the codebreaking process

4 September 1939

Turing arrives at **Bletchley Park** to begin his wartime work on code and cipher systems. He goes on to become the leader of the Hut 8 team

March 1940

2 November 1942

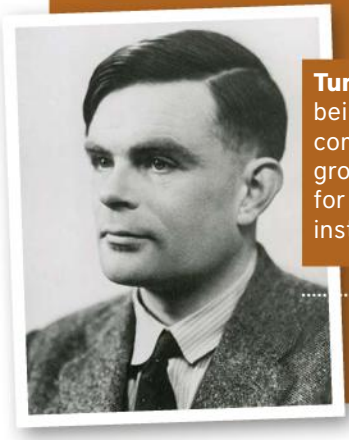
Turing travels to the US to liaise on several **joint US/UK technological projects**, including the development of an American Bombe machine

March 1943

Turing returns to Bletchley Park but is gradually transferred to Hanslope Park for the rest of the war to work on the 'Delilah' speech encipherment project

June 1945

Turing joins the National Physical Laboratory in west London. The following March, he **produces a detailed design for a digital computer** called the Automatic Computing Engine



31 March 1952

Turing is convicted of being "party to the commission of an act of gross indecency" and opts for **estrogen injections** instead of imprisonment

8 June 1954

Turing is found dead in bed by his housekeeper. The coroner's verdict is that he had **taken his own life**

DREAMSTIME / ALAMY / SCIENCE & SOCIETY PICTURE LIBRARY

SHARED PURPOSE Though Alan Turing's team made some of the most important breakthroughs in deciphering Enigma messages, they were among an army of some 10,500 people who contributed to the success of the codebreaking operation at Bletchley Park. The women and men pictured here in 1943 are translating and interpreting intercepted German messages

GETTY IMAGES

force and army. Many at Bletchley believed it could not be broken – yet doing so was vital.

These were desperate times for Britain. The country became ever more dependent on convoys of ships carrying vital supplies across the North Atlantic, and German U-boat attacks were wreaking havoc on these convoys: average monthly shipping losses in 1940 exceeded 240,000 tons. To tackle this, Turing's Bletchley Park team was expanded.

The challenge was this. Having set up their machines using the daily key, each Enigma operator applied one final setting before encrypting a message. The operators for the German army and air force were allowed to choose this setting themselves, but the German navy issued code books for this purpose. In a remarkable piece of work, Turing managed to deduce, quite quickly, how these code books were being used, but realised that his team would need to acquire copies before further progress could be made. It wasn't until a German naval code book was captured that Turing and his colleagues began to achieve success in working out the daily key and reading encrypted German naval messages. Intelligence reports about Germany's U-boat and ship movements could then be produced and sent to the Admiralty for dissemination.

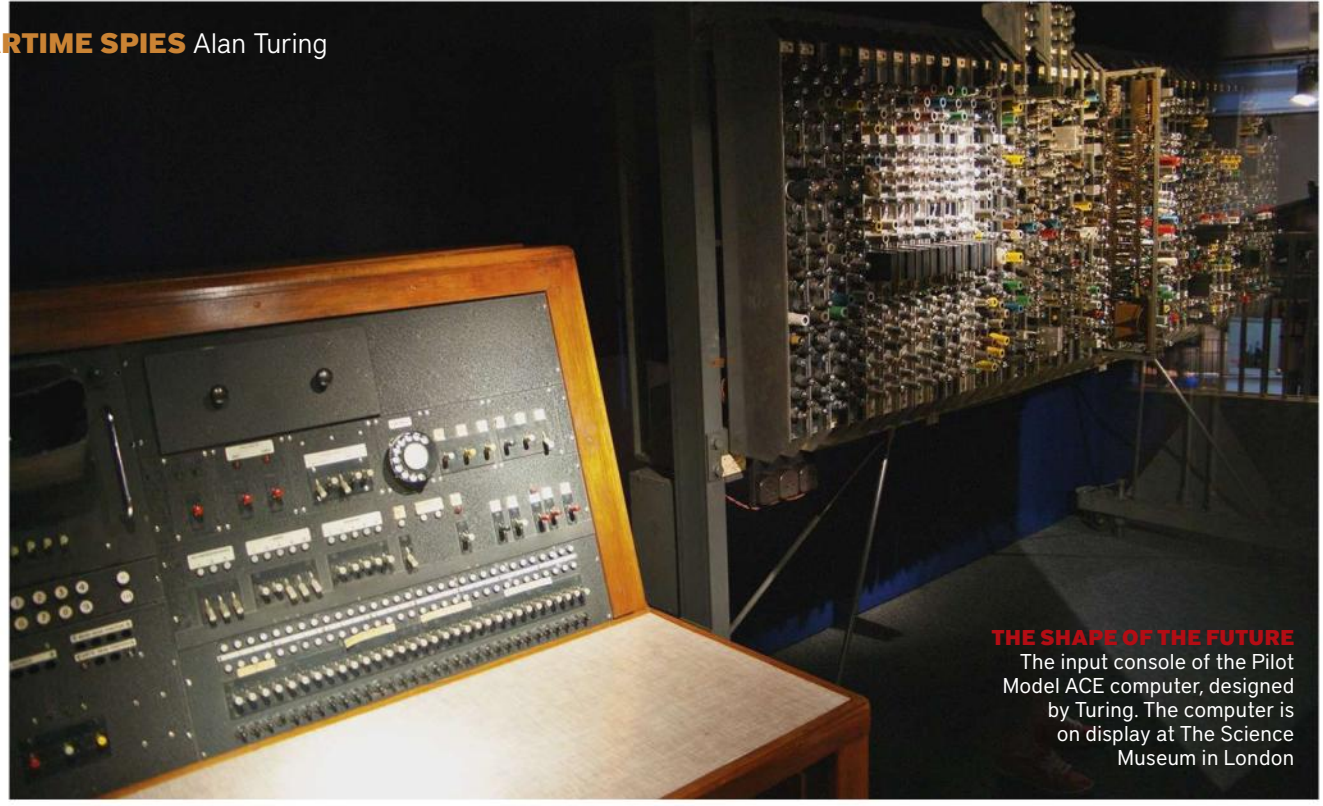
The interception and decryption of German naval messages played a crucial role in the great sea battles of the Second World War. German ships and U-boats could be located and attacked, and Allied convoys could be diverted to reduce shipping losses.

At its peak, Hut 8 had more than 150 staff. It was part of a large codebreaking operation at Bletchley Park that unlocked a number of other enemy code and cipher systems as well as Enigma, and employed as many as 10,500 people; the operation truly was a team effort. Yet Turing's contribution was fundamental. In late 1940 Turing wrote a report describing the methods he and his colleagues were using to solve the German Enigma system. It was known as 'Prof's Book', and it became essential reading for new recruits.

Years later, Bletchley Park codebreaker Peter Hilton explained that what set Turing apart from his colleagues was his ability to come up with ideas that Hilton felt he would not have thought of "in a million years". These ideas gave rise to a number of statistical methods with colorful names such as 'Banburismus' and 'Turingery'.

In June 1946, it was announced that Turing had – the previous year – been awarded the Order of the British

At its peak, the codebreaking operation at Bletchley Park employed as many as 10,500 people



THE SHAPE OF THE FUTURE
The input console of the Pilot Model ACE computer, designed by Turing. The computer is on display at The Science Museum in London

Empire (OBE) for war services. There were rumours that he had been considered for a higher award, but the OBE was the highest that could be awarded to civil servants of Turing's official wartime rank; his true role wasn't revealed for another three decades.

After the war, Turing worked at the National Physical Laboratory in south-west London, where he designed an early digital computer, before taking up a position at the University of Manchester and contributing to its pioneering computer developments. Biological research was now occupying much of his time and, in November 1951, he completed a paper on morphogenetic theory. However, it was work he'd undertaken much earlier that brought him academic renown in later years.

In 1935 Turing had attended a lecture by mathematician Max Newman, discussing the *Entscheidungsproblem* ('decision problem') which asks for a way of determining which mathematical problems are computable. This had intrigued Turing, and his research yielded the paper 'On Computable Numbers with an Application to the *Entscheidungsproblem*', published by the London Mathematical Society in 1937. By the early 1950s, his fame as the author of 'On Computable Numbers…' was growing and, in 1953, the University of Manchester appointed Turing to a specially created readership in the theory of computing.

On 31 March 1952, at a court in Knutsford, Cheshire, Turing was charged with being "party to the commission of an act of gross indecency" – in effect, he was charged with being homosexual. He pleaded guilty. Instead of imprisonment, he opted for hormone 'treatment' – estrogen injections that made him put on weight and enlarged his breasts. (Turing received a posthumous apology for this from British prime minister Gordon Brown in 2009, and a royal pardon in 2013.)

Thus, while his academic renown was growing, Turing's private life was in turmoil. On the morning of 8 June 1954, he was found dead in bed by his housekeeper. The coroner's verdict found that he had taken his own life; there were reports that a partly eaten apple by his bed contained traces of cyanide.

It was not until many years after the publication of Turing's 1937 paper that it became clear it had probably laid the foundations for the evolution of computing. His story has now been told on stage and screen, and he remains the only Bletchley Park figure to be widely known. Yet it was only after his death that much of Turing's life and work, obscured for so long, was revealed. ■

ALAMY

Years later, it became clear that Turing's paper laid the foundations for the evolution of computing

Fact or fiction?

Movie directors, writers and actors have all attempted to capture the essence of the still-mysterious Alan Turing

In 2014's *The Imitation Game*, Benedict Cumberbatch's performance highlighted the secrecy that dominated both Turing's professional and personal lives

Cumberbatch dances with Keira Knightley in *The Imitation Game*. Knightley played fellow cryptanalyst Joan Clarke

As Turing, Cumberbatch battles both with his inner demons and the authorities as he goes about his vital work

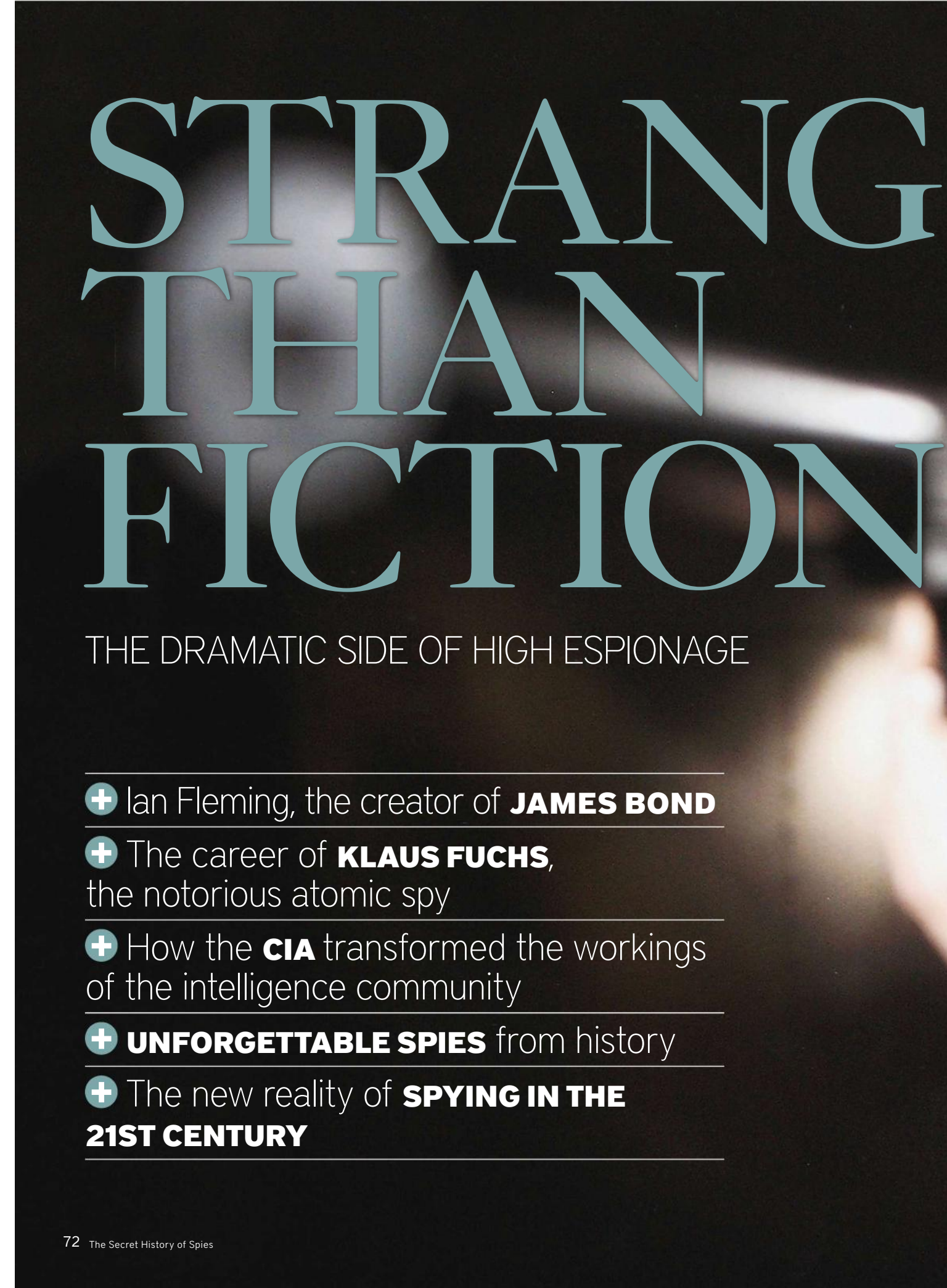
ALAMY / REX FEATURES

Alan Turing was first portrayed on film by Derek Jacobi in *Breaking The Code*, released in February 1997. The movie was based on both Hugh Whitmore's play of the same name, which had began a theatrical run in London in November 1986, and Andrew Hodges' book *Alan Turing: The Enigma*. Hodges' biography is one of a number of factual accounts of Turing's life that sit alongside several fictional depictions, including in Neal Stephenson's 1999 novel *Cryptonomicon* and *Enigma* by Robert Harris (1995).

The film adaptation of *Enigma* was released in 2001 and although the set closely resembled Bletchley Park, the storyline and characters were fictitious.

The movie *The Imitation Game*, released in 2014, was also based on Hodges' book; Graham Moore won an Academy Award for his screenplay. The actor Benedict Cumberbatch played Turing, while seven of the other characters took the names of real Bletchley Park colleagues. Given the large number of people who worked at Bletchley Park and the length of the war, Moore had to conflate events, real characters and timescales for dramatic effect. This is achieved very effectively, ensuring the story told is a gripping one. The costumes and set give a real feel for wartime Bletchley Park and the prop Bombe machine is quite realistic.

There are no known video or audio recordings of Turing and only varying accounts of his personality from people who knew him. However, Cumberbatch's portrayal (and, in particular, the sense of the wartime pressures Turing was under) certainly ring true.



STRANGER THAN FICTION

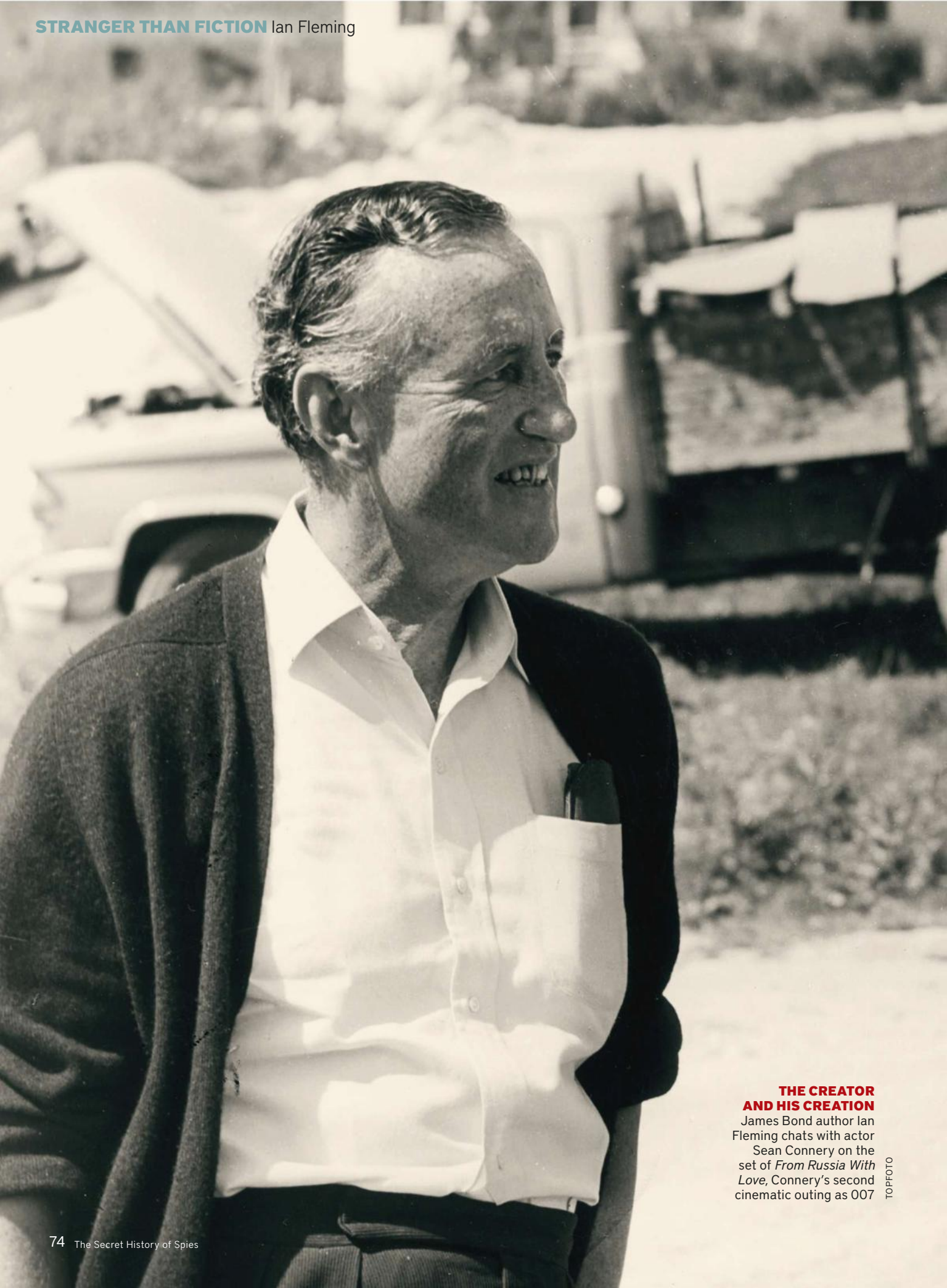
THE DRAMATIC SIDE OF HIGH ESPIONAGE

- Ian Fleming, the creator of **JAMES BOND**
- The career of **KLAUS FUCHS**, the notorious atomic spy
- How the **CIA** transformed the workings of the intelligence community
- **UNFORGETTABLE SPIES** from history
- The new reality of **SPYING IN THE 21ST CENTURY**

ER

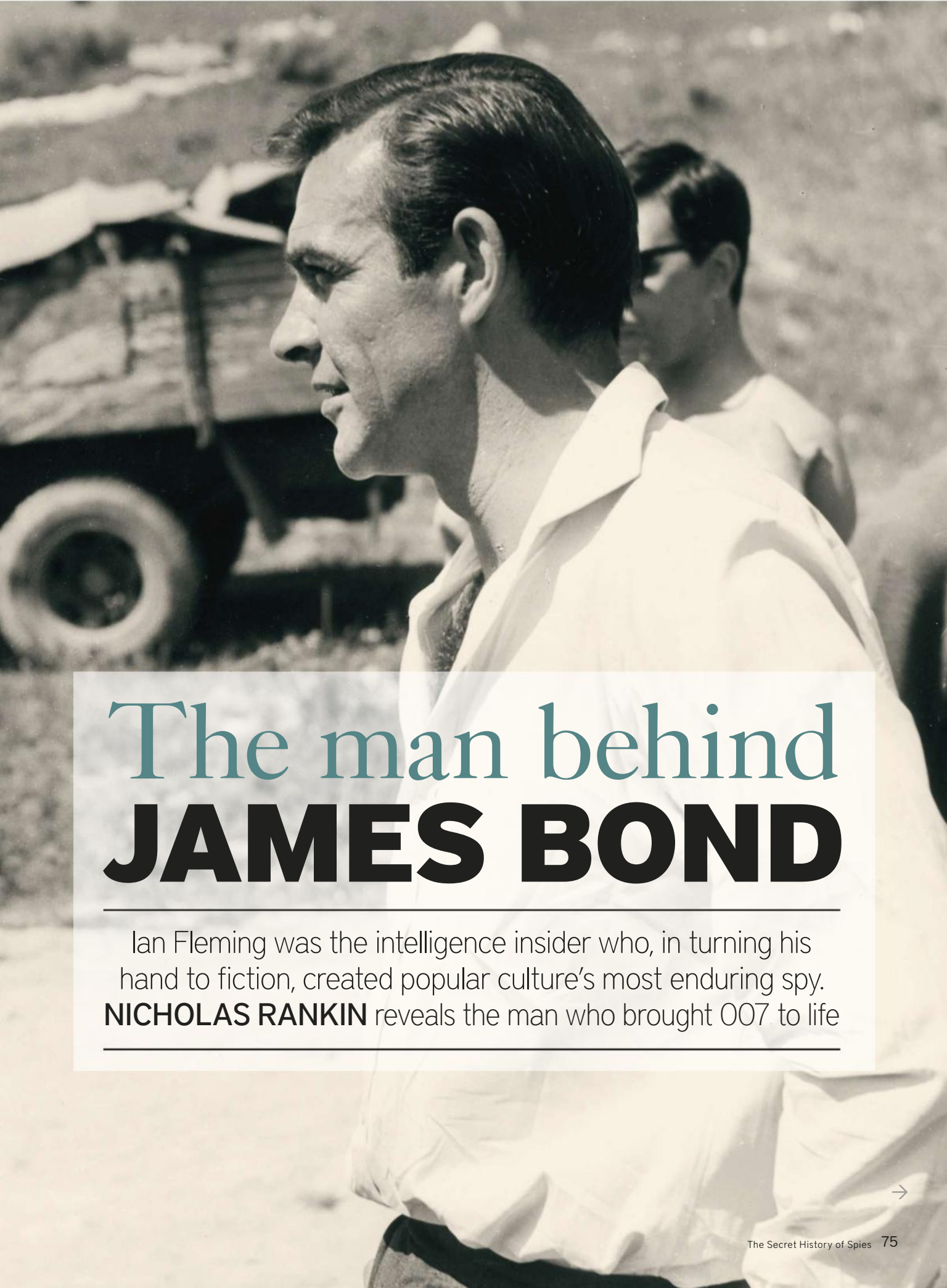
GETTY IMAGES

THE MAN WITH THE GOLDEN GUN
Daniel Craig, the latest James Bond, was first contracted to play Ian Fleming's 007 on the silver screen 10 years ago



THE CREATOR AND HIS CREATION
James Bond author Ian Fleming chats with actor Sean Connery on the set of *From Russia With Love*, Connery's second cinematic outing as 007

TOPFOTO



The man behind JAMES BOND

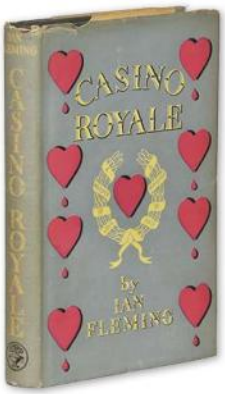
Ian Fleming was the intelligence insider who, in turning his hand to fiction, created popular culture's most enduring spy. **NICHOLAS RANKIN** reveals the man who brought 007 to life

Nearly one billion people across the planet watched the opening ceremony of the London 2012 Olympic Games on television. Among that dream-pageant and mix-tape of British creativity, the huge audience was astonished to see the imaginary James Bond and the very real Queen Elizabeth II apparently parachuting into the Olympic stadium from a helicopter. It was a *coup de théâtre* that brought together two icons of British patriotism: the world's most famous spy protecting the world's best-known monarch.

James Bond made his first appearance in Ian Fleming's first novel, *Casino Royale*, published in the Queen's coronation year, 1953. Back then, the author had no idea what he had started. The dozen novels and nine short stories that Ian Fleming wrote about his secret agent 007 between 1952 and 1964 have now mushroomed into some 26 James Bond movies, and eight different actors have portrayed the 'bang-bang kiss-kiss' hero. Nine more authors (including Kingsley Amis and William Boyd) have written Bond sequel or prequel novels, while there are also countless parodies and imitations. Ian Fleming's creature James Bond has become immortal, like Sherlock Holmes.

The poet John Betjeman picked up this parallel in the fan letter he wrote to Fleming in December 1963, having just watched *From Russia With Love*: "The Bond world is as full of fear & mystery as Conan Doyle's Norwood and Surrey and Baker Street… This is real art & the proof of it is in the reading & the filming… I look up to you, old boy, as I look up to Uncle Tom Eliot & Wodehouse and H Moore & I suppose Evelyn [Waugh]… Write on. Fight on. Let not popularity worry you and evildoers stop you writing as it does yours ever, John B."

The novel that started it all: 1953's *Casino Royale*



Fleming's invented super-spy has even dented modern reality. In June 2015, Britain's Secret Intelligence Service placed a full-page advertisement in a major newspaper, seeking to recruit new intelligence officers. The smooth copy – "At MI6, emotional intelligence counts for as much as IQ" – had to include a line to restrain the delusional from applying: "This is not the world of *Homeland*'s Carrie Mathison or Jack Bauer in *24* and it definitely isn't Bond."

The historian (and wartime secret intelligence officer) Hugh Trevor-Roper made the same point years ago in his essay on Wilhelm Canaris, the real-life head of Nazi Germany's military intelligence organisation, the Amt Ausland/Abwehr. Spy novels, wrote Trevor-Roper, create a picture of secret services as mysterious "systems animated by powerful and adventurous personalities who penetrate the darkest recesses and emerge with breathtaking scoops. But educated people know that… apparently miraculous achievements are the result… of efficient routine. They know that the head of an intelligence service is not a super-spy, but a bureaucrat."

James Bond originally sprang from the Walter Mittyesque day dreams of just such a desk-bound bureaucrat. In May 1939, four days before his 31st birthday, Ian Fleming was recruited – over lunch at the Carlton Grill in central London – to Section 17 of the Naval Intelligence Division (NID) at the Admiralty. He started work in Room 39, in a smoky office crowded with desks and filing cabinets; the room's fireplace faced three tall windows looking across to the back garden of No 10 Downing Street. His job was PA to DNI, personal assistant to the director of naval intelligence, handling paperwork and writing memos which he signed '17F'.

Fleming put some of this into 'Secret Paper-Work', the opening chapter of his 1955 James Bond novel, *Moonraker*. After his Monday morning pistol practice in the basement of the Secret Service HQ, Bond goes up to his office

REX FEATURES

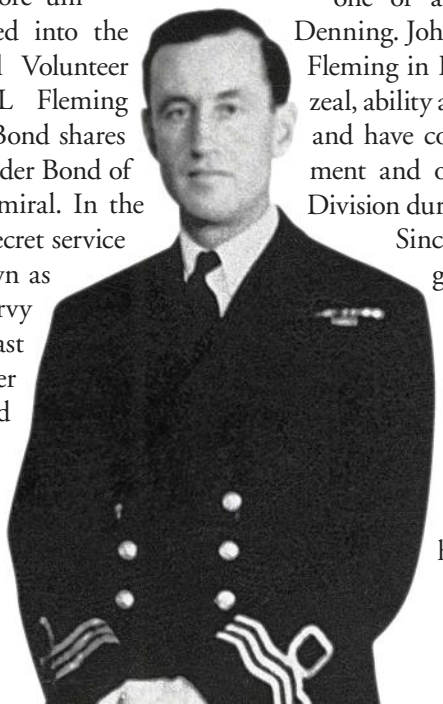
While there have been **countless parodies and imitations**, Ian Fleming's creature James Bond has **become immortal**, like Sherlock Holmes

BY ROYAL APPOINTMENT Daniel Craig, the actor currently charged with being James Bond, and Queen Elizabeth II make their eye-popping appearance together as part of the London 2012 Olympics opening ceremony

on the eighth floor, "a drab Ministry-of-Works-green corridor", a "bustling world of girls carrying files, doors opening and shutting, and muted telephone bells" for a routine day at HQ: "Mondays were hell. Two days of dockets and files to plough through."

The Naval Intelligence Division was *not*, in fact, one of Britain's nine wartime secret services. Its naval attachés abroad served openly at embassies and its officers at home wore uniform. Ian Fleming was soon inducted into the Special Branch of the Royal Naval Volunteer Reserve and became Lieutenant IL Fleming RNVR (Sp Br). His character James Bond shares that service attachment: he is Commander Bond of the Royal Navy. And he serves an admiral. In the original Bond books, the head of the secret service – who writes in green ink and is known as 'M' – is Admiral Sir Miles Messervy KCMG, a brusque old sailor whose last seagoing command was the battlecruiser HMS *Repulse*. Fleming has combined two strands of his experience here. The real chief of the Secret Service was customarily called 'C' (after Mansfield Cumming-Smith, its first head) and always signed in green ink; the DNI that Fleming initially worked for was the irascible Admiral John Godfrey, whose last seagoing command was, indeed, HMS *Repulse*.

Ian Fleming sat outside the green baize door that led to Admiral Godfrey's office, Room 38. Being his personal assistant meant he was the DNI's representative, his enabler and his scribe. Fleming had worked for Reuters news agency and wrote clear, crisp English. His self-confidence, forged when he was a schoolboy at Eton, allowed him to exercise ruthlessness and charm within the bureaucracy. "Ian could fix anyone or anything," recalled Admiral Norman Denning. John Godfrey's own end-of-term report on Fleming in December 1942 was appreciative: "His zeal, ability and judgment are altogether exceptional and have contributed very largely to the development and organisation of the Naval Intelligence Division during the war."



Fleming the naval intelligence officer. His experience greatly informed his books

Since Section 17 was the centre of intelligence co-ordination, Fleming's particular job gave him privileged access to many wartime secrets, liaison with other services and operational planning. The chronicler of NID, Donald McLachlan, records his regular visits to the Special Operations Executive, the Political Warfare Executive and 'C' himself. Fleming was 'indoctrinated'

BRIDGEMAN ART LIBRARY / INTERNATIONAL OLYMPIC COMMITTEE

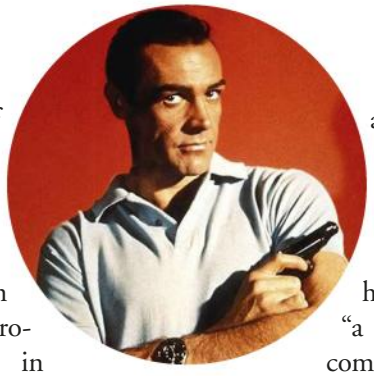
INTELLIGENCE AND IMAGINATION While Fleming wasn't the action hero he's been subsequently portrayed as, he was an imaginative military planner. His achievements include the creation of 30 Assault Unit, a commando force posing here with a captured German flag

SILVER SCREEN Many film directors have interpreted Fleming's books. Here, Terence Young directs Connery in 1965's *Thunderball*

THE GOOD LIFE Fleming was, like Bond in his books, an enthusiastic smoker and drinker. He died of heart failure at just 56

LITTLEHAMPTON MUSEUM / REX FEATURES

into ULTRA – the British breaking of Germany's most secret codes – early in 1940. He was a regular visitor to Bletchley Park, the war station of the Government Code and Cipher School, where Alan Turing was working to crack the German naval messages encrypted by the electro-mechanical Enigma machines. When, in September 1940, the Hut 8 codebreakers expressed a need for more of the wired wheels from inside the German machines, Ian Fleming set out to organise what Bletchley Park called a "pinch". Operation RUTHLESS (which was never carried out in the end) was pure Bond. A German-speaking British air-crew in German uniforms would send out an SOS and then crash their captured Heinkel He-111 bomber into the English Channel. When a fast German E-boat arrived to rescue them, the airmen would overpower its crew and steal the encryption kit.



Sean Connery played Bond in seven movies, more than any other actor

"Bond didn't know much about cryptography," Ian Fleming wrote in the 1957 novel he thought his best, *From Russia With Love*, "and, for security's sake, in case he was ever captured, wished to know as little as possible about its secrets." But Fleming's own knowledge of the covert world informed this and all the other Bond books. The Cold War plot of this adventure hinges on capturing "a grey japanned metal case with three rows of squat keys, rather like a typewriter". It was the Spektor, "the machine that would allow them to decipher the Top Secret traffic of all". Likewise, Fleming's knowledge of Italian sub-aqua expertise in the Second World War led to Emilio Largo's submarine skulduggery in the 1961 adventure, *Thunderball*.

Some books and TV programmes have sought to portray Ian Fleming as a wartime action hero in real life, who passed out top in the secret-agent course at Camp X in Canada in 1942, but failed to kill in the ultimate test. This is just fantasy. Ian Fleming did create an effective commando force, 30 Assault Unit, to seize intelligence material for the Royal Navy. But he was the planner and organiser, never a direct participant (although he did witness their failure to get ashore in their first outing at Dieppe in northern France in August 1942). James Bond was not Ian Fleming himself, but was, the author confessed, "a compound of all the secret agents and commando types I met during the war. It was all the things that I heard and learned about secret operations that finally led me to write about them in a disguised way and with James Bond as the central character."

After the war, Fleming stayed linked to the secret world. Trying to get out of his fortnight of statutory naval training in November 1951, Fleming wrote to Captain Vladimir Wolfson, the former naval attaché he had dealt with in wartime Turkey: "In fact as foreign manager of the *Sunday Times* and Kemsley newspapers I am engaged throughout the year in running a world-wide intelligence organisation and there could not be better training for the duties I would have to carry out for the DNI in the event of war. As you know, I also carry out a number of tasks on behalf of a department of the Foreign Office and this department would, I believe, be happy to give details of these activities to the DNI."

In May 2008, the journalist Phillip Knightley named six foreign correspondents working for Fleming in the 1950s who were also linked to MI6 or had been using press credentials as cover for espionage activities. "All of this could have been considered just a bit of James Bondish fun," wrote Knightley indignantly, "but for the fact that it entitles every foreign security service to believe that all British journalists working abroad must be spies."

In the books, James Bond smokes and drinks too much, as did his melancholy creator, who died of heart failure in August 1964, aged 56. His wife and her coterie liked to despise the books that paid for their lifestyle, and by then a new breed of more realist spy writer, including Len Deighton and John Le Carré, was challenging his oeuvre and values. But Ian Fleming had the satisfaction of seeing 007 elevated to the big screen, where James Bond could enter the dream-life of the whole world. ■

REX FEATURES

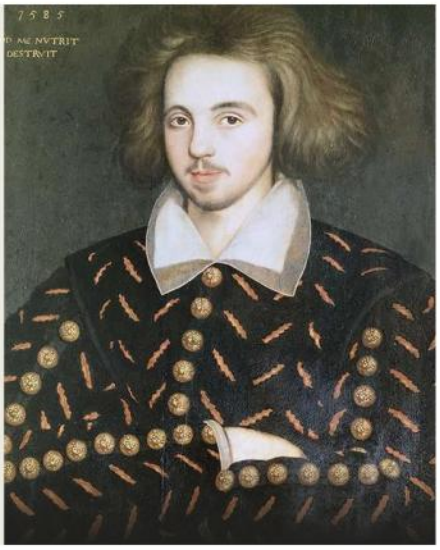
Bond was, said Fleming, "a compound of all the secret agents and commando types I met during the war"

LITERARY **AGENTS**

Ian Fleming wasn't the only British writer who led a double life in the intelligence services. **Nicholas Rankin** explores the lives of six others who were linked to espionage

1 Christopher Marlowe (or Marley)
1564–93

The murdered playwright who may have spied on Catholics



A contemporary of Shakespeare's, Christopher Marlowe (or Marley) was a successful playwright (author of *Tamburlaine*, *Doctor Faustus* and *The Jew of Malta*) who died mysteriously in a house in Deptford Strand near London, stabbed by a petty criminal named Ingram Frizer. The pugnacious Marlowe is said to have been first recruited by Sir Francis Walsingham, the chief of Queen Elizabeth I's intelligence service, as an undergraduate at Cambridge, when his secret job may have been to infiltrate and spy on dissident Catholics plotting against the queen. Exactly what sort of 'intelligencer' Marlowe was, and whether his death was part of a plot, remains puzzling.

2 Daniel Defoe (or Foe)
1660–1731

A life of Crusoe and counterinsurgency

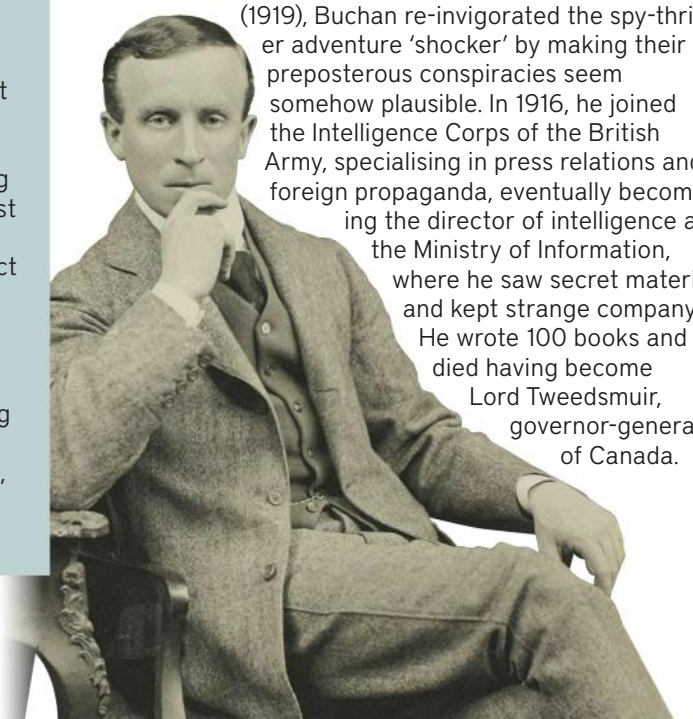
Daniel Defoe has been called the father both of the novel and of modern journalism. The author of *Robinson Crusoe*, *Moll Flanders* and *Colonel Jack* began his prolific writing career (he authored at least 350 works) to escape the debtors' prison.

In 1704, he began working as an agent and propagandist for the politician Robert Harley. Before and after the Act of Union with Scotland, Defoe played the part of a perfect spy, gaining trust duplicitously, setting up an unrivalled intelligence network, devising new methods of counter-insurgency and, above all, by writing penetratingly honest reports.

3 John Buchan
1875–1940

The thriller novelist and propagandist

John Buchan was a dynamically ambitious Scottish imperialist, best known as the author of *The Thirty-Nine Steps*, written on the outbreak of the First World War. With its sequels *Greenmantle* (1916) and *Mr Standfast* (1919), Buchan re-invigorated the spy-thriller adventure 'shocker' by making their preposterous conspiracies seem somehow plausible. In 1916, he joined the Intelligence Corps of the British Army, specialising in press relations and foreign propaganda, eventually becoming the director of intelligence at the Ministry of Information, where he saw secret material and kept strange company. He wrote 100 books and died having become Lord Tweedsmuir, governor-general of Canada.



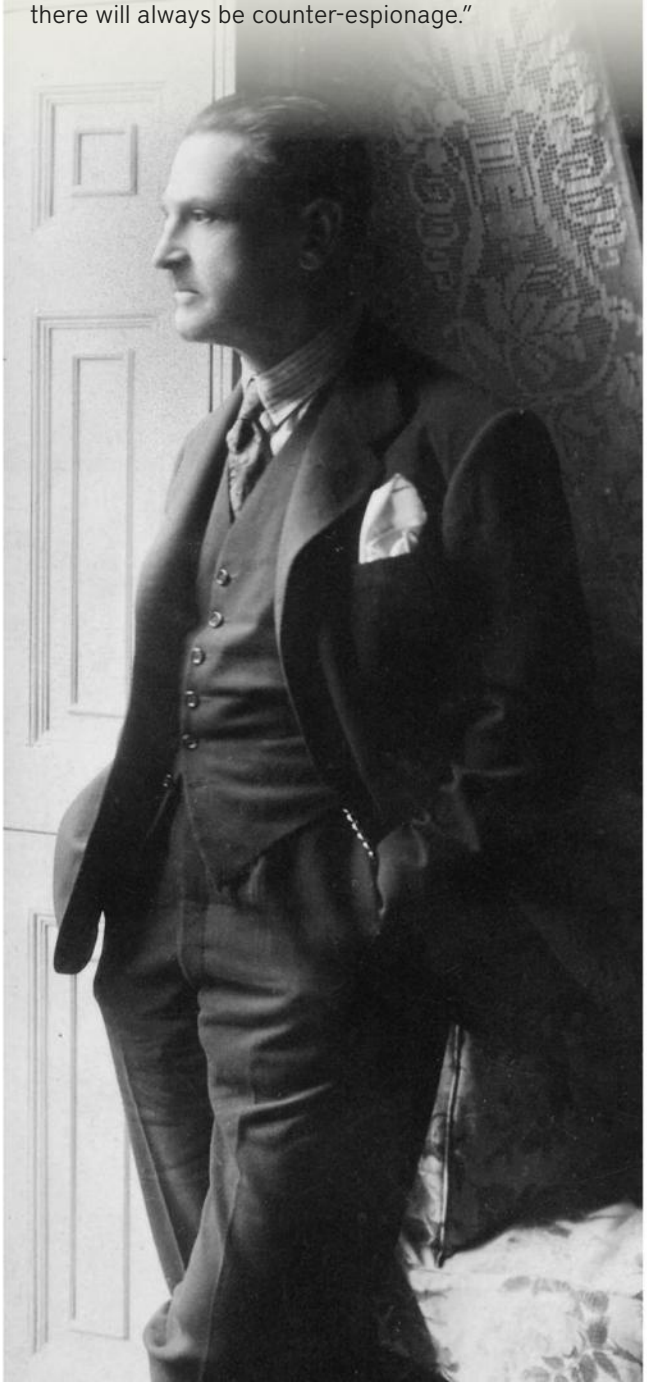
BRIDGEMAN ART LIBRARY

4 W Somerset Maugham
1874–1965

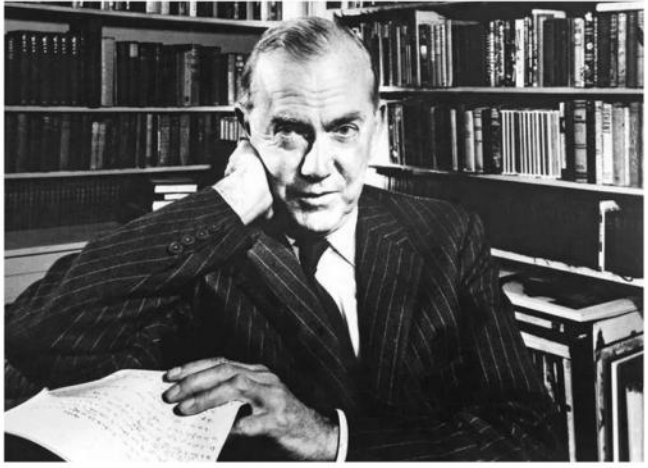
The author who blurred fact and fiction

W Somerset Maugham was already a successful author in 1915 when MI6 sent him to Switzerland to handle agents under the cover of writing a play. In 1917, he went to Russia too late to help the Kerensky regime and stop the Bolshevik revolution.

Maugham wrote up his experiences as fiction ("fact is a poor storyteller") in 1928's *Ashenden: Or The British Agent*, 16 disenchanted short stories that were the first to show intelligence work as boring and monotonous, as well as morally dubious. "But," he reflected, "there will always be espionage and there will always be counter-espionage."



GETTY IMAGES / BRIDGEMAN ART LIBRARY



5 Graham Greene
1904–91

The celebrated novelist and MI6 operative

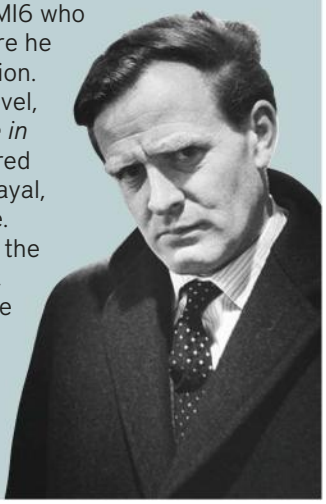
Graham Greene opened the 1957 anthology he co-edited, *The Spy's Bedside Book*, with the first chapter of John Buchan's *Greenmantle* and dedicated the book "to the immortal memory" of the Scotsman. In his introduction, Greene claims to have known very few spies and found all of them strange. In fact, the reality was that he worked for MI6 in the war, for a time under the double agent and later defector Kim Philby. Greene wrote about the CIA in Vietnam in *The Quiet American* (1955), a double agent in *The Human Factor* (1978), and a spy inventing his reports in *Our Man in Havana* (1958).

6 John le Carré
(aka David Cornwell)
1931–

The former spy who writes from experience

John le Carré (real name David Cornwell) was born in 1931, the son of a confidence trickster, making him addicted to secrecy from childhood. Recruited by MI5, in 1960 he moved to MI6 who sent him to Germany, where he began covertly writing fiction. The success of his third novel, 1963's *The Spy Who Came in From the Cold*, an embittered tale of deception and betrayal, freed him to write full-time.

Le Carré might criticise the intelligence establishment, but his books, exploring the morally fraught world of espionage, have helped raise the spy novel from light entertainment to serious literature. ■



THE NUCLEAR SUPER-SPY

Klaus Fuchs was one of the most notable spies of the atomic era. **MICHAEL GOODMAN** explores how the German-born scientist was able to pass Anglo-American research on this terrible new weapon to the Soviets

DPA–ULLSTEIN BILD

MASTER MOLE
Klaus Fuchs was the idealistic student of science whose political leanings led him to pass nuclear secrets to the Soviets. He never considered his activities to be those of a spy

"It was a foggy evening when I emerged from the Green Wood [Wood Green] underground station. The Nags Head [a local pub] was across the street and I opened a newspaper, pretending to be waiting for a bus. Everything appeared quiet and clear. At 10 minutes to eight, a man came around the corner and went into the pub. He was tall and thin and held his head high as he walked. I knew it was Fuchs even before he entered the Nags Head. I waited a few minutes to make sure no one was following him and then walked up to the pub myself…"

For the best part of a decade, Dr Klaus Emil Julius Fuchs provided a steady stream of information to the Soviet Union. The meeting in the Nags Head pub in north London in 1947 was the first with Alexander Feklisov, his new KGB handler, since he returned from the wartime Manhattan Project, the secret US effort to build an atomic bomb. There are often allegations made about how spies have changed the course of history. In the case of Klaus Fuchs, this is most certainly true: even by conservative estimates, it is claimed his information saved the Soviet Union two years in the construction of their first atomic bomb.

Fuchs was, in many respects, the typical scientist. Markus Wolf, head of foreign intelligence for the Stasi, East Germany's secret police force, gave a vivid first impression of Fuchs. "He was a cartoonist's notion of the brilliant scientist, with a high forehead and rimless glasses out of which watchful eyes stared thoughtfully… these eyes came to life when Fuchs began to talk about theoretical physics. He had a boyish enthusiasm for the subject."

Klaus Fuchs first arrived in the United Kingdom in 1933, fleeing his native Germany and certain Nazi prosecution. He was not, as many accounts have claimed, Jewish, but was a communist with Quaker heritage. As an active member of the communist underground movement, by 1933 his name was known to the Gestapo and he was, according to one of his biographers, "a wanted political criminal". Fuchs' political allegiance was made known to the British security authorities upon his arrival, yet no action was taken either then or later on.

He completed his doctorate at Bristol University and, in 1937, moved to Edinburgh to undertake post-doctoral work. With the advent of war, his career was set to alter – and radically. Following a short spell in Canadian internment, he returned to England and became a naturalised British citizen. Thanks to Britain's increased need for competent scientists, the young German was provided with security clearances and set to work on secret governmental work.

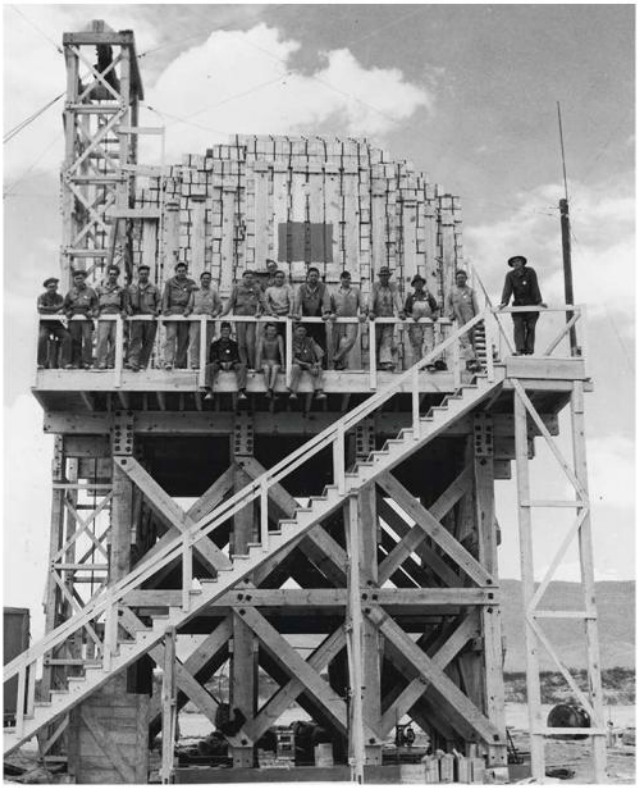
The discovery in the late 1930s that the atom could be split (through the process of nuclear fission) was quickly followed by a realisation that this could have significant military implications. Fuchs was a theoretical physicist and therefore had a great amount he could offer to the British government. With a growing interest in the military potential of fission, Fuchs was employed on a project known as 'Tube Alloys', the codename for the British atomic bomb development project. His first work was to consider intelligence reports on the embryonic German atomic bomb programme, but very quickly he became involved in research for Britain's own nuclear weapon.

In August 1943, Winston Churchill and Franklin Roosevelt signed an agreement in Quebec, formally cementing the Anglo-American atomic partnership. As a consequence, it was agreed that all developmental activity would be moved to the United States, and this included the relocation of several British scientists. The British Mission to Los Alamos, New Mexico (the home of the Manhattan Project bomb programme led by Robert Oppenheimer) comprised several notable scientists. Among them was Klaus Fuchs who, in December 1943, arrived in the United States.

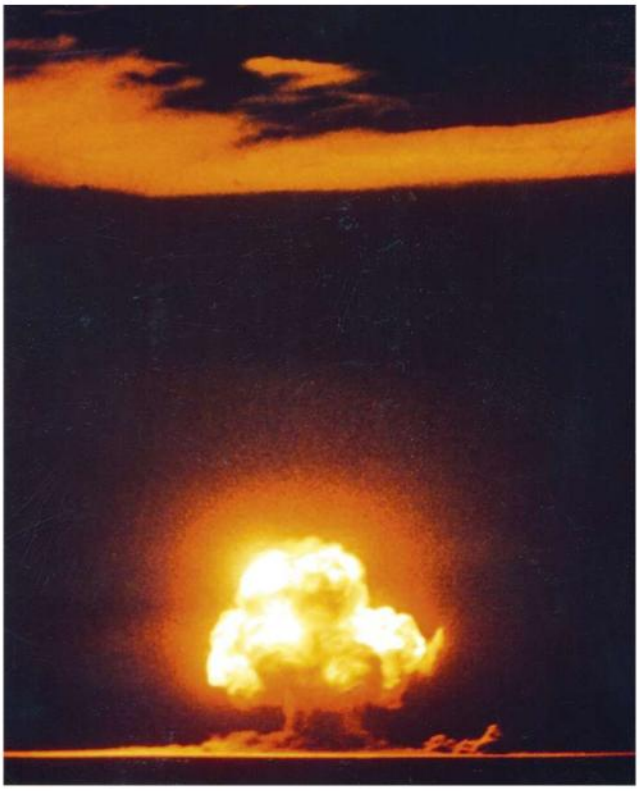
By this stage, the dichotomy of Fuchs' persona was beginning to take shape. His reputation as a scientist was expanding exponentially, yet his espionage role was also beginning to blossom. Fuchs had first provided information in 1941. In his later confession to the MI5, he described

GETTY IMAGES / AKG IMAGES

As a member of the **communist underground movement**, Fuchs' name was known to the Gestapo

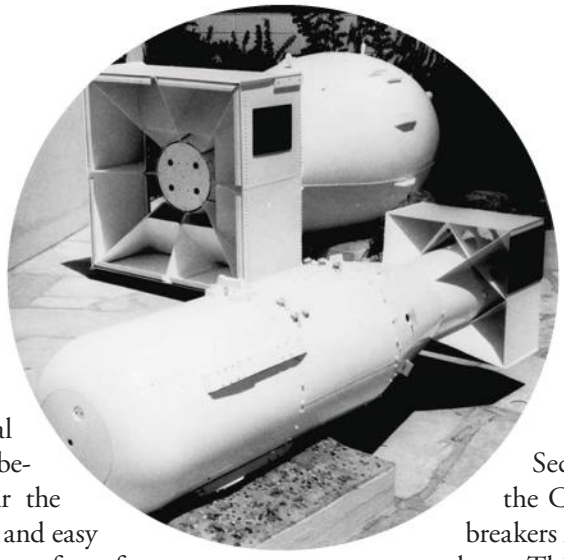


TOWER OF POWER
A group of workers at the Manhattan Project in Los Alamos stand on a platform to gauge radioactive fallout in 1944



EVE OF DESTRUCTION
Three weeks before the bombing of Hiroshima, the US detonates its first nuclear weapon at a site in New Mexico codenamed Trinity

CHIEF INSPECTOR Dr Robert Oppenheimer (in the white hat) and other Manhattan Project officials survey the Trinity detonation site. "We knew the world would not be the same," he later noted. "A few people laughed, a few people cried. Most people were silent"



A model of US atom bombs used in 1945. The passing of intelligence meant that Soviet bombs looked very similar

his schizophrenic state of mind: "I used my Marxist philosophy to establish in my mind two separate compartments. One compartment in which I allowed myself to make friendships, to have personal relations, to help people and to be in all personal ways the kind of man I had been before with my friends in or near the Communist party. I could be free and easy and happy with other people without fear of disclosing myself because I knew that the other compartment would step in if I approached the danger point. I could forget the other compartment and still rely on it."

In December 1943, having relocated to the United States, Fuchs was given a new Soviet handler. To give an idea of just how prolific he had been in passing information to the Soviet Union, during the comparatively short period between 1941 and 1943, he provided more than 570 sheets of valuable material. In mid-1944, he moved to Los Alamos. Despite working in the theoretical division, Fuchs and the British Mission were far less compartmentalised than their American counterparts and, as a consequence, he was able to access a wide breadth and depth of information.

After the end of the war, Fuchs, at the insistence of the Los Alamos director, stayed on for nearly a year. He returned to the United Kingdom in 1946 where he assumed the position of head of the theoretical physics division at the Atomic Energy Research Establishment, near Harwell in Oxfordshire. While he was not working on bomb physics *per se*, Fuchs was a regular visitor and lecturer at Fort Halstead, the home of Britain's nuclear weapons programme in the late 1940s. Now back in the UK, he continued to supply a steady stream of reports to the Russians, beginning with his first meeting in 1947 with Feklisov at the Nags Head pub.

Despite Fuchs' now-exalted position, a number of question marks over his security remained. Yet, whenever such issues were raised, it was repeatedly decreed that his usefulness outweighed any potential security risk. In a curious way, both positions would turn out to be correct: while Fuchs certainly did an excellent job, he continued to be a significant liability.

During the latter stages of the Second World War and the start of the Cold War, Anglo-American codebreakers had worked on cracking Soviet ciphers. This project, codenamed Venona, lasted for a number of years until the Soviets changed their cipher system in the late 1940s. Venona provided a wealth of information on the activities of numerous Soviet spies.

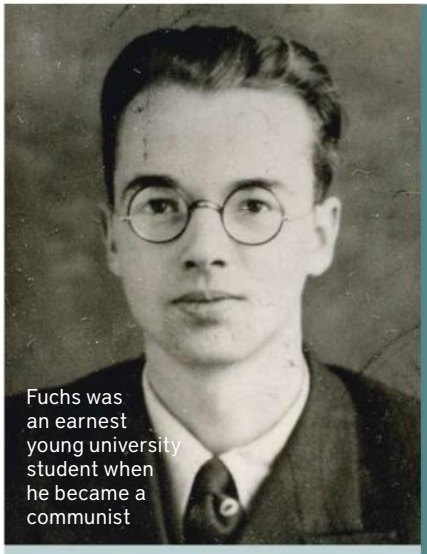
The problem was that it only referred to them by their codenames and, while many were identified, a sizeable number were not. Among these was a spy known only as 'Charles'. Examination of what details were known about Charles led investigators to conclude that he could only be Klaus Fuchs; the facts fitted too precisely for it to be anyone else. The problem was that this information could not be revealed in court because the codebreaking effort was so secret. As such, it was necessary to convince Fuchs to confess to his crimes.

In late 1949, Fuchs had gone to see the security officer at Harwell to discuss his father's appointment to a university chair in East Germany. Henry Arnold, the security officer, had become very friendly with Fuchs and they had spent many hours playing chess together. A chat with Arnold was a perfectly normal activity for the Harwell scientists, and Fuchs, as one of his biographers has noted, was drawn to him.

Fuchs was extremely concerned that his father's appointment would mean he would have to leave Harwell and his secret work. By this time, Arnold knew of the incriminating evidence provided by Venona, confirming that Fuchs was a spy. He played on Fuchs' insecurities about his father and invited William Skardon, an MI5

AKG IMAGES

It was decreed that Fuchs' usefulness outweighed any potential security risk



Fuchs was an earnest young university student when he became a communist

Klaus Fuchs

German-born theoretical physicist and atomic spy

Born on 29 December 1911 in Rüsselsheim in western Germany

Having fled Germany because of his communist leanings, during the 1930s Fuchs undertakes graduate study in the UK

In 1941 he begins work on the British atomic project and starts to pass secrets on to the Soviets

In 1943 Fuchs joins the Manhattan Project at Columbia University, moving to Los Alamos the following year

While working back in Britain, he admits spying and is imprisoned

In 1959 Fuchs is released from jail and moves to East Germany, where he dies in 1988

Becoming a spy

Fuchs' journey: from anti-Nazi student to Soviet nuclear spy

As a student at Leipzig University, Klaus Fuchs joined a student political organisation. A Social Democrat, Fuchs abhorred Nazism and marched against the activities of Hitler's SA (stormtroopers). Following a move to Kiel University, he continued his involvement in politics, becoming chairman of a similar student group.

In 1932, and with the Social Democrats supporting General von Hindenburg as the next president, Fuchs split from the party. As an alternative, the German Communist party instead supported a working-class coalition with the socialists in an attempt to dislodge Hindenburg and Hitler. Fuchs offered to speak on behalf of the communist candidate. The result was his expulsion from the Social Democrats.

In his mind, the communists were the only party standing up in opposition to Nazism and he readily joined the cause. Fuchs was also taken by the utopian idealism offered by communism, seeing it as the great hope for the world. The communists were, though, blamed for the burning of the Reichstag in Berlin, so Fuchs decided it was no longer sensible to openly remain a communist in Germany and emigrated to the United Kingdom.

A 1932 German Communist party poster advocates the downfall of the system

Fuchs made contact with a representative of the German Communist party in the UK. This person, unbeknownst to him at the time, was in fact a member of Soviet military intelligence.

When he was brought into the British atomic bomb effort, Fuchs decided to pass secrets to the Soviets. He was motivated by political conviction and not money, so his espionage was relatively straightforward to conduct. When meeting his various handlers, Fuchs would furnish them with both handwritten and typed copies of reports. "I could not see why it was in the west's interest not to share the bomb with Moscow," he later explained. "I never thought that I was doing something culpable by passing the secrets to Moscow. It would have seemed an evil negligence for me not to have done it."


Internee's No: 417
NAME: FUCHS
Given Names: KLAUS EMIL JULIUS Hut 16
DESCRIPTION
Age: 28 Years
Height: 5 Ft. 10 inches
Complexion: dark
Colour of eyes: brown dark
Colour of hair: brown dark
Weight (approximate): 9 stones
Clean shaven or not: clean shaven
Chin: pointed Nose: straight
General build: tall
Scars: etc.: none
Remarks: wears glasses
3 false teeth in front.
41

In 1940 Fuchs was interned with German refugees on both the Isle of Man and in Canada

GETTY IMAGES / NATIONAL ARCHIVES

BRAINS TRUST
After the Second World War, Fuchs (standing, far left) joined Britain's Atomic Energy Research Establishment as head of theoretical physics

P.D.
ii & iii.

REPORT ON SERVICE

RECEIVED 31 MAY 1949

Department MINISTRY OF SUPPLY

MR. KLAUS EMIL JULIUS FUCHS proposed for appointment as Senior Principal Scientific Officer

has been employed in the above Department as follows:—

*Please give full official designation of post.

(i)* Temp. Principal Scientific Officer from 1. 1. 46 to 29.1.47
(ii)* from to
(iii)* Temp. Senior Principal Scientific Officer from 30.1.47 to date 10.11.48.
(iv)* Temp. Deputy Chief Scientific Officer from 11.11.48 to date

His (or her) conduct and efficiency during that period have been EXCELLENT

and in the opinion of this Department his (or her) health is EXCELLENT.

His (or her) sick record is given overleaf.

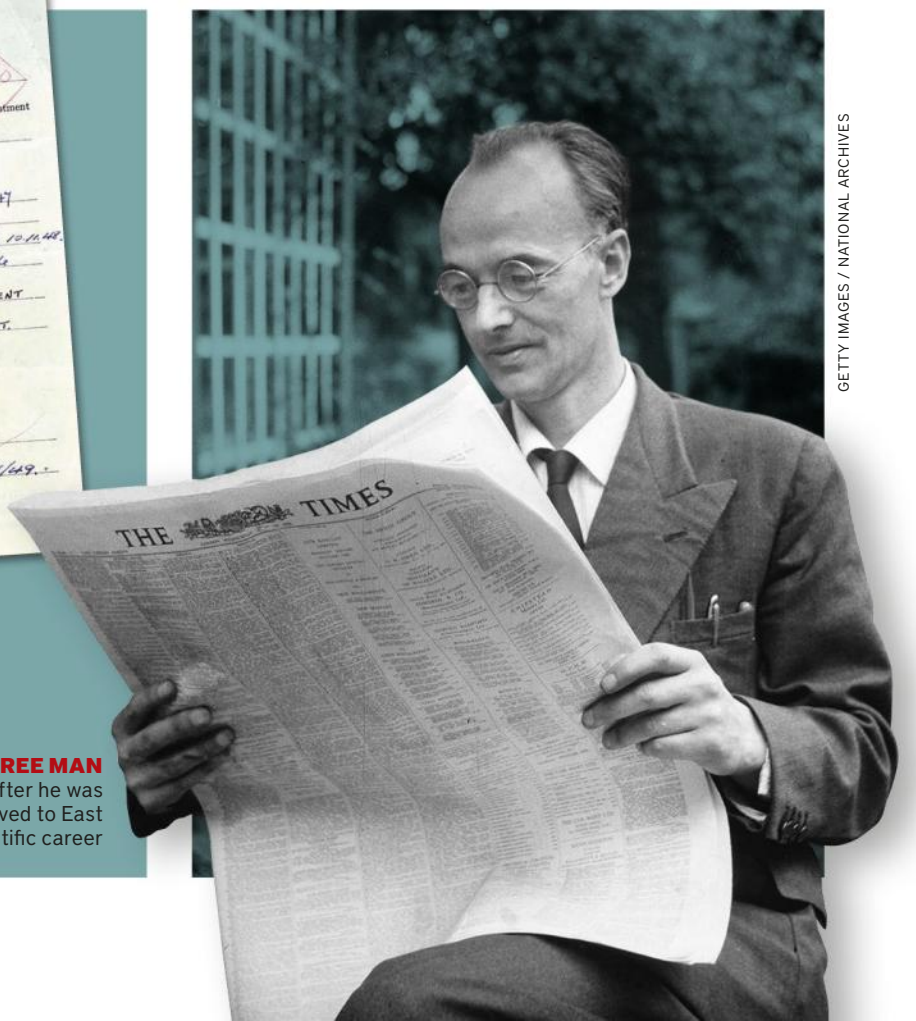
Signature [signature]

Date 21/5/49.

Date of Candidate's birth 29. 12. 1911

(38124) Wt. 21553—127 20m 5/49 G.S.Sl.

MODEL CITIZEN Fuchs' civil service report from May 1949 grades his work as "excellent." His spying was discovered just four months later



FREE MAN
Fuchs pictured in 1960, the year after he was released from jail in the UK. He moved to East Germany, where he continued his scientific career

GETTY IMAGES / NATIONAL ARCHIVES

investigator, to speak to Fuchs about the situation, which he readily agreed to.

On 21 December 1949, Skardon met Fuchs for the first time. Sitting in his Harwell office, Fuchs described his background in Germany and his political views. While discussing his time in the USA during the Second World War, Skardon suddenly asked whether Fuchs had been in touch with Soviet intelligence. Although Fuchs denied the allegation, he was thrown off balance. Throughout his espionage career he talked of having two identities – scientist and spy – and all of a sudden the dividing line between the two was blurring beyond recognition.

Nine days later, Fuchs and Skardon met once more. Fuchs, who had just turned 38, continued to talk about his past. In a skilful move, Skardon managed to persuade him that whatever information he had passed had been a mistake, and that it would be far better for him to admit it so that he could resume his work. Fuchs was lost in thought over the New Year period but had, it would seem, made up his mind. On 22 January 1950, he rang Arnold and said he would like to meet. Two days later, a meeting was arranged with Skardon, at which Fuchs confessed to being a Soviet spy.

Fuchs had initially thought that he might deny everything and leave Harwell to start an academic career. Yet, in his confession, he stated why he had felt it necessary to come clean. "It then became clear to me that in leaving Harwell in those circumstances I would do two things. I would deal a grave blow to Harwell, to all the work which I had loved and, furthermore, that I would leave suspicions against people whom I loved, who were my friends and who believed I was their friend. I had to face the fact that it had been possible for me in one half of my mind to be friendly with people, be close friends and at the same time to deceive them, to endanger them." During the course of several conversations, Fuchs admitted his role in passing information to the Soviet Union and, in March 1950, was convicted and sentenced to 14 years' imprisonment.

GETTY IMAGES / NATIONAL ARCHIVES

Despite numerous earlier attempts to do so, it was only at the end of the Cold War, with the opening of the Russian archives, that historians were in a position to assess the role Fuchs' espionage had on the Soviet programme – not to mention the Cold War nuclear arms race in general. Yuli Khariton, the Soviet chief nuclear weapons designer, has commented how "the design of the first Soviet atomic bomb was based on a rather detailed diagram and description of the first American bomb, which the Soviet Union obtained through the efforts of Klaus Fuchs and Soviet intelligence". Herein lies the most interesting fact: that the first atomic bombs of the United States of America, the United Kingdom and the Soviet Union, were remarkably similar.

In the Soviet Union, a decision of immense enormity was made about Fuchs' information. While Soviet scientists were developing their own, indigenous atomic bomb, it was decided that – in the first instance, at least – it made sense to copy the designs provided by Fuchs. By this stage in the late 1940s, it was known that the American bomb worked. This may sound rather simplistic now, but until the successful test of the world's first atomic device in July 1945, no one could be entirely sure that it would ever go bang. As such, the decision to base their design on Fuchs' information was eminently sensible.

Klaus Fuchs, although he was an excellent scientist, was politically rather naïve. His motives for providing information to the Soviets were not only that he believed, at least initially, in their Marxist cause, but also that he did not want the United States to have a monopoly over atomic weapons.

While this latter belief may appear commendable more than 60 years later, it was not viewed that way at the time. Yet by also aiding the British in much the same way as he had helped the Soviets, Fuchs did ensure that the US monopoly did not last long. As evidence of his naïvety, Fuchs' biggest regret after his arrest was not over the enormity of his crimes, but rather that the British government had decided to rescind his citizenship. He returned to East Germany in 1959 a repentant man who, until the year before his death in 1988, refused to comment on what he had done. ■

Fuchs' big regret was not the enormity of his crimes, but that his **British citizenship** had been **rescinded**

SPYING FOR THE SOVIETS

Klaus Fuchs was far from the only westerner passing highly classified information to the USSR during the mid-20th century. **MICHAEL GOODMAN** tells the stories of others who, whether for ideological or financial reasons, betrayed their own governments

1 The Cambridge Five

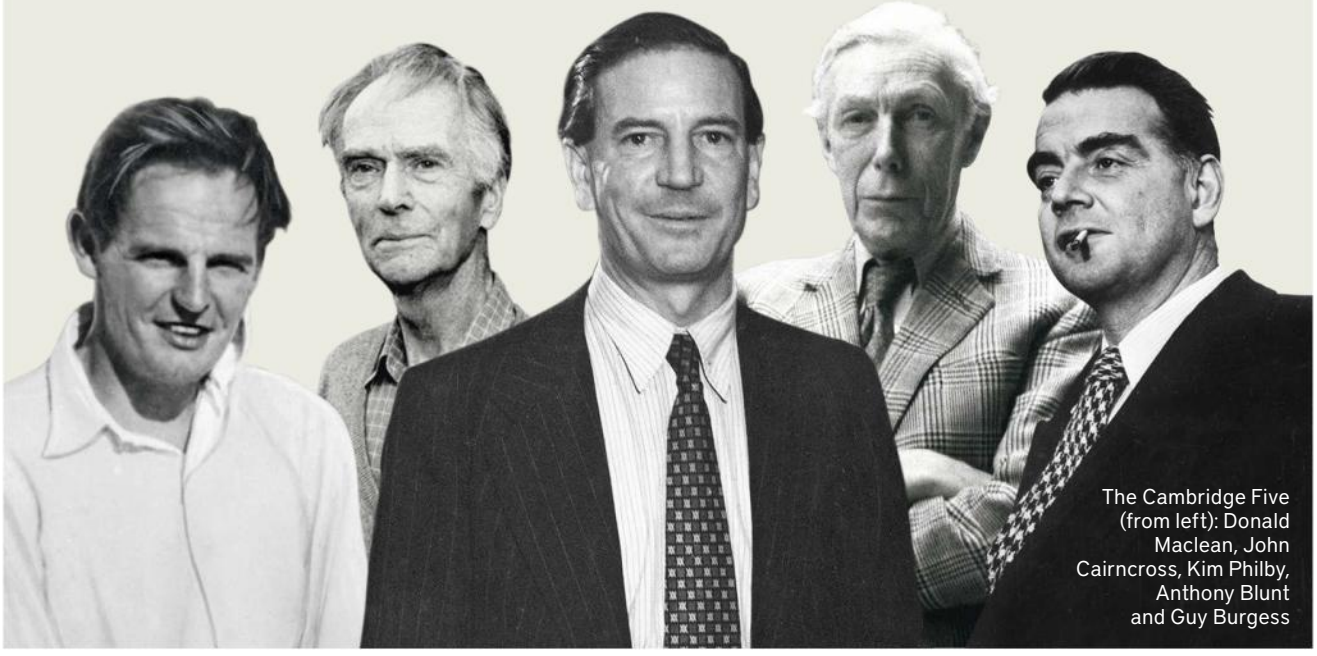
The brightest British minds who swapped the biggest state secrets

The Cambridge Five were the most notorious of all the spies who worked for the Soviet Union. This British quintet were exceptional for a number of reasons: while they worked independently, they knew the identities of one another; they spied at a critical time (during the Second World War and the early Cold War); the content of their espionage complemented each other, as each worked in different parts of the government. And the amount of information they provided was unsurpassed.

The five were recruited while students at the University of Cambridge in the 1930s and each would go on to have successful dual careers as British civil servants and Soviet spies. Kim Philby (1912–88) spent most of his career working for the British intelligence agency MI6, including a period as head of Soviet counterespionage and as MI6 liaison officer to the CIA in Washington DC. Donald Maclean (1913–83) had a successful career in the Foreign Office, working on atomic and military matters. Guy Burgess (1911–63) worked briefly for MI6, but also spent some time in the Foreign Office, working in London on propaganda, and then in the British Embassy in Washington.

Anthony Blunt (1907–83) spent most of the Second World War in MI5, where he passed on details of the interception of German Enigma codes and of German spying activities in the UK. The last member was John Cairncross (1913–95), who spent a year during the war at the famous codebreaking facility Bletchley Park, also working on German codes.

The five passed across a staggering amount of material, primarily in the form of actual documents or photographs of documents. So good was their information that the Soviets initially did not believe they were genuine. Maclean and Burgess ended up defecting to the Soviet Union in 1951, as did Philby in 1963. Blunt, a third cousin of Elizabeth II's mother, was knighted in 1956. He secretly confessed to MI5 in the early 1960s and was publicly revealed in 1979 by then-prime minister Margaret Thatcher and stripped of his knighthood. Cairncross left the civil service after the war and spent his career outside government. He finally revealed his role in 1979, before retiring and publishing his memoirs.



The Cambridge Five (from left): Donald Maclean, John Cairncross, Kim Philby, Anthony Blunt and Guy Burgess

GETTY IMAGES / ALAMY / REX FEATURES

Julius and Ethel Rosenberg were executed by electric chair in 1953

2 The Rosenbergs

The married couple caught out by a close relative's testimony

The Rosenbergs were a married couple, Julius (1918–53) and Ethel (1915–53). They gained notoriety not so much for the value or quantity of the intelligence they provided to the USSR, but because they were executed in the United States for committing espionage.

Julius Rosenberg joined the US army in 1940, but was discharged a few years later when his membership of the Communist party became known. In the meantime, he had been recruited by Soviet intelligence. His handler, Alexander Feklisov, claimed that Rosenberg had passed across several thousand pages of documents, but that these did not warrant execution. The high point of the Rosenbergs' career was yet to come.

Ethel's brother was a technician called David Greenglass. In 1943 he was posted to the Manhattan Project, the super-secret wartime atomic bomb programme. Also a member of the Communist party, Greenglass was recruited by the Rosenbergs and used his new position to pass detailed designs to the Soviets. Greenglass recruited another individual, Harry Gold, who would act as a courier for the infamous atomic spy Klaus Fuchs.

In 1950 Fuchs confessed to British authorities and, in the ensuing investigation, the FBI discovered the identities of Gold, Greenglass and the Rosenbergs. As part of a deal to reduce his own sentence (he served under 10 years), Greenglass provided details on his sister and brother-in-law's activities. As a result, both were convicted and subsequently executed in 1953.

> Having been named by Ethel Rosenberg's own brother, the couple were convicted and executed

The case continued to cause interest because Greenglass's testimony was concealed from the public and the evidence that Ethel had spied was debatable at best. It was also not proven that Julius had been involved with atomic espionage. When Greenglass's witness testimony from 1951 was finally released in July 2015, it revealed that he never mentioned Ethel Rosenberg's involvement in the delivery of atomic secrets to Soviet operatives.

GETTY IMAGES

3 John Vassall

The civil servant blackmailed into working for the KGB

John Vassall spent much of the Second World War as a photographer in Britain's Royal Air Force. After the war, he joined the Admiralty as a clerk, an administrative position that enabled access to a range of documentation. In 1952, he was given a position at the British embassy in Moscow, responsible to the naval attaché. Vassall found his position difficult, objecting to what he considered the snobbish culture of the diplomatic circuit.

He had a greater problem though: Vassall was a homosexual at a time when it was illegal, both in Britain and the Soviet Union. Had this fact become known, he would have lost not only his security clearance but also his job. In his memoir, published many years later, Vassall wrote about the loneliness he felt in Moscow. Soviet intelligence recruiters, skilled in spotting vulnerable targets, saw an opportunity. In 1954, Vassall was invited to a party, given copious amounts of alcohol and voluntarily engaged in sexual activities with a number of men. Unknown to him, he was the victim of a classic Soviet honeytrap: shortly afterwards, Vassall was shown incriminating photographs and blackmailed into working for Soviet intelligence.

Having engaged in sexual acts with men at a Moscow party, Vassall was caught in a honeytrap

He was not an ideological convert and had no love for the Soviet Union but, backed into a corner, he began to provide the Soviets with a variety of intelligence on British military matters. He returned to London in 1956 and continued to pass intelligence to the KGB. He was unmasked in 1961, with the defection of the KGB's Anatoliy Golitsyn to the west, and was arrested the following year. He confessed and eventually served 10 years of an 18-year sentence. He worked in London after his release and died in 1996 after suffering a heart attack on a bus.

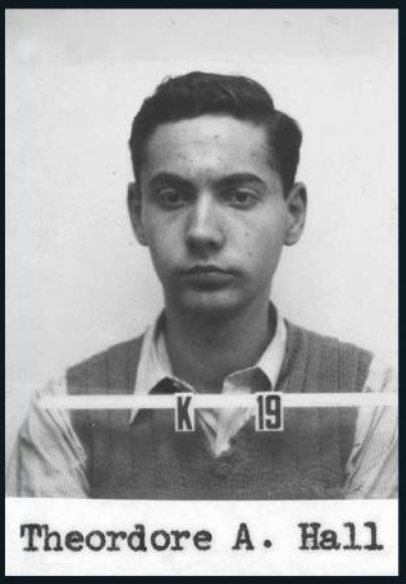
4 Ted Hall

The math prodigy who turned Soviet collaborator

Ted Hall (1925–99) was a child prodigy in mathematics, graduating from Harvard University in 1944 at the tender age of 18. He had already accepted a position at Los Alamos and began work on the designs of the two atomic bombs that would be dropped on Hiroshima and Nagasaki. There is some debate as to quite why Hall decided to volunteer for Soviet intelligence: shortly before his death in 1999, he conceded that he did it out of a desire for the US not to have a monopoly on atomic weapons, but this does not satisfactorily explain why he chose the Soviets to be his confessor.

Hall worked on the Manhattan Project for just two years, but in that time provided a wealth of data on the atomic bomb and, perhaps more importantly, details on the early scientific investigations into the far more destructive hydrogen bomb. As part of the FBI investigation into Klaus Fuchs, Hall was questioned, but no further action was taken.

His precise role did not become public until 1995 when the British and US governments released details of the Venona Project, the code name given to the breaking of wartime Soviet ciphers. In these documents, Hall's espionage was revealed, as was the decision in the early 1950s not to prosecute him as the necessity to keep the Venona Project secret was greater. He spent most of his subsequent career working on non-secret matters at the University of Cambridge.



The photo from Ted Hall's badge ID from his time working on the development of atomic bombs at Los Alamos

MARY EVANS / REX FEATURES

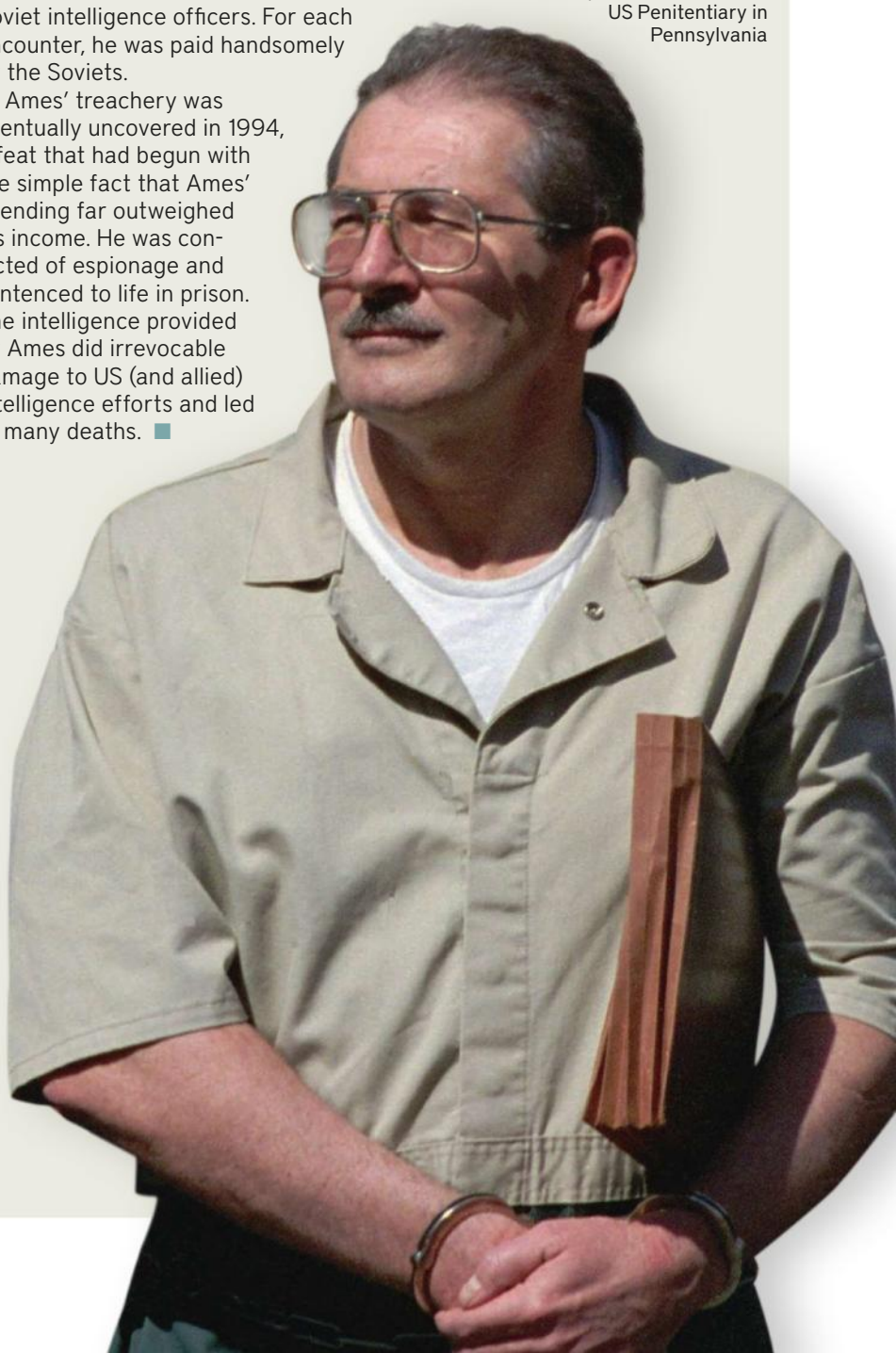
5 Aldrich Ames

The careless CIA operative who aroused much suspicion

While the first batch of Soviet spies worked for ideological reasons, that motivation became less convincing as the Cold War progressed. Instead the Soviets turned towards other human frailties for motivation and none would be more appealing than cold, hard cash. Aldrich Ames (born in 1941) did a number of odd jobs for the CIA (including painter and clerical worker) before he joined the agency proper in the late 1960s as an operational officer. One of his first postings was to Turkey, where he worked on recruiting Soviet intelligence officers. This experience led to a career-long involvement with Soviet espionage, working mainly at headquarters in Langley, Virginia, but with a further posting to Mexico City and New York.

Despite reports of excess drinking and adultery, Ames continued to be promoted within the CIA. In 1983 he was given an exceptionally sensitive role working on Soviet counterespionage, a task that provided him with details of all CIA operations and spies working against the USSR. That year he filed for divorce, a process that would be extremely costly. His position in the CIA legitimately enabled him to meet Soviet intelligence officers and, during one of these meetings in 1985, Ames volunteered to spy in exchange for money. Before long, US spies working against the Soviet Union began to vanish, yet despite a number of internal investigations and lie detector tests, Ames remained above suspicion. His role in the CIA meant that he could continue to meet Soviet intelligence officers. For each encounter, he was paid handsomely by the Soviets.

Ames' treachery was eventually uncovered in 1994, a feat that had begun with the simple fact that Ames' spending far outweighed his income. He was convicted of espionage and sentenced to life in prison. The intelligence provided by Ames did irrevocable damage to US (and allied) intelligence efforts and led to many deaths. ■



Aldrich Ames continues to serve a life sentence, without the possibility of parole, at Allenwood US Penitentiary in Pennsylvania

PA

Despite reports of excess drinking and adultery, Ames continued to be promoted within the CIA

SUDDEN IMPACT
Even though the CIA wasn't founded until six years after Pearl Harbor, many believe its existence to be the lasting legacy of the 1941 Japanese attacks

THE CIA AT WAR

For decades, the United States chose not to invest in its own intelligence network. But, as **RICHARD H IMMERMAN** explains, the establishment of the Central Intelligence Agency in the postwar years rewrote the rules

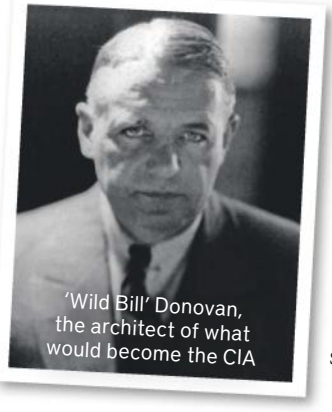
GETTY IMAGES

"Gentlemen don't read each other's mail," proclaimed US secretary of state Henry Stimson in 1929. With those six words, Stimson shut down the 'Black Chamber', the civilian code-breaking unit that the US had established during the First World War and which continued for a decade afterwards. Espionage had been pivotal to the growth and security of the republic since the Revolutionary War. In all cases, however, US intelligence offices were tied to both the military and the use of armed force, neither of which fitted comfortably in US civil society. Allowances could be made during times of war. But to engage in the dirty business of spying when the US was at peace was anathema to its ideals, values, and traditions.

The protection from the upheavals of Europe and Asia provided by the Atlantic and Pacific Oceans reinforced this sense of exceptionalism. The US could choose when and on what terms to engage with the other great powers. But Japan's surprise attack on Pearl Harbor on 7 December 1941, costing the United States more than 2,500 lives, exploded that myth and ended American innocence. That 'Day of Infamy', in the famous formulation of President Franklin D Roosevelt, was the catalyst for the US's "rendezvous with destiny." Summoning its military might and bountiful resources, the US embarked on a great crusade against Japan and its allies, especially Nazi Germany. Victory came first to Europe in April/May 1945 with the suicide of Adolf Hitler and the surrender of Germany. It took two atomic bombs in August to end the war against Japan. The US was again at peace.

Yet it had changed. For Americans, Pearl Harbor became emblematic of the treachery that one state could visit on another, treachery against which even ocean barriers no longer offered a failsafe defence. With Japan's aggression in China, Indochina and elsewhere in Asia over the previous decade posing a threat to the US colony in the Philippines, army and navy intelligence sought strenuously to monitor the movement of Japanese forces and assess Tokyo's intentions. Their joint effort even led to the breaking of the Japanese 'purple' code. This was a great achievement, but an insufficient one. Disparate intelligence was neither coordinated nor communicated; the Pearl Harbor attack came without warning. In 1962 a memorial to the more than 1,100 US sailors and marines who lay on the ocean bed beneath the *USS Arizona* was built. It receives several million visitors a year. But a no less enduring memorial to the victims of Pearl Harbor was the establishment of the Central Intelligence Agency in 1947.

A postwar official government report concluded that "the CIA may well attribute its existence to the surprise attack on Pearl Harbor". While accurate, that simple sentence does not do justice to the tortuous process that permanently turned American gentlemen into readers of others' mail or the accretions to the CIA's mission that went far beyond such behaviour. The process began in June 1942 when Roosevelt, after consulting the British, established within the Department of War the Office of Strategic Services (OSS). Headed by Congressional Medal of Honor recipient William 'Wild Bill' Donovan, the OSS recruited many of the country's best and brightest, including four future CIA directors. Not by much did one observer exaggerate when he claimed that the "OSS was the Petri dish for the spies who later ran the CIA".



'Wild Bill' Donovan, the architect of what would become the CIA

GETTY IMAGES / REX FEATURES

Even before the war ended, Donovan devised a plan to make the office permanent and under civilian control – by which he meant his own. The rapid disintegration of the Second World War Grand Alliance and the advent of the atomic age heightened US anxieties over the potential for another strategic surprise and gave him reason to be

For Americans, Pearl Harbor became emblematic of the treachery that one state could visit on another

ALL SMILES Winston Churchill, Harry S Truman and Josef Stalin shake hands at the Potsdam Conference in 1945, following the German surrender. Less than two years later, Churchill and Truman were both deeply concerned about Soviet aggression; Truman saw it as a fundamental threat to the "foundations of international peace and hence the security of the United States"

optimistic. But Roosevelt's successor, President Harry S Truman, feared that Donovan, politically ambitious and an ardent Republican, was incapable of respecting the boundary between a liberal democracy and a police state. In his opinion, to centralise US intelligence under his leadership during peacetime threatened to produce an American 'Gestapo', a word Truman used repeatedly. The president found allies among his enemies as well as friends. The state, war and navy departments protested that a central intelligence agency would trespass on their turf. Conservatives joined with liberals to protest that it would trespass on civil liberties, "pry[ing] into the lives of people at home" even as it spied abroad. Anti-New Dealers joined the chorus of criticism by charging that a stand-alone intelligence service would grow into one more bloated federal bureaucracy. Truman rejected Donovan's proposal, and on 20 September 1945, he abolished the OSS.

That could not end the story, however. The surprise attack on Pearl Harbor was seared into the public consciousness and, by 1946, Americans had come to see Josef Stalin as more dangerous than Adolf Hitler. A series of government studies produced a consensus that, to avoid a repeat of December 1941, the US needed a mechanism to provide the government with strategic warning. As a measure intended to bolster security while satisfying competing perspectives and interests, in 1946 Truman – by executive order – created the Central Intelligence Group (CIG). Headed by a director of central intelligence and supervised by a National Intelligence Authority composed of representatives of the secretaries of state, war and navy as well as the president, the CIG was given responsibility for the correlation and evaluation of "intelligence relating to the national security, and the appropriate dissemination within the government of the resulting strategic and national policy intelligence". It was prohibited from engaging in domestic intelligence gathering or surveillance.

The CIG was intentionally designed to be weak, "a step-child of three separate departments", to quote its legal counsel. Quartered in temporary huts, it had an undersized staff which received intelligence reports only at the discretion of the departments and military services. The director was divorced from the policy-making process and had no budgetary authority. Because he could not request appropriations from congress, the CIG was beholden to the cabinet secretaries for all its funding.

But while the CIG limped along feebly, the Cold War intensified. In February 1947, US diplomat George Kennan published an expansion of his 'Long Telegram' in the journal *Foreign Affairs*, describing the Soviet Union as animated by "a political force committed fanatically to the belief that with US there can be no permanent *modus vivendi* [peace]". The next month former British prime minister Winston Churchill came to the US to announce that Stalin was behaving like Hitler by pulling down an Iron Curtain that divided Europe. Then, in a June 1947 address to a joint session of the US Congress, President Truman declared that Soviet aggression posed an intolerable threat to the "foundations of international peace and hence the security of the United States".

The next month, Truman signed into law the National Security Act, establishing the requisite architecture for the US to serve as the leader and defender of the 'Free World'. It unified the military establishment by combining the departments of war and navy to produce the Department of Defense. It created a National Security Council within the Executive Office of the president. Lastly, it replaced the Central Intelligence Group with the Central Intelligence Agency. For the first time in its history, the US had a civilian-led peacetime intelligence agency, with an independent budget and reporting directly to the president.

The CIA's core mission was to collect, analyse and disseminate intelligence. But the National Security Act contained an elastic clause stipulating that the agency's mandate included performing "such additional services of common concern as the National Security Council

GETTY IMAGES / REX FEATURES

For the first time, the US had a civilian-led peacetime intelligence agency, with an independent budget and reporting directly to the president

TOP TABLE
In 1948, President Truman (second right) chairs a meeting of the recently formed National Security Council, its members drawn from civilian, military and intelligence agencies

INVADING FORCES
US marines prepare to land at Inchon during the Korean War. The surprise invasion of South Korea by North Korea caught the CIA off guard

determines can be more efficiently accomplished centrally". A vital additional service was political warfare, defined by George Kennan as "the employment of all the means at a nation's command, short of war, to achieve its national objectives". In 1948, the National Security Council vested the conduct of political warfare in the Office of Policy Coordination (OPC), a name intended to mask the office's true mission: to "plan and conduct covert operations". Housed in the CIA and directed by former OSS operative Frank Wisner, the OPC eagerly accepted its mandate. Within a year, it launched a joint operation with Britain's Secret Intelligence Service (MI6) to overthrow the communist government of Enver Hoxha in Albania by clandestinely offloading or airdropping Albanian expatriates into the country. It was a disaster. Britain's double agent Kim Philby tipped off the Soviets, who informed Hoxha. Virtually every operative was captured and some 300 were executed.

In 1949, the CIA also experienced its first great intelligence failure when it provided no warning of the Soviets' successful test of an atomic bomb. It failed again the following year when, by surprise, the North Koreans attacked the South. But for the agency's operations arm, the OPC (soon renamed the Directorate of Operations), the Korean War was a windfall. Covert operatives flooded the country and soon branched out into China, Indochina, the Philippines and elsewhere in Asia. By 1952, its personnel had grown almost tenfold and its budget increased by a factor of 15 – accounting for 75 per cent of the CIA's budget.

That year, Dwight D Eisenhower was elected president and appointed John Foster Dulles as secretary of state and his brother, Allen Dulles, as director of the CIA. These appointments cemented the role of the agency within the national security bureaucracy, as well as institutionalising the pre-eminence of covert action within the CIA. Eisenhower drew on national intelligence estimates and other CIA analytic products more than his predecessor did and funded the research and development of the U-2 spy plane programme to fly over Soviet territory. He also launched Project CORONA, which led to the replacement of the U-2 by a system of satellites capable of photographing Soviet and other 'denied' territory much more precisely and comprehensively than any reconnaissance aircraft. He also created the National Security Agency in order to eavesdrop on electronic communications. Still, even as the CIA's intelligence

RETURN TO POWER Shah Mohammad Reza Pahlavi salutes the Iranian army having been restored as head of state after the CIA's overthrow of Prime Minister Mossadegh in 1953

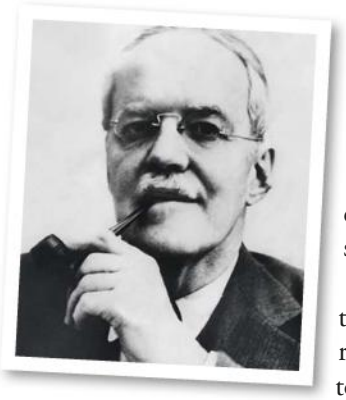
VOICES OF DISSENT Students in Honduras protest against the removal of the Guatemalan president Jacobo Arbenz Guzmán in 1954 in a CIA-engineered coup

GETTY IMAGES

MISSION FAILED Fidel Castro's troops depicted after successfully defending Cuba from US-trained counter- revolutionaries attempting to invade the island at the Bay of Pigs in 1961. "Victory has a hundred fathers and defeat is an orphan," reflected JFK

CHANGING ENEMIES The collapse of communism in eastern Europe in the late 1980s, symbolised by the fall of the Berlin Wall, removed a large proportion of the CIA's targets

"How could I have been so stupid?" asked President Kennedy after the Bay of Pigs disaster



CIA director Allen Dulles lost his job over the Bay of Pigs fiasco

collection capabilities improved, its reputation and utility in Washington became increasingly tied to its covert – indeed its paramilitary – actions. Through a combination of strategically placed bribes, the assistance of Britain's MI6, staged demonstrations and sheer luck, in 1953 the CIA's Operation TPAJAX succeeded in overthrowing Prime Minister Mohammad Mossadegh and restoring Shah Muhammad Reza Pahlevi to Iran's Peacock Throne.

A year later, the CIA scored another victory in Guatemala with Operation PBSUCCESS. It financed a make-believe 'Army of Liberation' in neighbouring Nicaragua, broadcast imaginary stories of its invasion of Guatemala from its own radio station, and hired mercenary pilots to drop blocks of dynamite attached to hand grenades and gasoline-filled soda pop bottles on highly visible targets so that the noise and fire would spread fear. (Guatemalans called the planes *sulfatos*, their word for laxative, because of their effect.) Rather than constituting "a conventional military operation", PBSUCCESS depended on the "psychological impact" of creating and maintaining "the impression of very substantial military strength". It worked. The Guatemalan army defected and President Jacobo Arbenz Guzmán fled the country.

The operations in Iran and Guatemala established the CIA as the US's "first line defence against Communism" and endowed the agency with a "legend of invincibility". But neither Mossadegh nor Arbenz was a communist, and the CIA was not invincible. Three months into his administration, President John F Kennedy gave the go-ahead to a CIA plan modelled on PBSUCCESS to overthrow a 'real' communist – Cuba's Fidel Castro. An invasionary force of some 1,400 CIA-trained Cuban exiles met disaster on the beaches of the Bay of Pigs. More than 100 died and half were captured, many of whom were executed. "How could I have been so stupid?" Kennedy asked out loud.

Kennedy's answer was to blame, and then fire, Allen Dulles. But the CIA remained unchanged. Congress continued to feed the Directorate of Operations and starve the Directorate of Intelligence. For the purpose of waging the Cold War, over the subsequent decades the CIA launched scores of covert actions in Vietnam, Laos, the Congo, Central and South America, and throughout the Middle East. It sought to overthrow governments, it engaged in assassinations, it spied on American citizens, and it established front organisations to subvert the electoral processes and political cultures of US friends and foes. These operations produced more blowback than strategic gain. In the meantime, the CIA failed to provide warning of the installation of Soviet missiles in Cuba, the 1979 revolution in Iran, the Soviet invasion of Afghanistan, or the end of the Cold War.

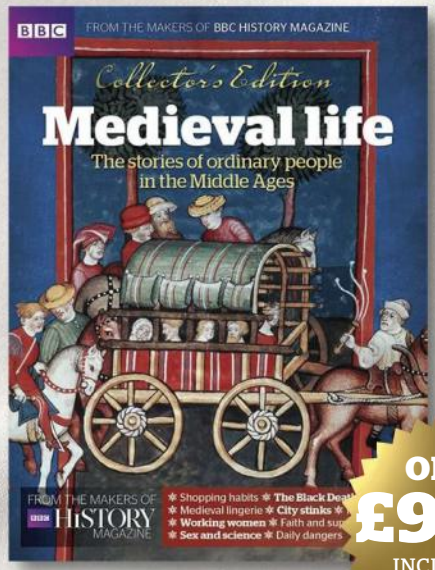
The CIA's inability to thwart the terrorist bombings of 11 September 2001, and its distorted estimate of Iraq's weapons of mass destruction programme, led to withering criticism and its subordination to the newly created Office of the Director of National Intelligence. Yet, by running a drone campaign that targets terrorists throughout the Middle East, South Asia and Africa, the CIA remains at the forefront of US security policy, even as its analytic and collection capabilities erode further. Originally established in 1947 for the purpose of collecting, analysing and disseminating intelligence, following its first armed drone mission against Afghanistan's Taliban in 2001, the CIA evolved into what a veteran intelligence officer called "one hell of a killing machine" – or what one US government official sees as "a mini-Special Operations Command that purports to be an intelligence agency". Current CIA director John Brennan has publicly opposed the CIA's militarisation, seeking "more trench coats, less body armour." History is not on Brennan's side. ■

GETTY IMAGES

The CIA's current director opposes its militarisation, seeking "more trench coats, less body armour." History is not on his side

Collector's Editions

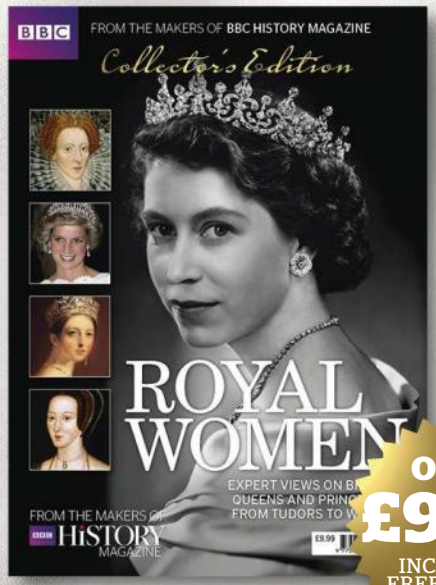
FROM THE MAKERS OF BBC HISTORY MAGAZINE



Medieval Life

Discover how people lived, thought, prayed, dressed and shopped in the Middle Ages with this fascinating compendium of the best articles from *BBC History Magazine*.

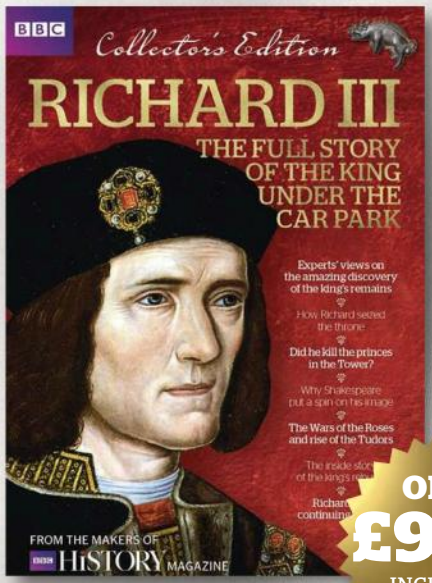
ONLY £9.99 INCLUDING FREE UK P&P*



Royal Women

Explore the lives of queens, princesses and mistresses – from Boudica and Anne Boleyn to Princess Diana and Kate Middleton – with this collector's edition.

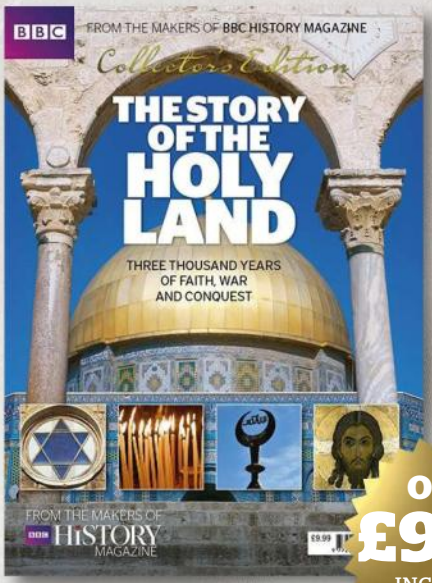
ONLY £9.99 INCLUDING FREE UK P&P*



Richard III

This collector's edition offers the complete guide to the most divisive monarch in English history, from his controversial rise to power to his death at the battle of Bosworth.

ONLY £9.99 INCLUDING FREE UK P&P*



The Story of the Holy Land

From the ancient world of the Bible to the 21st century, we dissect the fascinating history of a small land that has become central to three global faiths.

ONLY £9.99 INCLUDING FREE UK P&P*

Order online www.buysubscriptions.com/historyspec or call us on 0844 844 0250+

+ Calls will cost 7p per minute plus your telephone company's access charge.Lines are open 8am-8pm weekdays & 9am-1pm Saturday.
* Subscribers to *BBC History Magazine* receive FREE UK postage on these special editions. Prices including postage are: £11.49 each for all other UK residents, £12.99 each for Europe and £13.49 each for Rest of World.

Unforgettable

Famous or notorious, lauded or reviled, **HUW DYLAN** examines eight

1 Vasili Mitrokhin

Disillusioned KGB archivist who smuggled thousands of files to the west

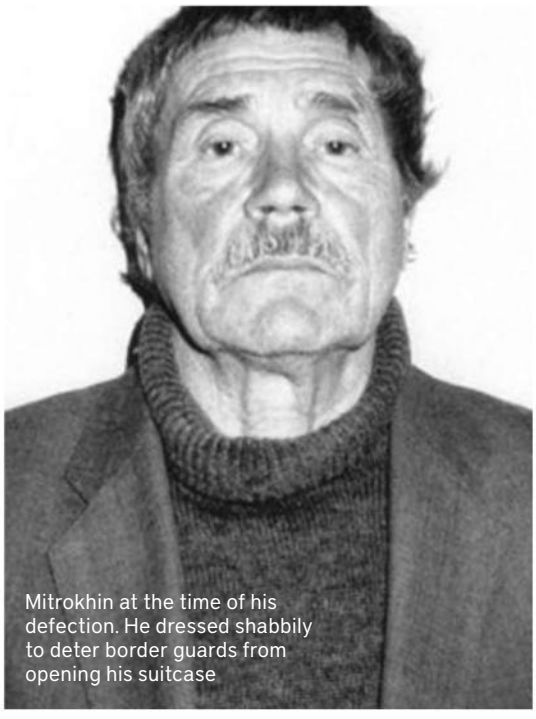
One of the greatest recruiting aids for Soviet intelligence during the Second World War and the early Cold War was the belief that the USSR was a socialist utopia, one that could be recreated elsewhere. The erosion of this belief turned this on its head. Soviet citizens, tired of oppression, spied for the west in the hope of undermining their corrupt state organs.

Vasili Mitrokhin (1922–2004) was one such spy. He was recruited into the Soviet intelligence service in 1948 and served in Austria and the Middle East. Yet a minor criticism of the bureaucracy ended his active service career. He was posted to the KGB archives.

There he had a view of the difference between the regime's rhetoric and its actions. This culminated in the suppression of the Prague Spring uprisings in Czechoslovakia in 1968, which convinced him that the system was incapable of reform. He then began compiling his own archive. Almost every day, from 1972 to his retirement in 1984, he smuggled out notes, and buried them under his family's holiday home. What he compiled was unprecedented: a global history of the Soviet secret service.

The archive lay hidden until the fall of the USSR gave him the chance to travel to Riga, where he visited the US embassy, which gave him short shrift. He moved on to the British embassy, where he was put in touch with intelligence officers, who arranged for the exfiltration of Mitrokhin, his family and his archive to Britain. There he helped British intelligence exploit his documents, revealing hundreds of Soviet operations and spies. Intelligence historian Christopher Andrew worked with Mitrokhin on several volumes based on the materials, the first titled *The Mitrokhin Archive: the KGB in Europe and the West*. They outline in detail the KGB's and the USSR's darkest secrets.

What Mitrokhin compiled was unprecedented: a global history of the Soviet secret service



Mitrokhin at the time of his defection. He dressed shabbily to deter border guards from opening his suitcase

CHURCHILL ARCHIVES CENTRE

Spies

of the most notable intelligence officers and agents of modern times

A 1965 Soviet stamp commemorating Richard Sorge, regarded by some as one of history's greatest spies

2 Melita Norwood

British civil servant who fed nuclear secrets to the KGB

Melita Norwood achieved a level of notoriety in Britain following revelations in 1999 that she had been an agent for the USSR. Prior to being outed (at the age of 87) in Vasili Mitrokhin and Christopher Andrew's book *The Mitrokhin Archive* she lived an uneventful retirement in London's suburbia. The Security Service had been aware of her past since 1992, but had elected not to pursue her, partly because of her age and the passage of time since her active espionage, partly because of the need to protect Mitrokhin.

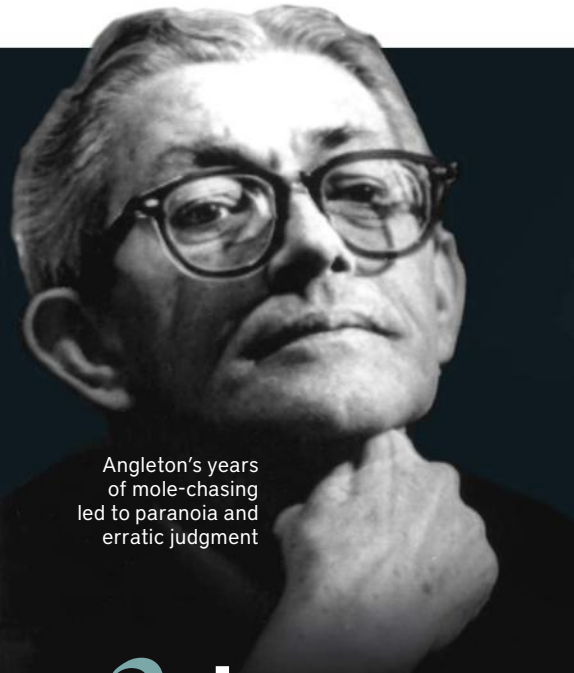
She was a spy of ideological conviction. Even in her retirement, with all Stalin's crimes apparent, she still apparently referred to him as "Old Joe" and noted that being a communist didn't mean you approved of everything that had happened in the USSR.

Born in 1912, she was recruited in 1937, when she worked at the British Non-Ferrous Metals Research Association. She spent her career there, both as a secretary and a Soviet spy. Her work provided her with access to valuable industrial information. But her real value came in the Second World War when she started gaining access to documents about the 'Tube Alloys' programme: Britain's atomic bomb project. This information was fed into the USSR's own nuclear industry. This led some to consider her the most important female Soviet agent in Britain; the KGB described her as "a committed, reliable, and disciplined agent...." They awarded her the Order of the Red Banner and offered her a pension upon her retirement. She died in 2005, aged 93 and still committed to the cause.

Norwood in 1999, aged 87, when her 35-year career as a Soviet spy was exposed

> The KGB described her as "a committed, reliable, and disciplined agent" and awarded her the Order of the Red Banner

ALAMY / REX FEATURES



Angleton's years of mole-chasing led to paranoia and erratic judgment

3 James Angleton

Complicated, influential but ultimately divisive US counterintelligence chief

James Angleton (1917–87) was a CIA counter-intelligence chief who retains a very particular place in the agency's history and in popular culture. He was, and remains, a divisive figure, lauded by some, but roundly criticised by others.

His career in intelligence began during the Second World War, when he was recruited into the Office of Strategic Services, the US's intelligence and sabotage outfit. His first posting was London and the X-2 counterintelligence branch. This was a secretive organisation even by the standards of the OSS, privy to the most sensitive material British intelligence could generate.

After the war, Angleton was recruited into the CIA. He spent his career there and became head of counterintelligence. Fiercely intelligent and ferociously anti-communist, Angleton hunted communist infiltrations and deceptions. He provided a useful service throughout the 1950s, applying his attention to detail to protecting US operations and cultivating relations with Israel's intelligence services.

But his belief in the pervasiveness of Soviet plots eventually overtook his better judgment. A number of factors led to this: his wartime experience of deception and penetration; the exposure of one of his closest confidants, Kim Philby, as a Soviet spy; and the defection of the Soviet Anatoliy Golitsyn, whose cocktail of accurate intelligence with conspiracy melded perfectly with Angleton's suspicions.

This led him to refuse to accept the bona fides of other, genuine Soviet defectors, for fear they were double agents. One, Yuri Nosenko, languished in prison for years because of Angleton's theory. His paranoia eventually became too much for his superiors. William Colby, the CIA director, thought "Jim was totally out of control". In the midst of a scandal about illegal CIA spying on US soil, in December 1974 he was eased out of the agency.

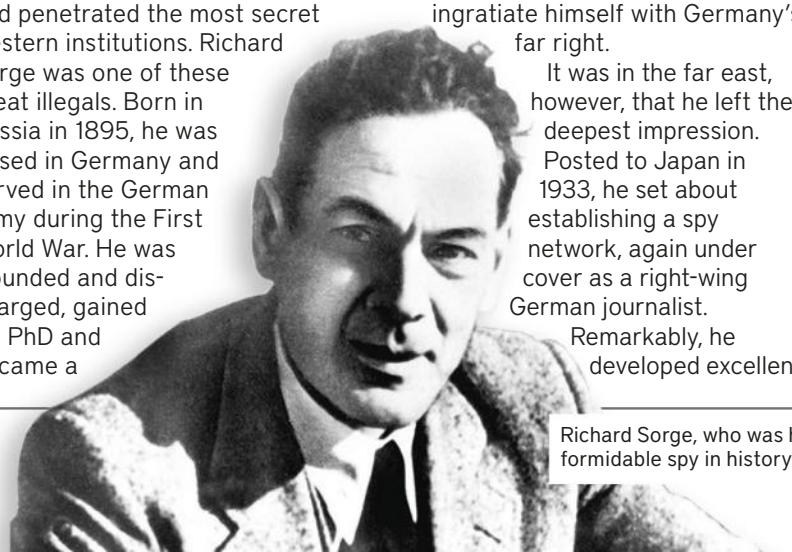
4 Richard Sorge

Masqueraded as a Nazi journalist in Japan to spy on the Axis

The golden age of Soviet foreign intelligence was the age of 'the great illegals'. Throughout the 1930s and beyond, Soviet 'illegal' agents – officers working abroad under deep cover – recruited some of the USSR's most notorious spies and penetrated the most secret western institutions. Richard Sorge was one of these great illegals. Born in Russia in 1895, he was raised in Germany and served in the German army during the First World War. He was wounded and discharged, gained his PhD and became a committed Marxist. Intelligent and charming, he was a natural spy. He was recruited into Soviet military intelligence in 1929. His background offered the ideal cover: a German journalist. He was posted across Europe, before being instructed to ingratiate himself with Germany's far right.

It was in the far east, however, that he left the deepest impression. Posted to Japan in 1933, he set about establishing a spy network, again under cover as a right-wing German journalist. Remarkably, he developed excellent sources in the Japanese government and in the German embassy (including, reportedly, seducing the ambassador's wife). He warned his superiors about Germany and Japan's anti-Soviet policies, and about the impending German attack on the USSR, Operation Barbarossa.

Unfortunately for Sorge, Stalin's paranoia meant that he distrusted the warnings, describing Sorge as a "shit who has set himself up with some small factories and brothels in Japan". He was arrested in Japan late in 1941 and hanged in 1944. Years later, his achievements were officially recognised; he was awarded the highest honour the USSR could bestow: Hero of the Soviet Union.



Richard Sorge, who was hailed as "the most formidable spy in history" by Ian Fleming

TOPFOTO / GETTY IMAGES

5 Noor Inayat Khan

Pioneering radio operator who showed bravery to the last

Code-named Madeline, Noor Inayat Khan (1914–44) was the first female Special Operations Executive (SOE) radio operator to be sent into occupied France during the Second World War.

Noor's father was Indian, a charismatic Sufi teacher; her mother hailed from Arizona. The family lived in London and moved to Paris after the First World War. Noor studied music and child psychology, and took to writing children's books and poetry. She fled to Britain early in the Second World War, philosophically opposed to oppression and determined to resist Nazism. She first joined the Women's Auxiliary Air Force, where she was trained as a wireless operator. Late in 1942 she was recruited into SOE's F (France) section. Her intelligence was apparent, her language skills impeccable, but some thought her unready for deployment. One of her trainers thought her "temperamentally unsuitable", something SOE's Maurice Buckmaster, leader of the section, thought was "absolute balls". He won out and she arrived in France in June 1943, as a radio operator for the Prosper network.

Unfortunately the network was unravelled by the Germans, but, undeterred, Noor continued to travel around Paris debriefing the surviving cells and communicating their intelligence back to London. She refused Buckmaster's invitation for her to return to London. Perhaps inevitably, given the hostile operating environment, she was captured. The secret police interrogated her for months; she attempted to escape twice, was kept in solitary confinement and beaten. She did not cooperate and her captors considered her extremely dangerous. Eventually she was transferred to Dachau, where, with three other SOE operatives – Yolande Beekman, Eliane Plewman and Madeleine Damerment – she was shot. She was posthumously awarded the George Cross, and a statue in her memory stands in London's Gordon Square Garden.

TOPFOTO / REX FEATURES

The SS interrogated her for months. She attempted to escape twice and was beaten. She did not cooperate

This statue of Noor in London (left), was unveiled in 2012 to honour the wartime heroine

6 Virginia Hall

Heroic amputee who was the scourge of the Gestapo

Hall received the Distinguished Service Cross from the Office of Strategic Services in 1945 for her efforts in France

The story of Virginia Hall (1906–82) has grasped the imaginations of historians of the Second World War secret service. Partly this is due to the mystique attached to tales of her parachuting behind enemy lines with her prosthetic leg (which she named Cuthbert) in a backpack. But mainly she is remembered for her bravery and indomitability. Hailing from Baltimore, she cut her own path, attending various educational institutions in Paris and Vienna. She tried, repeatedly, but failed to join the US foreign service as an officer (her final attempt being undermined by rules preventing amputees from serving).

The start of the Second World War found her in Paris, where she drove an ambulance for the French before being evacuated to London, where she entered the world of espionage. Working at the US embassy, she met Vera Atkins, special assistant to the head of SOE's France section, and over lunch was persuaded to put her courage and language skills to better use by joining up. She worked undercover as a journalist in Vichy, before escaping over the Pyrenees to Spain in 1942. She later trained as a radio operator with the possibility of being parachuted in to support the invasion.

Not content with a mere possibility, she transferred to the OSS and was soon back in France building resistance networks and sabotaging Nazi equipment. She stayed with the OSS and later worked for the CIA. She retired in 1966, having not been allowed to go on peacetime operations. Nevertheless, she was awarded an MBE in the UK and was the only civilian woman to receive the Distinguished Service Cross in the US.

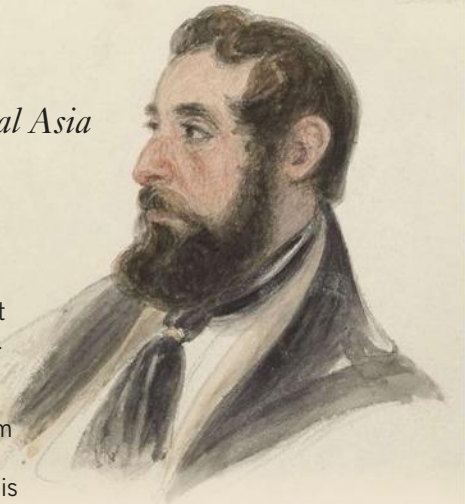
7 Arthur Conolly

Intelligence-gathering adventurer in the push for central Asia

Many of the most fascinating British spy stories involve the so-called Great Game with the Russian empire during the 19th century. This relentless struggle over the badlands of central Asia was fought in the main in secret, by brave officers, often taking 'shooting leave' to go on unofficial espionage adventures. The objective was greater understanding of the vast area between Russia and India's north-western frontier.

Born in 1807, Lieutenant Arthur Conolly (right) of the 6th Bengal Light Cavalry was 22 years old when he began his adventures. Brave and resourceful, he set out to examine the extent of Russian encroachment towards India. He resolved to travel from Moscow to India overland.

Much of his journey was spent in disguise; the peoples east of the Caspian Sea and the Karakum desert would likely take a Briton to be a spy. He assumed the identity of a French merchant and, for spying inside the Persian city of Meshed, a healer. From Herat to Kandahar he travelled disguised with a party of holy men. His 4,000-mile journey culminated in entering India through the Bolan pass, having gathered invaluable intelligence on the progress of Russian troops and traders towards India; the route an invading army would take; the politics of the tribes along the way; and the best place to resist an invasion of India: a treasure trove for politicians in London.



He met his end in 1842 on a mission to rescue Lieutenant Colonel Stoddart, who was held prisoner in Bukhara. Both were executed for spying, having first been made to dig their own graves.

NARA / NATIONAL PORTRAIT GALLERY, LONDON

It was claimed she betrayed secrets of the Allies' most advanced weaponry, including the tank

Mata Hari's catalogue of lovers included several high-ranking military officers and politicians

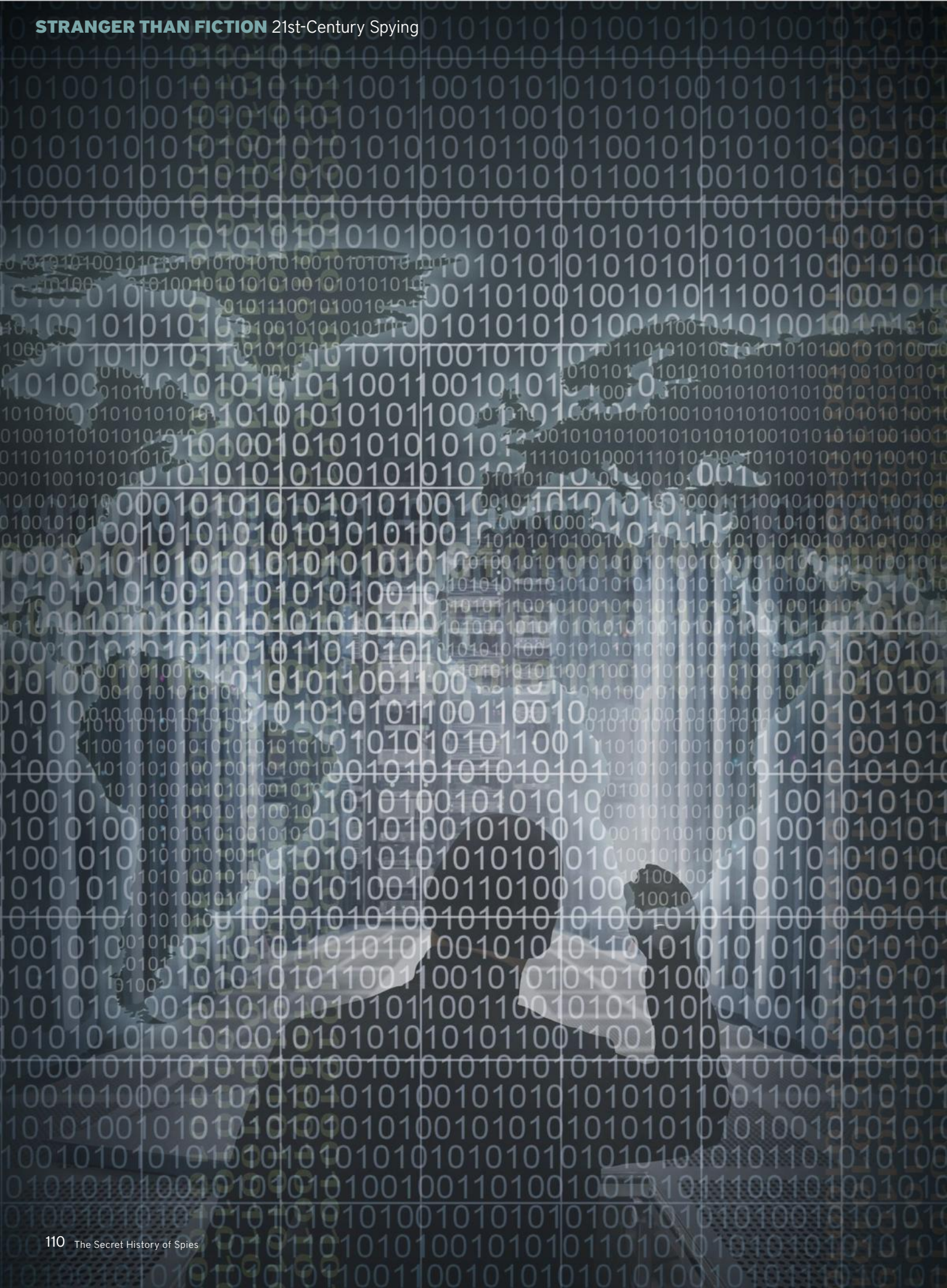
GETTY IMAGES

8 Mata Hari

Exotic dancer turned courtesan, turned German spy

Mata Hari may be the most infamous of Second World War spies, though this owes more to her colourful character and exploits than the value of her espionage. Born in the Netherlands in 1876 as Margaretha Geertruida Zelle, she adopted the stage name Mata Hari for performances on the European dance circuit. Her exotic dancing gained her notoriety across Europe, but she never won critical acclaim. By the start of the war, she was supplementing her dancing by working as a courtesan and had several relationships with senior military officers and politicians across Europe. It was the pillow talk from these liaisons that formed the bulk of her intelligence. She supplied the French with various snippets, but it's said that she was recruited in 1915 by the Germans, who gave her the code name H-21. She was arrested and interrogated by the British in 1916, but released.

Her fate was eventually sealed by Allied codebreakers who intercepted a message referring to agent H-21, a message detailed enough to identify Mata Hari. She was arrested and charged with espionage. It was claimed she betrayed some of the secrets of the Allies' most advanced weaponry, including the tank, and compromised Allied secret agents. Thousands of French soldiers, it was said, died because of her. This was highly dubious, as were the circumstances of her trial. Her advocate could not cross-examine the prosecution's witnesses or his own. She was found guilty and executed by firing squad in Paris on 15 October 1917. But the mystery surrounding her espionage lives on to this day. ■



NEW DANGER

SPYING IN THE 21ST CENTURY

With the classic espionage of the Cold War now replaced by new threats, new allegiances and new technology, **MICHAEL GOODMAN** explores the shape of modern spying

On Tuesday 14 May 2013 in Moscow, the Russian foreign ministry posted a message on its official website stating that an official from the political section of the US Embassy had been declared *persona non grata* and therefore forced to leave the country. At the same time, the Russians released several photographs of a man in his 20s, wearing a ludicrous, ill-fitting blond wig. Some showed him being wrestled to the ground, while others depicted him and an assortment of old-fashioned-looking spy gear. The diplomat in question, Ryan Fogle, had, the Russians claimed, been caught by their state security attempting to bribe Russian officials into spying for the Americans. The Russians declared that he was an officer with the CIA; the Americans declined to comment.

If the spy paraphernalia was not damning enough, Fogle was in possession of a letter, in Russian, offering an honorarium of up to $1 million a year to an agent with good access to information who committed to a long-term relationship with the US. The letter also provided details on how to use a nondescript Gmail account to maintain contact with US intelligence. For the Russians, this was a propaganda coup: an American spy had been caught red-handed and

CORBIS / DREAMSTIME

MAY 2013 US embassy worker Ryan Fogle is apprehended for allegedly attempting to recruit a Russian official as a spy

UNCERTAIN TIMES The proliferation of hardline Islamist factions such as Somalia's Hizbul Islam presents an ever-changing challenge

GETTY IMAGES / PA

his approach, demeanour and accessories looked distinctly amateurish. For the Americans, it was, at first glance, embarrassing, although a longer look suggested that this was a clever ploy to dangle in front of susceptible Russians a huge amount of money in exchange for betraying their country. Just as interesting was the fact that, despite the technological advances of the 21st century, this was a return to the classic game of espionage – a reminder, should it be needed, that spying was as important as it had ever been.

A defining feature of the Cold War had been the intelligence battle waged in the background. From every far-flung corner of the globe, the major intelligence agencies of east and west played the game. The employment of every intelligence resource, whether it be classic human espionage or highly sophisticated technical means, was a given, yet individual countries had notable characteristics. The Soviet Union had placed a premium on human trade-craft, both in terms of domestic surveillance and recruitment overseas. The United Kingdom had heavily relied on its transatlantic partnership and, although it could not keep pace with American technological advances, it maintained a world-class human eavesdropping service. The United States was the big player, with far more resources and personnel at its disposal. In practice, this often led to an increase in the reliance on technical sources and a reduction in the extent to which human sources were relied upon.

For both east and west, good information was known about the other's military capabilities, so what remained was the big question of intent: what might the opposing leader do next? The underlying fear was always nuclear war but, as remote as this was, related questions about military conflict, subversion and political interference remained important throughout.

The classic cocktail party recruitment venue of the Cold War was replaced by **a meeting in a crowded souk**

From 1989, in a largely unexpected move, the former satellites of the Soviet bloc rose up and declared independence from their communist masters. A coup in Moscow two years later marked a process that would culminate in the collapse of the Soviet Union. The Cold War was over.

Suddenly, a political power vacuum was created, matched in its intensity within the intelligence community. The great foe that had been omnipresent since 1945 had all but vanished overnight. Although much initial effort was geared towards monitoring events, questions began to be raised as to where the next threat might emerge and what this meant for intelligence agencies.

The simple answer was that many of the new threats had already existed for some time, but had been subsumed by the greater menace of the Soviet Union. As it was, an array of subject matter now pushed to the fore, including an increased emphasis on organised crime, the proliferation of weapons of mass destruction and a rise in ethnic conflicts. By the late 1990s, a new subject matter was taking centre stage in the form of

NEW THREAT The 2001 World Trade Center attacks brought a dramatic shift in focus and resources on the part of Western intelligence agencies, with a stronger emphasis on collaboration to counteract the threat of Islamist terrorism

Islamist terrorism. The nature of these various threats underlined the new world order and the impact of globalisation: borders were becoming less clearly defined, as was the delineation between internal and external threats. Similar grand changes were taking place in the intelligence communities: in the UK, staff numbers were radically slashed in the post-Cold War peace dividend, while a slew of new intelligence legislation brought public scrutiny for the first time.

On 11 September 2001, the focus of intelligence agencies changed almost overnight with the terrorist attacks in the United States. There had previously been intelligence effort directed towards combating Islamist terrorism, but the attacks revealed the full extent of the threat and the severity of its mission. Within a decade of the Cold War's end, significant changes had occurred. The emphasis on Europe had changed to the dusty backstreets in the Middle East. Where a new officer in the CIA or MI6 might previously have expected a posting to Warsaw or Vienna, now it was more likely to be Mogadishu or Addis Ababa. The nature of the target, and its liberation from sophisticated technology, meant the human spy had to take on a renewed importance, but the classic cocktail party recruitment venue of the Cold War was replaced by a meeting in a crowded souk.

Just as importantly, the Cold War paradigm of knowing capabilities and having to gauge intent was now the opposite: it was assumed that terrorists would launch attacks, but where, when and how? The other great lesson of 9/11 was that intelligence agencies could no longer operate on the 'need to know' principle, but rather had to move to one of a 'need to share'. Not only applying to domestic agencies, this requirement to work with international partners would have been unthinkable a decade earlier.

International terrorism was not the only threat emerging. The multi-polar nature of the world and the rise in asymmetric threats meant a global watch needed to be maintained. In addition, the breathtaking advances in technology and the internet ensured that novel approaches could be made and technology employed to assist the intelligence community.

One of the greatest state-based threats in the Middle East was Iran's nuclear weapons programme. Iran claimed that it was designed for peaceful, nuclear energy purposes; much of the rest of the world claimed it was a hostile, military programme. In June 2010, details began to emerge about a computer worm that had targeted a key component of the Iranian programme. One method to create the fissionable material required for a nuclear weapon is to employ vast numbers of centrifuges – essentially tubular pieces of equipment that rotate at varying speeds to separate the different isotopes of uranium. Computers are used to control the speed of these, often based on standard operating systems like Microsoft Windows.

There is some debate as to who was behind the attack, but the result was clear. By mid-2010, when details first emerged, approximately one-fifth of Iran's centrifuges had become irrevocably damaged. Software had changed the spin speed, resulting in physical destruction. Later scrutiny revealed that the code could only have been inserted into the system physically: in other words, a human

GETTY IMAGES

NUCLEAR ATTACK President Mahmoud Ahmadinejad visits an Iranian nuclear facility. In 2010, a cyber-attack apparently destroyed a fifth of Iran's nuclear centrifuges

SECRET STORIES Edward Snowden being interviewed by Jane Mayer in 2014

being would have had to plug in a USB memory stick or similar to initially infect the system, after which the code could have replicated and caused its damage without any human contact. The culprit was an elaborate and hugely sophisticated piece of malware called Stuxnet.

Compare this software-instigated physical destruction to the way in which the Israelis damaged the Iraqi nuclear programme in 1981. Flying eight F-16A fighter jets, each armed with two 2,000lb bombs, the Israeli air force headed towards a site just outside of Baghdad. The destination was the Osirak nuclear reactor – another means of producing fissionable raw material for a nuclear weapon. Flying over a number of countries en route to Iraq, the Israeli pilots spoke in Arabic using various local accents to confuse ground control staff as to their true provenance. Finally reaching Iraq, at least half the bombs hit their target and the nuclear reactor was destroyed. Two minutes after launching the bombs, the Israeli planes turned around and returned home.

The information revolution of the last decade has changed the way that everyone, spies included, live their lives. The ability to check facts online, monitor people virtually and access vast reams of information is unparalleled in human history. A simple comparison makes this obvious: one of the most infamous and damaging Cold War spies, Kim Philby, passed across thousands of documents to his Soviet masters. To obtain these, he took photographs, made copies and stole originals in an espionage career lasting several decades. By contrast, Edward Snowden was able to procure almost two million original documents in just a few months.

The ability to check facts online, monitor people virtually and **access vast reams of information** is unparalleled in human history

In the 21st century, intelligence is as vital as ever. The proliferation of threats and the interconnectedness of the world, together with the information revolution, have altered the nature of spying but, at the same time, its core role has remained undiminished. The evolution of the internet and the reliance upon technology for everyday life means that technical intelligence gathering has risen in importance and, while this is useful for targeting some threats, it can often provide little of value for technologically advanced countries or those non-state actors who do not rely on computers, the internet or mobile phones.

The advances in technology are, of course, invaluable, but they cannot replace the spy on the ground. The first examples of intelligence thousands of years ago used spies to target human frailties. The vulnerabilities are the same today, and whether they are exploited by human or technical means, the role of intelligence has remained the same: to discover information that the recipient wants to keep secret. ■

BBC HISTORY MAGAZINE

THE SECRET HISTORY OF SPIES
FROM THE MAKERS OF *BBC HISTORY MAGAZINE*

EDITORIAL

Editor Rob Attar
Production Editor Spencer Mizen
Art Editor Susanne Frank
Picture Editor Samantha Nott
Editorial production Nige Tassell, Paul Bloomfield, Sue Wingrove, Margaret Harris, Jane Williamson
Additional work by Paul Jarrold, Charlotte Hodgman, Matt Elton, Rachel Dickens, Sarah Lambert, Katherine Hallett, Rosemary Smith

historymagazine@historyextra.com

IMMEDIATE MEDIA Co

PRESS AND PUBLIC RELATIONS

Press officer Dominic Lobley 020 7150 5015
dominic.lobley@immediate.co.uk

SYNDICATION

Head of licensing & syndication Tim Hudson
International Partners' Manager Anna Brown

PRODUCTION

Production Director Sarah Powell
Production Co-ordinator Emily Mounter
Reprographics Manager Tony Hunt

PUBLISHING

Publisher David Musgrove
Publishing Director Andy Healy
Managing Director Andy Marshall
CEO Tom Bureau
Deputy Chairman Peter Phippen
Chairman Stephen Alexander

BBC WORLDWIDE

Director of Editorial Governance Nicholas Brett
Director of Consumer Products and Publishing Andrew Moultrie
Head of UK Publishing Chris Kerwin
Publisher Mandy Thwaites
Publishing Co-ordinator Eva Abramik, UK.Publishing@bbc.com
www.bbcworldwide.com/uk--anz/ukpublishing.aspx

With thanks to Clive Irving and Peter Kreisky, The Kreisky Media Consultancy, LLC

Cover pictures: Alamy, Getty Images
Back cover picture: Benedict Cumberbatch in *The Imitation Game* – Rex Features

ABOUT THE AUTHORS

Dr John Cooper is senior lecturer in history at the University of York. He is the author of *The Queen's Agent: Francis Walsingham at the Court of Elizabeth I* (Faber, 2011). On page 12, John explains the depths of intrigue that Walsingham the spymaster brought to the Tudor dynasty.

Gordon Corera is a familiar voice on both BBC television and radio through his role as the corporation's security correspondent. His books include *Intercept: The Secret History of Computers and Spies* (Weidenfeld & Nicolson, 2015). The fascinating evolution of electronic espionage is a subject that Gordon returns to on page 26.

Dr Huw J Davies is senior lecturer in defence studies at King's College London. He is the author of *Wellington's Wars: The Making of a Military Genius* (Yale University Press, 2005). On page 36, Huw reveals the emergence and importance of spying during the Napoleonic Wars.

Dr Huw Dylan is a lecturer in intelligence and international security in the Department of War Studies at King's College London. He is the author of *Defence Intelligence and the Cold War: Britain's Joint Intelligence Bureau 1945–1964* (Oxford University Press, 2014). On page 104, Huw looks at the extraordinary careers of a number of notable spies from history.

Michael Goodman is professor in the Department of War Studies at King's College London. His books include *Spying on the World: The Declassified Documents of the Joint Intelligence Community* (Edinburgh University Press, 2014). On page 58, Michael examines the sophisticated espionage methods employed during the Second World War.

Dr Joel Greenberg is a historian and tour guide based at Bletchley Park, the location of Britain's codebreakers during the Second World War. He is the author of *Gordon Welchman: Bletchley Park's Architect of Ultra Intelligence* (Frontline, 2014). Joel assesses the life and work of another key Bletchley Park figure, Alan Turing, on page 64.

Professor Richard H Immerman is a faculty fellow in history at Temple University in Philadelphia. His books include *The Hidden Hand: A Brief History of the CIA* (Wiley-Blackwell, 2014). Richard retraces the ever-changing roles of the CIA on page 82.

Nicholas Rankin is a writer and broadcaster who worked for the BBC World Service for 20 years. He is the author of *Ian Fleming's Commandos: The Story of 30 Assault Unit in WWII* (Faber & Faber, 2011). On page 74, Nicholas separates the facts from the fiction of the life of James Bond creator Fleming.

Collector's Edition

THE SECRET HISTORY OF SPIES

ESPIONAGE – FROM THE TUDORS TO THE WAR ON TERROR

"What set Turing apart was his ability to come up with ideas that others would not have thought of 'in a million years'"

JOEL GREENBERG ON THE PIONEERING CRYPTANALYST ALAN TURING, PLAYED BY BENEDICT CUMBERBATCH IN *THE IMITATION GAME* (ABOVE)

FROM THE MAKERS OF BBC HISTORY MAGAZINE