**Skyscrapers**

Burj Khalifa (Dubai, UAE; Adrian Smith, architect; completed 2009)

As of 2019, the Burj Khalifa in Dubai, United Arab Emirates is both the tallest building in the world and the tallest man-made structure ever built. The structure was named in honor of **Sheikh Khalifa**, the president of the UAE. The burj—Arabic for “tower”—is part of a complex in downtown Dubai that also includes the world’s second-largest mall by area and one of the world’s largest fountains. The building has three curved wings in a ‘Y’-shape that act as **buttresses** supporting the building’s massive height. That exact height, 2,722 feet, was kept a closely-guarded secret until the building opened.

Empire State Building (New York City; [Firm of] Shreve, Lamb, and Harmon, architects; completed 1931)

The Empire State Building, which has a height of 1,250 feet (1,454 feet including antenna) surpassed the nearby **Chrysler Building** to become the tallest building in the world upon its 1931 completion, holding that title for four decades until the construction of the original World Trade Center. Following the 9/11 attacks, the building was once again the tallest in New York. The Empire State Building, like the Chrysler Building, is a classic example of **Art Deco** architecture, an early-20th-century style known for its streamlined, modern appearance. The building is an iconic symbol of New York and pop culture, appearing prominently in the film *King Kong*. Original plans for the building included a mooring station for **zeppelins** at its apex, but this never came to fruition.

Abraj Al-Bait (Mecca, Saudi Arabia; [Firms of] Dar Al-Handasah and SL Rasch, architects; completed 2011)

The Saudi government funded construction of the Abraj Al-Bait complex, a set of seven massive hotels whose central tower reaches a height of 1,972 feet. The complex overlooks the **Great Mosque of Mecca**, which contains the ***Kaaba*** (the holiest place in Islam) and was built to offer modern accommodations to Muslims participating in the annual ***Hajj***, or pilgrimage to Mecca. The Abraj Al-Bait, whose name means “Tower of the House” in Arabic, contains the world’s largest clock face (over 140 feet in diameter) and as of 2019 is the world’s most expensive building, with construction costs exceeding $15 billion. The complex was built by the Saudi **Binladin Group**, a company founded by Osama bin Laden’s father.

Shanghai Tower (Shanghai, China; Jun Xia, lead architect; completed 2015)

When it opened in 2015, the Shanghai Tower—with a height of 2,073 feet—was the second-tallest building in the world, a title it still holds as of 2019. The tower, which is located in Shanghai’s Pudong District, is adjacent to both the **Jin Mao Tower** and **Shanghai World Financial Centre**, two of the world’s other tallest buildings. By far, the tower’s most notable architectural feature is the fact that the building twists as it ascends—the top of the building is rotated approximately 120 degrees clockwise from the base. Its 118th floor is home to the second-highest observation deck in the world; the **Ping An Financial Center** in Shenzhen, China has an observation deck about one foot higher.

One World Trade Center (New York City; David Childs, architect; completed 2014)

Construction began on One World Trade Center, alternatively known as **1 WTC** and the **Freedom Tower**, in 2006, and was the main part of the project of rebuilding the World Trade Center following the **9/11 attacks** as part of an overall plan for the site developed by architect **Daniel Libeskind**; it occupies the former site of the original 6 WTC. The building reaches a symbolic height of **1,776 feet**, and is adjacent to a pair of **memorial reflecting pools** marking the foundations of the original Twin Towers. The new WTC complex includes a transportation hub designed by Spanish architect **Santiago Calatrava**. A new **Two World Trade Center** will likely not be completed until 2024.

Willis Tower (Chicago; Bruce Graham and Fazlur Rahman Khan, architects on behalf of the firm Skidmore, Owings and Merrill; completed 1973)

When it opened in Chicago, Illinois in 1973, the Willis Tower was the tallest building in the world, with a height of 1,450 feet. The building was originally (and is still commonly) known as the **Sears Tower**, as it was built as a new headquarters for Sears, Roebuck & Co.; it was officially renamed after the insurance company Willis Group Holdings, Ltd., in 2009. The building’s design, inspired by a **pack of cigarettes**, consists of a three-by-three set of “tubes” of varying heights. The tower contains a 103rd-floor **“Skydeck”** from which as many as four U.S. states (Illinois, Indiana, Wisconsin, and Michigan) are visible on a clear day, and which also contains several glass balconies that extend out from the building, allowing visitors to look straight down to the street below.

The Shard (London, England; Renzo Piano, architect; completed 2013)

The Shard, originally known as **London Bridge Tower**, is the tallest building in the U.K, with a height of 1,016 feet. It gets its name from its appearance: the glass-enclosed, pyramid-like structure tapers as it rises to a set of points at the top, giving the impression of several shards of glass leaning against one another. The Shard was designed by Pritzker-winning Italian architect Renzo Piano, who also designed Paris’s **Georges Pompidou Center** and New York’s **Whitney Museum of Art**. Despite being in London, the tower is primarily owned by the state of **Qatar** and is a broadcast headquarters for the English branch of the Qatari media network **Al Jazeera**.

Taipei 101 (Taipei, Taiwan; Chu Yuan Lee, architect; completed 2004)

Taipei 101, named for its 101 floors, was the tallest building in the world when it opened in 2004, with a height of 1,674 feet; it lost the title to the Burj Khalifa in 2010. The building was originally known as the **Taipei World Financial Center**. The main part of the structure consists of **eight** stacked sections of eight floors each (Chinese numerology considers eight a lucky number); those sections resemble both floors of a **pagoda** as well as ancient Chinese **money boxes** (which themselves inspired the design of modern Chinese take-out containers). The upper floors of the building contain a **tuned mass damper**, a large round structure that absorbs vibrations and keeps the building from shaking during high winds and other inclement weather.

Petronas Towers (Kuala Lumpur, Malaysia; César Pelli, architect; completed 1998)

The Petronas Towers are the world’s tallest **twin towers**, at 1,483 feet each. Upon their completion, they surpassed the (at the time) Sears Tower to become the tallest buildings in the world; they lost that overall title to **Taipei 101** in 2004. The towers are named for Petronas, Malyasia’s government-owned petroleum and gas company, which is headquartered in the towers. Architect Pelli designed the cross-section of the towers to resemble the Islamic symbol of the ***Rub el Hizb***, while their exteriors resemble an ancient **minaret**, a tower attached to a mosque from which a ***muezzin*** issues a call to prayer. The towers are connected by a **skybridge** on their 41st and 42nd floors, allowing visitors to move between them. In the coming years, the towers will be exceeded in height by two other Kuala Lumpur skyscrapers: the slightly taller **Exchange 106** and the massive, 2,185-foot **PNB 118**.

Vista Tower (Chicago; Jeanne Gang, architect; planned completion 2020)

The Vista Tower, located near Chicago’s **Navy Pier**, will be the third-tallest building in Chicago (behind the Willis Tower and the Trump International Hotel and Tower) upon its completion in 2020. When finished, the Vista Tower will be the tallest structure in the world designed by a female architect; the current tallest building designed by a woman, **Aqua**, is just a few blocks from the Vista Tower and was also designed by Gang. The Vista Tower’s design consists of three connected portions of increasing height, with the tallest topping out at a planned 1,191 feet.

**Major works of literature**

* The Murders in the Rue Morgue (1841) by **Edgar Allan Poe**. This story marks the debut of **C. Auguste Dupin**, the predecessor of many future literary genius detectives. The unnamed narrator begins by musing on the unique mental challenges presented by the games of chess and whist, and then recalls how Dupin was once able to **practically read the narrator’s mind** regarding an actor named Chantilly. Both the narrator and Dupin then read newspaper accounts of the murders of two women; the daughter was strangled and **stuffed up a chimney**, while the mother had her throat slashed so deep by a **razor** (also found at the scene) that her head falls off when she is moved. Neighbors testify they heard two voices but one was unidentifiable. Bags of money at the scene lead to the arrest of local **banker Le Bon**; Dupin deduces that, because the money remains, Le Bon is innocent and robbery is not the motive. Offering his services to **a police prefect known as “G,”** Dupin notes the extreme strength required of both murders, the odd language, and tufts of hair. He realizes the murderer was non-human and places a newspaper ad for a missing **orangutan**. A sailor confesses to the crime: he bought an orangutan in Borneo but could not control it, and when he got angry that the orangutan grabbed the razor and mimicked the sailor’s daily shave, the orangutan ran off in a bestial rage and killed the two women.
* The Purloined Letter (1844) by **Edgar Allan Poe**. The police prefect “G” asks for Dupin’s help regarding a devious official known as **“Minister D.”** G believes the minister stole a letter that contains potential blackmail fodder regarding an unnamed but powerful man, and thus a huge reward is offered. However, the police cannot find the letter in Minister D’s lodgings or on his person. One month later, “G” contacts Dupin again after the reward increases to 50,000 francs; Dupin asks for the reward immediately and amazingly produces the letter. Dupin, using a **metaphor about a map game**—in which **players tasked with finding a name on a map** can easily overlook large-print names—says Minister D **hid the letter in plain sight**, putting it amongst a bundle on the mantle. Once hearing of the theft, Dupin went to the apartment, located the letter, and then created a diversion so he could swap the letter with a taunting fake.
* The Moonstone (1868) by **Wilkie Collins**. **Rachel Verinder**’s 18th birthday party is marred by the theft of the Moonstone, a **sacred gem plundered from India** that Rachel had just inherited. Suspicion falls on a **trio of Indian jugglers**, but also on Rachel herself, who behaves oddly and breaks off her engagement with **Franklin Blake** when Franklin leads the search. The maid **Rosanna Spearman** is also suspected, especially after she commits suicide by **jumping into quicksand**. Local inspector **Sergeant Cuff** cannot solve the mystery, but one year later, Franklin returns from abroad and learns that Rosanna, who was secretly in love with him, began impeding the investigation after a **paint smudge** made her suspect he was the thief. Franklin then meets with Rachel, who claims she saw Franklin steal the Moonstone but never told anyone to save their reputations. Eventually, Franklin learns that he was secretly **fed laudanum** at the party by **Dr. Candy**, and while in a drugged stupor took the Moonstone to protect it. The Moonstone later turns up for sale, upon which it is stolen by the trio of Indians. The Indians also kill the seller, who is revealed to be **Godfrey Ablewhite**, another party guest whose personal debts prompted him to keep the Moonstone when the drugged Franklin gave it to him. Other characters who narrate portions of the book include **Miss Drusilla Clack**, an Evangelical who constantly hands out moralizing **tracts**; **Gabriel Betteredge**, a servant obsessed with ***Robinson Crusoe***; and Dr. Candy’s **opium**-addicted assistant **Ezra Jennings**, an odd man with multi-colored hair.
* The Final Problem (1893) by **Sir Arthur Conan Doyle**. The **Sherlock Holmes** stories made Doyle a celebrity, but Doyle, feeling cheapened by the work, decided to **kill off Holmes** in this story. The story begins with Watson welcoming in a bleeding Holmes, who recounts that **Professor Moriarty**—Holmes’s alleged archnemesis, despite first appearing in this story—has just tried to kill Holmes via a **staged car accident**, a **falling brick**, and an **armed thug**. Holmes plans to go to Europe to defeat Moriarty without alerting him; however, despite Holmes **disguising himself as an Italian priest** and giving Watson circuitous, Moriarty tails them by rail, though Holmes and Watson evade him. In Strasbourg, Holmes learns that Scotland Yard has busted Moriarty’s organization but have failed to catch the man himself, leading Holmes to continue to Switzerland. During a hike to the **Reichenbach Falls**, a messenger tells Watson that a sick woman at their hotel needs a doctor; Holmes knows this is a trap laid by Moriarty but says nothing. Finding no such woman, Watson rushes back to the falls, where footprints and signs of a struggle convince him that Moriarty found Holmes and, during a fight, both **fatally tumbled over the waterfall**.
* The Hound of the Baskervilles (1902) by Sir Arthur Conan Doyle. This novel was the first Holmes story to appear after “The Final Problem.” Holmes is solicited by **James Mortimer**, whose friend **Charles Baskerville** recently died in **terror**, with nearby canine footprints consistent with a myth about a **hellish hound** who kills Baskerville heirs. The next heir, **Henry**, is almost shot by a bearded pursuer in London, leading Holmes to send Watson to Baskerville Hall to protect Henry while he investigates. At the estate on the moors, Watson learns that two neighbors, the **Stapleton siblings**, are behaving oddly, as are the Baskerville servants, the **Barrymores**, and **Laura Lyons**, the woman Charles was supposed to meet the night of his death. Watson learns that Mr. Barrymore is skulking around to secretly aid his brother, an **escaped convict**, and discovers through Laura that a shadowy figure walking the moors at night is actually Holmes, laying low. Holmes discovers that Laura was used by Jack Stapleton to lure Charles onto the moors, where Stapleton—a distant heir of the Baskervilles—killed Charles with his huge pet dog. Holmes and Watson then use Henry as bait; the ruse works, and they kill Stapleton’s dog, who has been painted with **phosphorus** to appear spectral. Stapleton drowns in the **Grimpen Mire** while fleeing, and Holmes and Watson learn Stapleton’s supposed “sister” is actually his wife, who refused to help her villainous husband.
* The Maltese Falcon (1930) by **Dashiell Hammett**. This classic of the **“hard-boiled”** genre follows **Sam Spade**, a San Francisco private eye hired by **“Ms. Wonderly”** to tail **Floyd Thursby**, with whom her sister has eloped. The next day, Sam’s partner **Miles Archer** is found dead, shot by Thursby, who is also dead. The cops suspect Spade, who is sleeping with Archer’s wife. Spade learns that “Ms. Wonderly” is actually **Brigid O’Shaughnessy**, a woman hunting for a priceless **statuette** called the Maltese Falcon alongside the obese **Caspar Gutman** and a homosexual Middle Easterner named **Joel Cairo**. At a private meeting in which Gutman explains how Brigid, Thursby, and Cairo found the Falcon in **Constantinople**, Spade suddenly faints, having been drugged by Gutman. Spade returns to his office, where a **ship captain** gives him a package containing the falcon, then dies. Brigid calls, urgently requesting Spade’s help, but Spade returns home only to find Brigid, Gutman, and Cairo waiting, demanding the Falcon. Spade reminds them that one of them will be pegged for the murders, and they turn on each other. Gutman decides his **bodyguard, Wilmer**, will be the patsy, but when they discover the Falcon is a fake, Wilmer escapes. Cairo and Gutman leave to find the real Falcon, but Spade doesn’t let Brigid go, certain she cannot be trusted. She confesses she shot both Archer and Thursby but is in love with Spade; Spade, refusing to **“play the sap”** for her, turns her over to the cops, who report that Wilmer has just murdered Gutman. The novel’s 1941 film adaptation, starring **Humphrey Bogart**, is considered a ***film noir*** masterpiece.
* The Big Sleep (1939) by **Raymond Chandler**. Wealthy patriarch **General Sternwood** hires private eye **Philip Marlowe** to help his daughter **Carmen**, who is being blackmailed by bookseller **Arthur Geiger**. Sternwood also worries about **Regan**, his daughter Vivian’s **missing husband**. Pretending to be a gay book collector, Marlowe learns that Geiger’s bookstore is a **pornography** front, and after staking out Geiger’s home, he hears gunshots and sees two cars speeding away. Geiger is dead, and Carmen Sternwood is naked and drugged in front of a camera from which the film has been taken. The next day, Sternwood’s **chauffeur** is found dead in a car driven off a pier. Marlowe meets with **Joe Brody**, who is taking over Geiger’s bookstore, when Carmen busts in with a gun, demanding the photographs in Brody’s possession. Marlowe forces her to leave, then learns the chauffeur killed Geiger to protect Carmen from disrepute; Brody, also spying on Geiger that night, pursued and killed the chauffeur. Geiger’s homosexual lover then arrives and kills Brody, thinking Brody killed Geiger. With the case seemingly solved, Marlowe still wonders about Vivien’s missing husband Regan, as well as the **missing wife** of **Eddie Mars**, a criminal who backed Geiger’s business. Carmen and Vivien each try to seduce Marlowe while Marlowe investigates those disappearances. On returning to Sternwood’s house, Carmen asks Marlowe to **teach her to shoot**; at the lesson, she tries to shoot Marlowe, but Marlowe put blanks in the gun. This proves Marlowe’s theory: Carmen is a **nymphomaniac** who killed Regan when he spurned her advances. Vivien admits she hid the body and lied to save her father from shame, and she promises to put Carmen in an asylum.
* Murder on the Orient Express (1934) by **Agatha Christie**. This novel features Christie’s popular Belgian detective **Hercule Poirot**, who is snowbound on the **title train** in the Balkans when a passenger named **Samuel Ratchett** is found **stabbed to death**. Thanks to a scrap of paper in Ratchett’s compartment referencing **“little Daisy Armstrong,”** Poirot realizes Ratchett is actually **Lanfranco Cassetti**, a man who was acquitted on technicality of **kidnapping and murder** (a crime inspired by the real-life kidnapping of **Charles Lindbergh’s baby**). Poirot discovers that all the passengers—including former Russian princess **Natalia Dragomiroff**—are concealing their pasts and each had a motive to kill Cassetti, and Poirot correctly deduces that ***all of them*** stabbed Cassetti. However, Poirot’s alternate theory, that a **stranger** entered the snowbound train and randomly killed Ratchett, is the one presented to local authorities.
* And Then There Were None (1940) by **Agatha Christie**. This novel is an example of a **“country house mystery,”** a genre popularized by Christie in which possible suspects are limited due to the crime’s isolated locale. The novel concerns **ten murderers** who have escaped justice and who are invited to an **island mansion**. After a **mysterious record** accuses each guest of their crimes, they begin turning up dead one by one. **Vera Claythorne** and **Philip Lombard** are the final two survivors; Vera, suspecting Philip of being the killer, shoots him dead, then returns to her room and hangs herself. The novel ends with a fisherman recovering a **message in a bottle** written by **Justice Wargrave**, one of the victims, who confesses he orchestrated all the killings in the name of **“true justice.”** The novel was previously published under the title ***Ten Little Indians*** and an even earlier title that included a racial slur and was taken from a popular **minstrel** song whose lyrics—which allude to each victim’s death—are **framed and hung in the mansion’s bedrooms**.
* The Name of the Rose (1980) by **Umberto Eco**. This mystery is set in 1327 at a Catholic conference to resolve a potential heresy. **William of Baskerville** and his novice, **Adso of Melk**, are tasked with investigating the death of the comical **manuscript artist Adelmo**. The abbey’s **librarian, Malachi**, bars the two men from entering a **mysterious, labyrinthine library**, so they meet with **Jorge of Burgos**, a **blind monk who hates laughter**. The next day, after the monk **Venantius** is found dead in a vat of **pig blood**, William and Adso find that both victims had sought out a book from a secret room called the ***Finis Africae***. Upon breaking into the labyrinth, they find odd writings left by Venantius; later, the monks discover that Venantius’s fingers and tongue were **stained black**. Eventually, William and Adso realize the letters above rooms in the library spell out regions of the world, and they locate the *Finis Africae* **behind a mirror**. As the conference ramps up, a monk named **Severinus** tells William about an odd book in his own library, but he is murdered before he can say more and the book goes missing. On the sixth day, Malachi is killed; his tongue and fingers are also black. On the final day of the conference, William and Adso enter the *Finis Africae* and find Jorge of Burgos within. Severinus’s secret book is a **sequel to Aristotle’s *Poetics***, whose thoughts on comedy will undermine Christianity. Jorge **poisoned the pages**, knowing any reader would lick his fingers to turn them. Jorge then **eats the manuscript**, killing himself, but not before using Adso’s lantern to set the library ablaze. William and Adso escape.

**Major Places in Greece**

* Argos, a city-state or polis, was a major rival of Sparta. Both were on a large peninsula known as the Peloponnese. Argos came to prominence in the 7th century BC under King Pheidon, who is sometimes credited with developing the use of citizen-soldiers known as hoplites in rectangular phalanx formations.
* Athens is on the peninsula of Attica, across the Saronic Gulf from Corinth. Athens is often called the birthplace of democracy. Its political institutions included the ecclesia, an assembly open to all male citizens, which elected officials and enacted legislation; and the boule, a group of male citizens chosen by lot who served for a year at a time. The boule oversaw day-to-day operations of the government, and set the agenda for the ecclesia. The size of the boule and the functions of both assemblies changed due to constitutional reforms enacted by Solon, Cleisthenes, Ephialtes, and Pericles. The ecclesia could banish a citizen for ten years, a practice known as ostracism. The rise to power of Athens during the Persian Wars sparked the Peloponnesian War, which Athens lost.
* Corinth’s location—on the land route to the Peloponnese, and with a placement at the Isthmus of Corinth that allowed it to have harbors on the Saronic and Corinthian Gulfs—made it a major trade center. The tyrant Periander is credited with building the Diolkos, a four- to five-mile long paved track across the Isthmus that allowed transport of ships and heavy goods much faster than could be achieved by sailing all the way around the Peloponnese.
* Delphi was a sacred site on the Greek mainland, which the Greeks thought was the center of the world. A major temple to Apollo at Delphi housed the Oracle of Delphi, a priestess known as the Pythia (a title that commemorates Apollo’s slaying of the snake Python at Delphi). Every four years, Delphi hosted the Panhellenic Pythian Games, which were second only to the Olympic Games in importance.
* Knossos is an archaeological site on the island of Crete that contains remains from the Neolithic to the late Bronze Age. Knossos became the center of the Minoan civilization. In 1900 British archaeologist Sir Arthur Evans began excavating its large palace complex, which yielded a large trove of tablets inscribed in Linear A (still undeciphered) and Linear B (shown to represent an ancient form of Greek, but written long before the development of the Greek alphabet).
* Olympia is on the Peloponnese. Like Delphi, Olympia was a major Panhellenic sacred site. The cult statue in its Temple of Zeus was one of the Seven Wonders of the Ancient World. The site also had athletic facilities for the Olympic Games held every four years.
* Sparta was for many years the predominant polis of the Peloponnese. Sparta was led by two kings, one each from the Agiad and Eurypontid families. The constitution of Lycurgus established the Gerousia, a council of elected elders plus the kings, which functioned as a high court and decided which matters to forward to the popular assembly, or apella (the analogue of the ecclesia of other city-states). The two kings were also joined by five annually elected ephors, who had broad executive powers. Sparta beat its rival Athens in the Peloponnesian War in the late 5th century BC, but lost its position as the leading military power in all of Greece to Thebes in 371 BC.
* Syracuse was a major Greek colony on Sicily, founded by colonists from Corinth and Tenea. Its forces crushed the Sicilian Expedition of Athens, which proved to be the decisive turning point of the Peloponnesian War. Some 200 years later, the great scientist Archimedes died during the Roman takeover of Syracuse.
* Thebes was the main city of Boeotia, a region of the southern Greek mainland just west of Attica. Thebes allied with Sparta during the Peloponnesian War, but the two cities quickly became enemies following the war. Thebes established the Sacred Band, an elite force of 300 soldiers consisting of pairs of male lovers, and broke the hegemony of Sparta at the 371 BC Battle of Leuctra. However, Thebes fell from power quickly, fighting on the losing side at the 338 BC Battle of Chaeronea against the Macedonians led by Philip II, and the city was destroyed three years later by Alexander the Great following an unsuccessful revolt.

**Roman Emperors**

* Augustus (63 BC–AD 14, reigned 27 BC–AD 14) was the first **Roman emperor**. Born Gaius Octavius, he was the grandnephew and heir of **Julius Caesar**. After Caesar was assassinated, Octavian formed the **Second Triumvirate** with **Marc Antony** and **Marcus Lepidus** to defeat Caesar’s assassins. With the help of **Marcus Agrippa**, he sidelined Lepidus and defeated Antony at the **Battle of Actium** to seize the empire. Ruling as **princeps**, or first citizen, Augustus created the **Praetorian Guard** and added **Egypt** to the empire, but halted expansion into Germania after a crushing defeat at the **Battle of Teutoburg Forest**.
* Tiberius (42 BC–AD 37, reigned AD 14–AD 37) was Augustus’s stepson. During his father’s reign, Tiberius led the conquests of **Pannonia** and **Raetia** in central Europe and became the imperial heir with the support of his mother **Livia**. Unhappy as emperor, he mostly resided in his island **villa on Capri** and left **Lucius Sejanus** to manage the state. However, when Sejanus attempted to seize power in AD 31, Tiberius had him arrested and executed. Tiberius was emperor when **Jesus** of Nazareth was crucified in AD 33.
* Caligula (AD 12–AD 41, reigned AD 37–AD 41) was the son of **Germanicus**, Tiberius’s popular nephew, and earned the nickname “Caligula,” or **little boot**, from his father’s soldiers. Though initially moderate, Caligula became increasingly tyrannical, supposedly trying to build a palace on Lake Nemi and to **make his horse, Incitatus, a consul**. In AD 41, **Cassius Chaerea** led a conspiracy of senators and Praetorian guards that killed Caligula and his immediate family.
* Claudius (10 BC–AD 54, reigned AD 41–54 BC) was Caligula’s uncle. A noted **scholar**, he was the last person able to read **ancient Etruscan**. He oversaw the **conquest of Britain** and centralized power through a bureaucracy featuring talented freedmen like **Tiberius Narcissus**. In AD 49, Claudius married his niece **Agrippina the Younger**, who then **poisoned** both Claudius’s son **Britannicus** and the Emperor himself.
* Nero (AD 37–AD 68, reigned 54 BC–AD 68) was the son of **Agrippina the Younger**. Nero provoked scandal by performing as an **actor** and **musician**. He ordered his mother’s death in AD 58, and ordered the deaths of **Seneca the Younger** and several others after the **Pisonian Conspiracy**. Nero supposedly **“fiddled” during the Great Fire of Rome** and **persecuted Christians** after it. In AD 68, he was deposed by the Senate and committed suicide.
* Trajan (AD 53–AD 117, reigned AD 98–AD 117) led Rome to its **greatest territorial extent**. After succeeding **Nerva**, Trajan defeated **Decebalus** to conquer the rich Kingdom of **Dacia** (modern-day Romania). He employed **Apollodorus of Damascus** to build **Trajan’s Column** and **Trajan’s Bridge** across the Danube. Near the end of his reign, Trajan invaded the **Parthian Empire**, sacking its capital of Ctesiphon and **annexing Armenia and Mesopotamia**.
* Hadrian (76–138, reigned 117–138) was Trajan’s younger cousin who succeeded him as emperor. At the start of his reign, he **withdrew from Trajan’s conquests** in the east. While traveling in **Greece**, he joined the **Eleusinian Mysteries**; while visiting Egypt, his beloved companion **Antinous** drowned in the Nile. He also commissioned **Hadrian’s Wall** to mark the border of Roman Britain and crushed the **Bar Kokhba revolt** in Judea.
* Marcus Aurelius (121–180, reigned 161–180) was the last of Rome’s **“Five Good Emperors.”** With **Lucius Verus**, Marcus inherited the throne from his uncle **Antoninus Pius** and secured a decisive victory over the **Parthian Empire**. Marcus then spent much of his reign dealing with the **Antonine Plague** and fighting the **Marcomannic Wars**. During this time he wrote the ***Meditations***, a journal and major text of **Stoic philosophy**.
* Diocletian (244–305, reigned 284–305) stabilized the empire after the **Crisis of the Third Century**. He took power by defeating **Carinus** at the **Battle of the Margus** before creating the **Tetrarchy**, a new system of imperial rule with two senior emperors and two junior emperors. He unsuccessfully attempted to curb inflation with his **Edict on Maximum Prices** and led the **last and largest persecution of Christians**. In 305, he became the first emperor to **voluntarily step down**, retiring to his palace in Split, Croatia.
* Constantine (272–335, reigned 306–335) was the son of **Constantius Chlorus**, one of the junior members of Diocletian’s Tetrarchy. Proclaimed emperor by his father’s men, Constantine **defeated Maxentius** at the **Battle of Milvian Bridge** to seize Italy and then defeated his brother-in-law **Licinius** to win the east. He proposed the **Edict of Milan** giving tolerance to Christians and oversaw the Christian **Council of Nicea**. Constantine also converted the city of **Byzantium** into **Constantinople**, the capital of the Eastern Roman Empire for the next 1,100 years.

**Honorable Mention**

* Vespasian (AD 9–AD 79, reigned AD 69–AD 79) emerged from the Year of the Four Emperors in AD 69 to found the Flavian Dynasty, and later commissioned the Colosseum.
* Septimius Severus (145–211, reigned 193–211) triumphed in the Year of the Five Emperors and founded the Severan dynasty. He was the first emperor to be born in Africa.
* Aurelian (215–275, reigned 270–275) reconquered the territory lost during the Crisis of the Third Century by defeating Zenobia of the Palmyrene Empire and retaking Gaul and Britain.
* Theodosius (347–405, reigned 379–405) was the last man to rule both the eastern and western halves of the empire.
* Romulus Augustulus (460–507, reigned 475–476) is traditionally regarded as the last “Roman emperor.” He was deposed in 476 by Odoacer, marking the end of the Western Roman Empire.

**Major Post-modern Literature**

* Vladimir Nabokov (1899–1977) was a Russian-American author. His 1955 novel ***Lolita*** depicts **Humbert Humbert**’s obsession with the adolescent **Ramsdale** resident **Dolores Haze**, whom Humbert nicknames “Lolita.𕢝 Humbert becomes Lolita’s stepfather by marrying her mother **Charlotte**, who soon dies. Lolita and Humbert travel the U.S. before Humbert enrolls Lolita at the **Beardsley School for Girls**. There, Lolita is cast in a play written by **Clare Quilty**, and devises a plan of escape. In Nabokov’s highly meta-fictional novel ***Pale Fire***, a **999-line poem** of the same name by **John Shade** is the subject of a lengthy commentary by the scholar **Charles Kinbote**. However, Kinbote’s notes are more concerned with himself than with the poem, revealing that he thinks of himself as King Charles, the exiled monarch of the land of **Zembla**. Nabokov’s other books include the novels ***Ada, or Ardor***, which recounts an **incestuous** relationship; ***Invitation to a Beheading***, about the condemned prisoner **Cincinnatus**, and ***The Defense***, a Russian-language novel about the chess player **Aleksandr Luzhin**. In his memoir ***Speak, Memory***, Nabokov wrote about his wife **Vera** and his scientific interest in **butterflies**.
* Jorge Luis Borges BOR-hayss (1899–1986) was an Argentine short story writer who often dealt with **meta-fictional themes**. His story **“The Library of Babel”** depicts an **infinite library** made up of **hexagonal rooms**, which contain every possible **410-page book**. In **“Pierre Menard, Author of the Quixote,”** the fictional 20th-century author Pierre Menard writes a **line-by-line reproduction** of Cervantes’s ***Don Quixote***, which is much more interesting than the original because of the historical context in which the new version was produced. Borges’s story **“Tlön, Uqbar, Orbis Tertius”** describes an imaginary realm, created by a **secret society of intellectuals**, that gradually intrudes into the world of the story. **“The Aleph”** is named after a **point** from which every other point in the universe can be perceived. Many of Borges’s best-known stories appeared in the collections ***Ficciones*** and ***Labyrinths***, the latter of which is named after a common motif in Borges’s work. For example, in **“The Garden of Forking Paths”** the author **Ts’ui Pên** tries to create a metaphorical “labyrinth” by writing a novel in which every event is followed by every possible outcome. The story is narrated by Ts’ui Pên’s descendent, **Dr. Yu Tsun**, who kills the Sinologist **Stephen Albert** to convey a coded message to German forces during World War I.
* Kurt Vonnegut (1922–2007) was an American novelist best known for the 1969 novel ***Slaughterhouse-Five***. The novel centers on **Billy Pilgrim**, who experiences his life out of order after becoming **“unstuck in time.”** Like Vonnegut, Billy survives the **firebombing of Dresden** during World War II. Billy is also **kidnapped** by aliens called **Tralfamadorians**, and displayed in a **zoo** along with the actress **Montana Wildhack**. The Tralfamadorians have a fatalistic attitude towards mortality, which is mirrored in the novel’s repetition of the phrase **“so it goes”** after any mention of death. Vonnegut’s earlier novel ***Cat’s Cradle*** describes a fictional religion called **Bokononism**, which was founded on the Caribbean island of **San Lorenzo**. The plot of *Cat’s Cradle* partly focuses on **ice-nine**, a substance invented by **Felix Hoenikker** that has the power to destroy all life on Earth.
* Italo Calvino (1923–1985) was an Italian author. In his 1979 novel ***If on a winter’s night a traveler***, the even-numbered sections are presented as the **first chapters** of a number of different books, each of which breaks off abruptly at a climactic moment. The odd-numbered sections are addressed in the second person to **“You,”** the reader of “Italo Calvino’s new novel, *If on a winter’s night a traveler*.” You and a fellow book-lover named **Ludmilla** investigate oddities in the novels you are reading, in the process encountering a best-selling author named **Silas Flannery**, the deceitful translator **Ermes Marana**, and a scholar of **Cimmerian** literature named **Professor Uzzi-Tuzii**. Calvino’s novel ***Invisible Cities*** is framed as a conversation between **Kublai Khan** and **Marco Polo**, who describes 55 fictional cities to the Mongol ruler. Calvino is also known for his fantastical short stories, some of which are collected in the volume ***Cosmicomics*** and narrated by an ancient being named **Qfwfq**.
* Joseph Heller (1923–1999) was an American novelist. He **satirized** **Army bureaucracy** in his novel ***Catch-22***, which was based on his experiences as a **bombardier** on the **Italian front** during World War II. The novel is set in Rome and on the Mediterranean island of **Pianosa**, where **John Yossarian** is stationed with the **256th Squadron**. “Catch-22” is a rule stating that airmen do not have to fly missions if they are **insane**, but that applying to be excused from flying missions is **proof of sanity**; consequently, there is no way to avoid the dangerous missions. Characters in the novel include the arch-capitalist mess officer **Milo Minderbinder**, who sets up a syndicate called **M&M Enterprises**, and **Major Major Major**, who is accidentally promoted to the rank of major because of his unusual name. The novel’s main antagonist is **Colonel Cathcart**, who continually raises the number of missions that airmen must fly before they are allowed to go home. In 1994 Heller wrote a sequel to *Catch-22*, titled ***Closing Time***.
* Don DeLillo (born 1936) is an American author. His 1985 breakout novel ***White Noise*** is narrated by **Jack Gladney**, a professor of **“Hitler Studies”** at a Midwestern college. After a chemical spill results in an **“Airborne Toxic Event,”** Jack’s wife **Babette** begins taking a mysterious drug called **Dylar**. Three years later DeLillo published ***Libra***, a novel about assassin **Lee Harvey Oswald**’s participation in a fictional **conspiracy** against John F. Kennedy. DeLillo also wrote the 1997 novel ***Underworld***, in which the **waste management** executive **Nick Shay** buys the baseball that was hit by New York Giants player Bobby Thomson in the 1951 **“Shot Heard ’Round the World.”**
* Thomas Pynchon (born 1937) is a **reclusive** American novelist. His 1973 novel ***Gravity’s Rainbow*** follows **Tyrone Slothrop**, a lieutenant in World War II whose sexual encounters seem to predict the locations of future **V-2 rocket strikes**. A number of characters in the novel are trying to find the secret of a mysterious device called the **Schwärzgerat**, which is to be installed in a rocket with the **serial number 00000**. Pynchon also wrote ***The Crying of Lot 49***, in which **Oedipa Maas** suspects that she has become entangled in an ancient conflict between the **Thurn und Taxis** and **Trystero** mail delivery services. Other Pynchon novels include ***V.***, in which **Herbert Stencil** searches for the mysterious title entity, and ***Inherent Vice***, about the Los Angeles private investigator **Doc Sportello**.
* Salman Rushdie (born 1947) is a novelist born in India, who holds British and American citizenship. Rushdie’s 1981 Booker Prize-winning novel ***Midnight’s Children*** follows **Saleem Sinai**, a man with an enormous nose who is born at precisely the moment that **India becomes independent**, giving him **telepathic powers**. Other members of the novel’s title group—the people born within an hour of independence—include **Shiva**, a child with enormous **knees**, and the magical **Parvati-the-witch**. Rushdie’s 1988 novel ***The Satanic Verses*** begins as the actors **Gibreel Farishta** and **Saladin Chamcha** are miraculously saved after their **plane explodes** over the English Channel. Upon being betrayed by Gibreel, Saladin seeks revenge by ruining Gibreel’s relationship with the mountaineer **Allie Cone**. *The Satanic Verses* was condemned in a ***fatwa***, or religious decree, issued by Iranian leader **Ayatollah Khomeini**. The *fatwa* accused Rushdie of **blasphemy**, and ordered Muslims to kill Rushdie, his editors, and his publishers. In 1998, Iran agreed not to actively seek Rushdie’s death. Rushdie described his years of hiding in the memoir ***Joseph Anton***; the title refers to the pseudonym that Rushdie adopted, which was inspired by the authors Joseph Conrad and Anton Chekhov. Rushdie’s other novels include ***The Moor’s Last Sigh***, which is narrated by the swiftly aging **Moraes Zogoiby**; ***The Ground Beneath Her Feet***, which was loosely inspired by the legend of **Orpheus**; and the young adult books ***Haroun and the Sea of Stories*** and ***Luka and the Fire of Life***.
* David Foster Wallace (1962–2008) was an American author. His massive 1996 novel ***Infinite Jest*** depicts a future North America in which **years are named after corporate products**. The novel is set mainly at the **Ennet House Drug and Alcohol Recovery House** and the **Enfield Tennis Academy** (where **Hal Incandenza** is a student). Hal’s father, James, directs **“the Entertainment,”** a dangerously enthralling film sought by **Quebeçois terrorists** known as the **Wheelchair Assassins**. Wallace’s other novels are ***The Broom of the System*** and ***The Pale King***, the latter of which was left **unfinished** at his 2008 **suicide**. Wallace is also known for his essay collections, including ***Consider the Lobster*** and ***A Supposedly Fun Thing I’ll Never Do Again***.
* Zadie Smith (born 1975) is a British novelist. Her 2000 debut novel ***White Teeth*** depicts the Bengali Muslim **Samad Iqbal** and his English friend **Archie Jones**, who both live in London. Samad’s son **Magid** becomes an **atheist** scientist who joins **Marcus Chalfen**’s project to develop a genetically modified **“FutureMouse,”** while Magid’s twin brother **Millat** joins a Muslim fundamentalist group called **KEVIN** (Keepers of the Eternal and Victorious Islamic Nation). Both twins sleep with Archie’s daughter, **Irie**. Smith’s other novels include ***NW***, which takes place in northwest London; ***Swing Time***, which describes a troubled dancer named **Tracey**; and the academic novel ***On Beauty***, which is loosely based on E. M. Forster’s novel ***Howards End***.

**Civil Right Leaders**

* Stokely Carmichael (1941–1998) was a leader of the **Pan-African movement** and the **Black Power movement**, who popularized the use of the term “Black Power.” He replaced **John Lewis** as chair of **SNCC**; under his leadership, SNCC shifted from a policy of nonviolence to a more militant approach. He served as **“honorary Prime Minister”** of the **Black Panther Party**, but later distanced himself from that movement because he didn’t believe that white activists should be allowed to participate. He ended up changing his name to **Kwame Ture** (in honor of Ghanaian President Kwame Nkrumah and Guinean President Ahmed Sekou Touré) and moving to **Guinea**.
* Shirley Chisholm (1924–2005) was a Democratic politician from New York who achieved a number of firsts. In 1968, she was the **first black woman elected to Congress**. In 1972, she became both the **first black major-party presidential candidate** and the first woman to run for the Democratic Party’s presidential nomination. (**Margaret Chase Smith** had run for the Republican nomination in 1964.) In 1970, Chisholm gave an acclaimed speech in support of the **Equal Rights Amendment**.
* Medgar Evers (1925–1963) was the **NAACP**’s field secretary for Mississippi, in which capacity he planned boycotts and grassroots civil rights organizations. He advocated ending segregation at the **University of Mississippi**; after *Brown v. Board of Education* ruled that segregated public schools were unconstitutional, he applied to law school there, but was rejected because he was black. In 1963, he was assassinated by **Byron De La Beckwith**, a member of the white supremacist network **White Citizens’ Councils**.
* Jesse Jackson Sr. (1941–) is a civil rights activist and politician who began as a protégé of Martin Luther King, Jr. He helped organize **Operation Breadbasket**, a department of the **SCLC** focused on economic issues. Jackson also worked on the **Poor People’s Campaign** after King’s assassination, but he clashed with King’s appointed successor, **Ralph Abernathy**. He founded the civil rights organizations **Operation PUSH (People United to Save Humanity)** and the **National Rainbow Coalition**, which later merged to form the **Rainbow/PUSH Coalition**. He also ran for the Democratic presidential nomination in 1984 and 1988. His son **Jesse Jackson Jr.** was a congressman from Chicago before serving prison time for financial corruption.
* Martin Luther King Jr. (1929–1968) was a Baptist minister and the most prominent leader of the civil rights movement in the 1950s and ’60s. He delivered the **“I Have a Dream” speech** at the 1963 **March on Washington**. As leader of the **Southern Christian Leadership Conference (SCLC)**, he joined with members of the **Student Nonviolent Coordinating Committee (SNCC)** to organize the **Selma-to-Montgomery marches**. His leadership of the **Poor People’s Campaign** was cut short in 1968 when **James Earl Ray** assassinated him at the **Lorraine Motel** in **Memphis**.
* James Meredith (1933–) became the first African-American person admitted to the **University of Mississippi** in 1962. Two people died in the riots sparked by his enrollment. In 1966, Meredith began the **March Against Fear**, planning to walk from Memphis to Jackson. On the second day, he was wounded by a sniper; thereafter, thousands of other civil rights activists completed the march in his name.
* Rosa Parks (1913–2005) was arrested for refusing to give up her seat on a **bus** in Montgomery, Alabama, in 1955, disobeying driver **James F. Blake**’s order to move to the “colored section” of the bus. She collaborated with **Edgar Nixon** and other leaders of the **NAACP (National Association for the Advancement of Colored People)** to organize the **Montgomery bus boycott**, which lasted from December 1955 (four days after her arrest) until December 1956.
* Al Sharpton (1954–) is a Baptist minister and community leader from New York City. He is also a **perennial political candidate** who has run for the U.S. Senate, mayor of New York City, and president of the U.S. Sharpton began his activism career working under Jesse Jackson as part of Operation Breadbasket. He has been at the center of many controversies. In 1987, he helped handle publicity for **Tawana Brawley**, who falsely accused four white men of having raped her. Sharpton was also accused of making **anti-Semitic** remarks during the 1991 **Crown Heights riot**, a racial riot in which Jews were attacked after two children were injured by the motorcade of the leader of the Chabad-Lubavitch movement.
* Ida B. Wells (1862–1931) was an early **investigative journalist** and civil rights leader who helped found the **NAACP**. In the 1890s she investigated **lynching**, arguing that it was a form of controlling black communities rather than retribution for criminal acts. She documented the results of her research in pamphlets such as ***Southern Horrors*** and ***The Red Record***. She accused **Frances Willard**, the president of the **Woman’s Christian Temperance Union**, of turning a blind eye to lynching.
* Malcolm X (1925–1965) was a black **Muslim** civil rights activist who changed his name from **Malcolm Little** upon converting to the **Nation of Islam**. He later repudiated the Nation of Islam and became a mainstream **Sunni** Muslim, completing the *hajj* in 1964. He was known for rejecting nonviolent activism, arguing in his speech **“The Ballot or the Bullet”** that violence might be necessary if the government continued to suppress the rights of African Americans. In 1965, he was assassinated while preparing to give a speech at the **Audubon Ballroom**.

**Mountains**

* Mount Everest (China and Nepal): The border between Nepal and China straddles the summit of the **Himalayan** peak Mount Everest, which, at a height of over **29,000 feet**, is the **tallest mountain in the world**. The **Khumbu Icefall** and the cliff-like **Three Steps** are hazards faced by potential climbers of Everest. It was first summited by **Sir Edmund Hillary** and **Tenzing Norgay** in 1953. Local **Sherpas** act as guides for mountaineers in the area, though they walked out of the job over dangerous working conditions in 2014 after 16 of them were killed in an avalanche.
* K2 (Pakistan and China): **Qogir**, **Ketu**, and **Mount Godwin-Austen** are other names for K2, whose most common names come from the fact that it is the **second-tallest mountain in the world**. The “K” in K2 stands for **Karakoram**, the mountain range in Pakistan and China in which the peak is found. The **House’s Chimney** and the **Black Pyramid**are features of K2, which also possesses a different second-place record, behind the Annapurna Massif: it boasts the **second-highest fatality rate** among attempted climbers of any mountains above 8,000 meters.
* Denali (United States): Formerly and often called **Mount McKinley**, Denali is the **highest mountain in North America**. It is in south-central **Alaska**, in Denali National Park. The **West Buttress route** is considered the best path to ascend Denali. **Frederick Cook**, a man notorious for having faked the discovery of the North Pole, is now believed to have also **faked his ascent** of the mountain in 1906 as well, leaving a climbing party seven years later with the honor.
* Mount Mitchell (United States): The **Black Mountain** subrange of the **Appalachians** is the location of Mount Mitchell, the **tallest peak in the United States east of the Mississippi**. This mountain, in North Carolina, was the subject of a debate over its altitude between its namesake and **Thomas Clingman**, leading **Elisha Mitchell** to attempt another ascent in which he fell to his death.
* The Matterhorn (Switzerland and Italy): **Edward Compton** and **John Ruskin** are among the **artists inspired by** the Matterhorn, which is renowned for its almost perfectly **pyramidal shape**. The mountain is on the border between Switzerland and Italy, near the Swiss town **Zermatt**. It was first climbed in 1865 by **Edward Whymper**; four people died in that ascent.
* Mount Kilimanjaro (Tanzania): **Kibo**, **Mawenzi**, and **Shira** are the three summits of Mount Kilimanjaro, the **tallest mountain in Africa**. It is notable for also being the **tallest mountain that is not part of a mountain range**, having been formed by a now-**extinct volcano**. A corpse of a leopard is found on top of the mountain in **“The Snows of Kilimanjaro,”** a short story by **Ernest Hemingway** that uses the mountain as the backdrop for the memories, and ultimately the death, of a writer suffering from gangrene.
* Mount Kenya (Kenya): The **second-tallest mountain in Africa** is Mount Kenya, which shares its name with the country in which it is located. British geographer and political theorist **Halford Mackinder** led the first group to ascend the peak, which bypassed the **Darwin Glacier** and proceeded up the **Diamond Glacier**. Like Kilimanjaro, it was formed by a now-**dormant volcano**, and, like Kilimanjaro, part of its notoriety rests on a book. ***Facing Mount Kenya***, an anthropological study of the **Kikuyu people** by **Jomo Kenyatta**, was one of the first such texts by an African ethnographer to gain fame.
* Mount Kosciuszko (Australia): The name of **Tadeusz Kosciuszko**, the Polish commander who fought in the American Revolutionary War, was appended to the **tallest mountain in Australia** by European explorers in the 19th century. When it was discovered that **Mount Townsend** was actually taller, the **names were switched** so that Kosciuszko would remain the highest peak on the continent. The peak’s name in Aboriginal languages, such as **Jagungal** or **Tackingal**, translates to **“table-top mountain.”**
* Mount Fuji (Japan): **Yamanaka** and **Kawaguchi** are two lakes found along the slopes of Mount Fuji, the **tallest mountain in Japan**. It is only about an hour’s drive from Tokyo, and has significance in the Shinto religion, being sacred to the goddess **Sengen-Sama**. The mountain was also depicted in the series of prints ***Thirty-Six Views of Mount Fuji***, drawn by **Hokusai**.
* Mount Aconcagua (Argentina): The **subduction of the Nazca Plate** formed Mount Aconcagua, the **highest point in the Southern Hemisphere**. It is near the city **Mendoza** in **Argentina**, and straddles the **Polish Glacier**, which provides a popular route for climbers looking to summit it.

**Elements**

* Hydrogen (atomic symbol H, atomic number 1) is the first element on the periodic table and, by far, the **most common element in the Universe**. In addition to the main **isotope** (also called **protium**), there are two other significant isotopes of hydrogen: deuterium (2H or D), which has one **neutron**, and tritium (3H or T), which has two neutrons. It naturally exists as a **diatomic gas** (H2), which was discovered by the British chemist **Henry Cavendish**. Hydrogen is highly **flammable** when exposed to high temperatures or electric current, a fact demonstrated by the **Hindenburg disaster**. It can react with nonmetals by losing an electron to form the **H+** ion, or react with metals to form the **hydride ion**, H–.
* Helium (He, 2) is the **lightest noble gas** and the **second most abundant element** in the Universe (after hydrogen). Discovered by **Sir William Ramsey**, **Pierre Janssen**, and **Norman Lockyer**, it has two stable isotopes, helium-3 and helium-4, with helium-4 by far the more common. Because of their different quantum properties (the helium-3 **nucleus** is a **fermion**, while the helium-4 nucleus is a **boson**), the isotopes of helium actually have significantly different physical properties. Helium-4 can exist in a zero-**viscosity** state known as **superfluidity** when its temperature drops below the **lambda point**. Helium has the **lowest boiling point** of any element; liquid helium is used for devices that need intense cooling, such as **MRI machines**. Most helium on Earth results from **radioactive decay**, since the helium nucleus is equivalent to an **alpha particle**.
* Oxygen (O, 8) is, by mass, the **most common element in Earth’s crust**. It was discovered independently by **Carl Scheele** and **Joseph Priestley**; Priestley originally called it **“dephlogisticated air.”** Oxygen normally exists in elemental form as a **diatomic gas** (O2), but it can also exist in a triatomic form, **ozone** (O3), which is known for its role in **blocking UV rays** in Earth’s **stratosphere**. Diatomic oxygen is — despite having an even number of electrons — **paramagnetic**, meaning it has unpaired electrons. This points out a problem with traditional **valence bond theories**, which predict that oxygen should be **diamagnetic**; **molecular orbital theory** correctly explains this behavior. Because oxygen is easily capable of **accepting electrons**, reactions in which a species gives up electrons are known as **oxidation reactions**.
* Nitrogen (N, 7) is the **most abundant element in Earth’s atmosphere**. Nitrogen, which was first isolated as **“noxious air”** by **Daniel Rutherford**, exists primarily as a **diatomic molecule** containing two **triple-bonded** nitrogen atoms (N2). Because nitrogen gas is extremely **stable**, N2 is unusable for many biological and chemical purposes. To make it useful, it often undergoes **fixation** to convert it into usable nitrogen species such as the **ammonium ion** (NH4+) — as it is by bacteria in the **root nodules** of **legume** plants—or **ammonia** gas (NH3), as is done industrially in the **Haber-Bosch process**. Conversely, its stability makes it useful in **preventing unwanted combustion reactions**. It also has a relatively **low boiling point** (–196°C), which makes liquid nitrogen useful as a refrigerant.
* Mercury (Hg, 80) is one of just two elements that is a **liquid at standard temperature and pressure** (the only other one is **bromine**). It has been known since antiquity, and is found in ores such as **cinnabar**. Older names for it, reflecting its liquid nature, include **hydrargyrum** (the source of its symbol) and **quicksilver**. Because it is a very **dense** liquid, it is commonly used in **barometers** to measure atmospheric pressure; the pressure exerted by the atmosphere equals the pressure exerted by a column containing **760 millimeters** of mercury. Alloys of mercury with other metals are called **amalgams**, some of which have been used as **dental fillings**. Chronic exposure to mercury can cause psychological problems; its use in hatmaking led to the expression **“mad as a hatter.”** More recently, concerns about mercury exposure have led to the **banning** of mercury in **thermometers**.
* Sulfur (S, 16) was widely known in the ancient world, and is referred to in the Bible as **brimstone**. Its nature as an element was first recognized by **Antoine Lavoisier**. Its most stable **allotrope** is an eight-membered ring that exists as a **yellow solid**. It is most often isolated by **injecting superheated steam** into the ground in the **Frasch process**. As an element, it is used in the **vulcanization** process to **cross-link the polymer** strands of **rubber** to increase strength; similarly, sulfur-sulfur bonds hold many **proteins** together. Industrially, though, the majority of sulfur is used to make **sulfuric acid**, H2SO4 (in fact, sulfuric acid is the most widely produced chemical in the chemical industry). Sulfur compounds are noted for their **strong and unpleasant odors; small quantities of hydrogen sulfide, H2S, are frequently added to natural gas — which is normally odorless — to help people notice gas leaks.**
* Iron (Fe, 26) is the **most common metal in the Earth**, and one of the major components of the **Earth’s core**. Iron was known to the ancients; its atomic symbol comes from the Latin name **ferrum**. Iron is the namesake of **ferromagnetism**; one of its ores is **magnetite**, Fe3O4, which contains iron in both of its most common **oxidation states**, 2+ and 3+. **Iron(II) sulfide**, FeS2, is formally known as **pyrite**, but because of its appearance has long been known as **fool’s gold**. Iron can react with oxygen in the air to form **iron(III) oxide**, Fe2O3, in a relatively slow but **exothermic process**; this process is used in “all-day” **heat patches**. **Hydrated** iron(III) oxide is better known as rust; rust only forms when iron is exposed to both oxygen **and** water. Its **isotope 56** is one of the most strongly bound of all nuclei, with the lowest mass per nucleon. Iron is one of the heaviest elements that is normally produced by **stellar nucleosynthesis**. The largest use of iron is in **steel**.
* Carbon (C, 6) is found, by definition, in all **organic compounds**. It is the **fourth most abundant element in the Universe**. It has three major **isotopes**: isotope 12, which is stable; isotope 13, which is used in **NMR spectroscopy**; and isotope 14, which is **radioactive** and is the basis of **carbon dating**. Carbon’s ability to form **four chemical bonds** means that it has many different **allotropes**. The best-characterized natural allotropes are **diamond**, which consists of a tetrahedral network of carbon atoms, and **graphite**, which consists of planes of carbon atoms arranged in hexagons. **Fullerenes** such as **buckyballs** and **carbon nanotubes**, on the other hand, are generally produced synthetically; buckyballs are roughly spherical. More recently, **graphene**, which is a single layer of atoms shaped like graphite, has proven to have remarkable properties; for example, it is nearly **transparent** while being about 200 times stronger than an equivalent mass of steel.
* Aluminum (Al, 13) is the **most common metal in Earth’s *crust***, and the first metal in the *p* block of elements. First isolated by **Hans Christian Ørsted**, its primary ore is **bauxite**, from which it is refined using large amounts of electric current, via **electrolysis**, through the **Bayer** and **Hall-Héroult processes**. (Because aluminum exists only in a +3 oxidation state, it takes three moles of electrons to produce one mole of aluminum; as a result, it has been estimated that 5% of all electricity in the U.S. goes to purifying aluminum.) It is found in the mineral **corundum**, which is found in many gems, including **sapphires** and **rubies**; the specific impurities found in a gem determine its color. It is also found in **aluminosilicates**, such as **feldspar**.
* Gold (Au, 79) was known to the ancients as a relatively **inert metal**. Its atomic symbol comes from its Latin name, **aurum**. It is resistant to attack by most **acids**, but it (along with **platinum**) will dissolve in **aqua regia**, a mixture of concentrated **nitric acid** and **hydrochloric acid**. Among all metals, it has the **highest electronegativity** and **electron affinity**; it occasionally is found in a –1 oxidation state as Au–. Widely used in jewelry, it also has a number of scientific uses. **Ernest Rutherford**’s **gold foil experiment** demonstrated the existence of a **positively charged nucleus**. **Scanning electron microscopy** (SEM) often requires that specimens be **“sputtered,”** or thinly coated, with gold atoms to allow imaging. Suspensions of gold compounds have been used to treat **rheumatoid arthritis**.

**US Battleships**

* USS *Constitution* Better known as **“Old Ironsides,”** the *Constitution* was one of the first six ships commissioned by the U.S. Navy after the American Revolution. Launched from Boston in 1797, the *Constitution* first saw action as the squadron **flagship** in the **Quasi-War** with France from 1799–1801 and also fought in the **Barbary War** and the **War of 1812**. She later served many years as the nation’s flagship in the Mediterranean. Retired from active duty in 1846, the words of **Oliver Wendell Holmes**’ poem [**“Old Ironsides”**](http://www.ibiblio.org/eldritch/owh/oldiron.html) saved her from the scrap yard—she became the training ship of the U.S. Naval Academy until the mid-1880s. She became the symbolic flagship of the U.S. Navy in 1940 and is now a floating museum in Boston.
* USS *Chesapeake* The USS *Chesapeake* was built at what is now the **Norfolk Naval Shipyard**, between 1798 and 1799. The *Chesapeake* was attacked by the British ***Leopard*** off **Cape Henry** in 1807 (which led to the duel between **Commodores James Barron** and **Stephen Decatur**), one of the causes of the **War of 1812**. She was captured off Boston in 1813 by the British frigate ***Shannon***, on which occasion her commander, Captain James Lawrence, uttered his celebrated dying words, **“Don’t give up the ship,”** which have become a tradition in the U.S. Navy.
* USS *Lawrence*/USS *Niagara* **Oliver Hazard Perry**’s decisive victory over the British fleet in the **Battle of Lake Erie** on September 10, 1813 ensured American control of the Great Lakes during the **War of 1812**. In the battle, Perry’s flagship, the USS *Lawrence*, was severely damaged and four-fifths of her crew killed or wounded. Commodore Perry and a small contingent rowed a half-mile through heavy gunfire to another American ship, the **USS *Niagara***. Boarding and taking command, he brought her into battle and soundly defeated the British fleet. Perry summarized the fight in a now-famous message to **General William Henry Harrison**: **“We have met the enemy and they are ours.”**
* USS *Monitor*/CSS *Virginia*, also known as the USS *Merrimack* After departing Union forces burned the **Gosport Navy Yard** in Norfolk in April 1861, yard workers salvaged the USS *Merrimack* and converted her into the **ironclad** CSS *Virginia*. On March 8, 1862, the CSS *Virginia* left the shipyard and sank two Union warships in **Hampton Roads**. The South’s ironclad rammed and sank the **USS *Cumberland*** and set fire to and sank the **USS *Congress***. The *Monitor* was sent to end its rampage and the two ironclads battled for 3½ hours before the *Virginia* ran aground in its attempt to ram the **USS *Minnesota***. Visibly damaged, the *Virginia* retreated and the *Monitor* withdrew to protect the *Minnesota*. The Confederates destroyed the *Virginia* soon after to prevent her capture by Union forces. The *Monitor*, victorious in her first battle, sank in a storm off **Cape Hatteras, North Carolina**. The shipwreck is a national underwater sanctuary under the purview of the NOAA.
* USS *Maine* (ACR–1) [Second class] The first *Maine*, a second-class armored battleship, was launched in 1889. A part of the **“Great White Fleet,”** in 1897 the *Maine* sailed for **Havana** to show the flag and protect American citizens. Shortly after 9:40 pm on February 15, 1898, the battleship was torn apart by a tremendous explosion. The court of inquiry convened in March was unable to obtain evidence associating the blast with any person or persons, but public opinion—inflamed by **“yellow journalism”**—was such that the *Maine* disaster led to the **declaration of war on Spain** on April 21, 1898.
* USS *Arizona* (BB–39) [*Pennsylvania* class] A lead ship of the honor escort for **President Wilson**’s trip to France in 1918, she was on **Battleship Row** at **Pearl Harbor** when Japanese aircraft appeared just before 8:00 am on Sunday, December 7, 1941. The *Arizona* came under attack almost immediately, and at about 8:10 was hit by an 800-kilogram bomb just forward of turret two on the starboard side. Within a few seconds the forward powder magazines exploded, killing 1,177 of the crew, and the ship sank to the bottom of the harbor. In 1962 the USS *Arizona* memorial opened and is now administered by the National Park Service.
* USS *Missouri* (BB–63) [*Iowa* class] The fourth USS *Missouri* was the last battleship completed by the United States; she was laid down January 6, 1941 by **New York Naval Shipyard**. The *Missouri* was launched on January 29, 1944 and received her sponsorship from **Miss Margaret Truman**, daughter of the then-Missouri Senator, **Harry S. Truman**. Commissioned on June 11, 1944, the “Mighty Mo,” as she became known, sailed for the Pacific and quickly became the flagship of **Admiral Halsey**, which is why she was chosen as the **site of the formal surrender of the Empire of Japan** on the morning of September 1, 1945.
* USS *Nautilus* (SSN–571) [*Nautilus* class] In 1951 Congress authorized construction of the world’s first **nuclear-powered submarine**. On December 12 of that year, the Navy Department announced that she would be the sixth ship of the fleet to bear the name *Nautilus*. She was launched on January 21, 1954. Eight months later, on September 30, 1954, the *Nautilus* became the first commissioned nuclear-powered ship in the U.S. Navy. On the morning of January 17, 1955, *Nautilus*’ **Commander Wilkinson** signaled “Underway on Nuclear Power.” In 1958 she departed Pearl Harbor under top-secret orders to conduct **“Operation Sunshine,”** the first crossing of the North Pole by a ship.

***Norse Mythology***

* Ymir: A **primordial giant** who formed in the void **Ginnungagap** from **fire and ice**. He gave birth to the **frost giants** and created the primordial cow **Audhumla**. He was **killed by Odin** and his brothers, who used his body to **construct most of the universe**.
* Odin (or Wodin or Wotan): The **“All-Father,”** he is the leader of the **Aesir**, the principal group of Norse gods. He is a god of **war**, **death**, **wisdom**, **poetry**, and **knowledge**, and rides the eight-legged horse **Sleipnir**. He **hung himself** for nine days on the world-tree **Yggsdrasil**, pierced by his own spear, to gain knowledge, and **traded one of his eyes** for a drink from Mimir’s well to gain wisdom.
* Frigg (or Frigga): The **wife of Odin**, and mother by him of **Balder**, **Hoder**, **Hermod**, and **Tyr**. She is the goddess of the **sky**, **marriage**, and **motherhood**, and often works at her **loom**, spinning **clouds**.
* Frey (or Freyr): The son of **Njord**, and **twin brother of Freya**. He is one of the **Vanir**, a second group of Norse gods, but lives with the Aesir as a **hostage**. The god of **fertility**, **horses**, **sun**, and **rain**, his possessions include the magic ship **Skidbladnir**. He travels in a **chariot drawn by the golden boar Gullinbursti**, and had to give away his **magic sword** to win the hand of the giantess **Gerda**.
* Freya: The daughter of **Njord** and **twin sister of Frey**, she is also a **Vanir** **hostage** living with the Aesir. The goddess of **love**, **passion**, and **human fertility**, her possessions include a **cloak** that allows her to turn into a **falcon**, and the necklace **Brisingamen**. She travels in a **chariot drawn by two cats**.
* Thor: A son of **Odin** and the giantess **Jord**, he is the god of **thunder**, **weather**, and **crops**. One of the most popular of the Norse gods, he travels in a **chariot pulled by two goats**, and wields the hammer **Mjölnir**. He is married to **Sif**, and his special nemesis is the **Midgard Serpent**.
* Loki: He’s actually **giant-kin**, but lives with the **Aesir** and is **Odin’s blood-brother**. The god of **fire** and **trickery**, his many **pranks** include **duping Hoder** into **killing Balder**. His children include the wolf **Fenrir**, the **Midgard Serpent** Jormungandr, **Hel** (the ruler of the underworld), and **Sleipnir**. After killing Balder he was **chained to three boulders** with snakes dripping **poison** onto him.
* Heimdall: The son of **nine sisters**, he is the god of **light** and **guardians**. He guards **Bifrost**, the rainbow bridge into Asgard. His senses are so sharp, he can **see 100 miles** by night or day and **hear grass growing**. He will call the Aesir into battle at **Ragnarok** with his horn Gjall (or **Gjallerhorn**).
* Balder (or Baldur): The **fairest** of the Aesir, he is the god of **light**, **joy**, and **beauty**. He **dreamed of his own death**, so Frigga extracted promises from everything not to harm Balder, but she skipped **mistletoe**. **Loki** tricked Balder’s blind brother **Hoder** into killing him with a **spear of mistletoe**.
* Norns: The goddesses of **destiny**, represented as the **three sisters** Urd (or Wyrd), Verdandi (or Verthandi), and Skuld. The counterparts of the Greek **Fates**, they **tend the Well of Fate** at the roots of Yggdrasil.

**Egyptian Mythology**

There are, for most practical purposes, only three major episodes in Egyptian mythology:

* The family quarrel of Osiris and Set: **Osiris** took **Isis**, his sister, for his wife, and ruled over the earth. **Set** grew **jealous** of his brother and **killed him**, afterwards **cutting his body into 14 pieces** and **hiding** them in various places around Egypt. He then claimed kingship over the land. Isis searched the breadth of the land until she had **recovered** all of the pieces and, with the help of **Anubis**, **embalmed** the body. She conceived a son, **Horus**, by the (still dead) Osiris, then resurrected him. Horus defeated Set to regain the kingship, and all subsequent pharaohs were said to be aspects of him.
* Afterlife: The Egyptians believed that the **soul** had three components, the ***ba***, ***ka***, and ***akh***, each of which had different roles after death. The *ka* remained near or within the body (which is why **mummification** was required). The *ba* went to the **underworld** where it merged with aspects of **Osiris**, but was allowed to periodically return (which is why Egyptian **tombs** often contained narrow **doors**). The *akh* could temporarily assume different physical forms and wander the world as a **ghost** of sorts. In the underworld, the *ba* was subjected to the **Judgment of Osiris** in the **Hall of Double Justice**, where the **heart** of the deceased was **weighed** against **Ma’at**, commonly represented as an **ostrich feather**.
* Worship of Aton: This is actually a historical episode: during the reign of **Amenhotep III** (1390–1353 BC), worship of the god Aton (or Aten) — a representation of the **disk of the sun** — was resurrected. This process was carried to its extreme conclusion by his successor, **Amenhotep IV**, who eventually declared Aton to be the **only god**, thereby creating one of the earliest known **monotheistic religions**. The pharaoh even changed his name to **Akhenaton**, meaning “Aton is satisfied.” The worship of Aton was centered on the capital city **Tell-al-Amarna**, and was largely confined to upper classes and the pharaonic court; it did not survive Amenhotep. Under his successor, **Tutankhamen** (King Tut), traditional religious practices were restored.

**The Pantheon**

* Osiris: Husband of **Isis**, father of **Horus**, and brother of **Set**, Osiris served as god of the **underworld** and **protector of the dead**. In addition to his role as the chief and **judge** of the underworld (as a result of the above-mentioned murder by Set), Osiris also served as a god of **vegetation** and **renewal**; festivals honoring his death occurred around the time of the **Nile flood**’s retreat. Statues representing him were made of clay and **grain**, which would then germinate. Osiris was represented either as a **green mummy**, or wearing the **Atef**, a plumed crown.
* Set: Created in opposition to the forces of **Ma’at**, Set (termed **Typhon** by **Plutarch**) fought the demon **Apopis** each day, emerging victorious, symbolic of the struggle of forces that brought harmony. In later times, this struggle led Set to be associated with the serpent itself, and Set became the personification of **violence** and disorder, and the **cause of all disasters**. Having killed his brother **Osiris**, Set did battle with Osiris’ son **Horus**, being emasculated in the fight. His cult was diminished over time, due to reaction against violence. His effigies were destroyed by some, while others were changed into representations of **Amon**, by replacing the ears with horns.
* Isis: Isis, daughter of **Geb** and **Nut**, protected **love**, **motherhood**, and **fate** in the Egyptian mythos. Many of her roles are similar to those of the goddess **Hathor**, but she is often equated with the Greek **Demeter**. Her powers were gained through **tricking** the god **Ra**. By placing a **snake** in his path, which **poisoned** him, she forced him to give some power to her before she would cure him.
* Horus: The god of the **sky** and **light** and the son of **Isis** and **Osiris**. In earlier myth he was the brother of **Set**, and son of **Ra**. His mother impregnated herself by the dead **Osiris**, then hid Horus. When he was grown, he avenged his father’s death, driving away Set. In the battle, he **lost his eye**, but regained it thanks to the god **Thoth**. Thus Horus came to rule over the earth. He was known to have two faces, that of the **falcon**, **Harsiesis**, and that of a **child**, **Harpocrates**.
* Ra: Personification of the **midday sun**, he was also venerated as **Atum** (setting sun) and **Khepri** (rising sun), which were later combined with him. He **traveled across the sky** each day and then each night, the monster **Apep** would attempt to prevent his return. Other myths held that Ra spent the night in the **underworld** consoling the dead. The **god of the pharaohs**, from the fourth dynasty onward all pharaohs termed themselves “sons of Ra,” and after death they **joined his entourage**. He was portrayed with the head of a **falcon**, and crowned with the **sun disk**.
* Amon: Amon began as a local god of **Thebes**, governing the **air**, **fertility**, and **reproduction**. His wife was **Mut**, and his son was **Khon**. Later, Amon became linked with the sun god **Ra**, and the two combined as Amon-Ra. In this form, he became worshipped beyond Egypt, and identified with **Zeus** and **Jupiter**. His appearance in art was as a **man in a loincloth**, with a **headdress topped by feathers**, but other appearances show him with the **head of a ram**. The temple of Amon-Ra at **Karnak** was the largest ever built.
* Thoth: Serving the gods as the **supreme scribe**, the **ibis-headed** Thoth was known as the **“tongue of Ptah”** for his knowledge of **hieroglyphics**, and as the **“Heart of Re”** for his **creative** powers. His knowledge of **science and calculation** made him the creator of the **calendar**, and his symbol was the **moon** due to his knowledge of how to calculate its path. His knowledge of **magic** led to his association with the Greek **Hermes**. Thoth was consulted by **Isis** when attempting to resurrect **Osiris**, and was again consulted when the young **Horus** was stung by a scorpion.
* Ptah: Principal god of the city of **Memphis**, he was portrayed as a **mummy**, or wearing the **beard of the gods** on his chin. His godhood was achieved by himself, much like his **creation power**, done merely by act of will. A patron of **craftsmen**, he also was seen as a **healer**, in the form of a **dwarf**. In the **death trilogy** (Anubis, Osiris, Ptah), he was seen as the god of **embalming**. His wife was the **cat-headed** **Sekhmet**, and his son was the **lotus** god **Nefertem**.
* Anubis: Son of **Osiris** and **Nepthys**, and god of **embalming** to the Egyptians, he was typically pictured with the **head of a jackal**. He also served as the god of the **desert** and the **watcher of the tombs**. He also served to **introduce the dead to the afterlife**, and as their **judge**. To decide the fate of the dead, Anubis would **weigh the heart** of the dead against the **feather of truth**. Anubis is sometimes identified with **Hermes** or **Mercury**.
* Ma’at: The daughter of **Ra**, she **predated the universe** and served over the creation of it, ensuring **balance** between everything. Primarily seen as the **keeper of order**, Ma’at was responsible for **seasons**, **day and night**, **rainfall**, and **star movements**. A symbolic **offering** of Ma’at, in the form a statuette was given to the gods, as Ma’at encompassed all other offerings. Ma’at’s aspect as god of **justice** also showed through her role in death ritual, where her **ostrich feather** was weighed against the **hearts of the dead** in the underworld. **Judges** wore effigies of Ma’at, and the supreme **head of courts** was said to be the priest of Ma’at.
* Hathor: Hathor (or Athor or Athyr) was the patron of **women**. Hathor was the daughter of **Ra** and the wife of **Horus**. She fulfilled many functions as goddess of the **sky**, goddess of **fertility**, protector of **marriage**, and goddess of **love** and **beauty**. In that final role she became equated with **Aphrodite** and **Venus**. Pictures of Hathor show the goddess with the **head of a cow**.
* Nephthys: Termed the **“lady of the castle,”** for her role as guardian of **tombs**, she sided against her own husband, **Set**, in his battle against **Osiris**, but when Set was destroyed, she **collected the bits** of his body and brought him back to life, much as **Isis** had done for Osiris. In addition to being Isis’ sister, she was also said to be Osiris’ mistress, leading to much complaint from Isis. Due to her close ties to all the other gods, she was rarely associated with a cult of her own.

**Revolutionary War Leaders**

* Benedict Arnold: Volunteering for service following the **Battle of Lexington**, he joined **Ethan Allen** in the **attack on Fort Ticonderoga**. Appointed by [Washington](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington) to **capture Quebec**, he was **severely wounded** in the failed December 1775 assault that also saw the death of General Richard Montgomery. Arming a **flotilla on Lake Champlain**, he attacked the British forces at **Valcour Island**, earning accolades — perhaps at the cost of the support of other officers. **Passed over for promotion**, Washington personally **persuaded him not to resign**. Promoted following his defense of Danbury, he again considered resignation, but won victory at **Ft. Stanwix**, and commanded advance battalions at **Saratoga**, where he was wounded in the fight. Sent to command Philadelphia, he **lived extravagantly among Loyalists**, and skirted several regulations to raise money, prompting investigations. After **marrying Peggy Shippen**, he made **overtures to the British**, alerting them to a **plan to invade Canada**, and planning to **betray his expected command of West Point**. When his contact, **Major John Andre** was captured, he **escaped**. Later, as part of the British army he raided New London, Connecticut, and led several raids on Virginia.
* John Burgoyne: “Gentleman Johnny,” as he was known due to his cultural tastes (Burgoyne was also a **playwright**), he began his Revolutionary War career under **Gage**, returning to England after ineffectiveness in 1774–1775. Sent to **reinforce Canada**, he formulated a plan to **isolate New England** with the help of **Barry St. Leger** and [**William Howe**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#howe). The plan worked as far as **capturing Fort Ticonderoga**, but met resistance when he **sent his Hessians** to attack **Bennington**. Exhausted, his troops met trouble at **Saratoga**, being repulsed at **Freedman’s Farm**, and being forced to **surrender** after **Bemis Heights**. Paroled on condition he returned to England, Burgoyne was later appointed **commander-in-chief of Ireland**.
* Charles Cornwallis, First Marquess Cornwallis: An aristocrat and ensign in 1756, he fought in the **battle of Minden**, and by the end of the **Seven Years’ War** he was a captain. Made **aide-de-camp to George III**, he made colonel, and was promoted to major general before being sent to America. After a **failed assault on Charleston**, he served under **Sir Henry Clinton** in the **battle of Long Island**, but made his mark in fighting at **Manhattan** and pursued [Washington](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington) across the Hudson, being outmaneuvered by Washington at **Princeton** (January 3, 1777). Following this defeat he directed the main **attack on Brandywine Creek**, and reinforced **Germantown** as part of the plan to capture Philadelphia. Promoted to second-in-command under Clinton after the Philadelphia campaign, he led the **Battle of Monmouth** before **returning home to attend his sick wife**. Sent south in 1780 to **capture Charleston**, he bested [Horatio Gates](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#gates) at Camden (North Carolina) and [Nathaniel Greene](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#greene) at **Guilford Courthouse**, the latter a pyrrhic victory that likely led to his defeat in attempts to contain [Lafayette](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#lafayette) in Virginia. Following this, he **occupied Yorktown** in August 1781, where he was surrounded by American and French forces, and forced to surrender. Following the war, he was appointed **governor-general of India**, and proved to be a capable administrator.
* Horatio Gates: Wounded in the disastrous **French and Indian War** attack on **Fort Duquesne**, it was there he first met [George Washington](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington). Recommended by Washington to be **adjutant general of the army** at the outbreak of revolution, he organized the army around Boston into an effective force. Promoted to major general in 1776, he was assigned to command troops in **New York** originally intended to **invade Canada**. Briefly put in charge of **Philadelphia**, he then directed the **defense of New York** against [**Burgoyne**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#burgoyne)**’s invasion** attempt, leading to victory at Saratoga. Following this he became involved in the **Conway cabal**, an attempt to replace Washington, which led to coldness between the two. Placed in command of **the South** over Washington’s objections by Congress, he tried to raise adequate forces, but **lost the battle of Camden** to [Cornwallis](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#cornwallis), and was replaced by [**Nathaniel Greene**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#greene). Washington then accepted Gates back as his **deputy**, a position he held until the end of the war.
* Sir Guy Carleton: Irish-born, he led grenadiers across the **Plains of Abraham** in the 1759 **siege of Quebec** under his close friend **General Wolfe**. He entered the war as **second-in-command** to **Thomas Gage** before **taking command** after Gage’s 1775 recall. Carleton then directed British troops from Canada to **Boston** after the Battle of Concord, resulting in a **revolt**. Carleton repulsed efforts by **Montgomery** and [**Benedict Arnold**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#arnold) to **capture Montréal and Quebec**, routing a second attempt by Arnold, by defeating an **American naval buildup on Lake Champlain**. Following this, he attempted to support [Burgoyne](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#burgoyne)’s failed plan to **isolate New England**. Brought back to Britain to govern **Armagh** in Ireland in 1777, he sat out all but the end of the war, returning in 1782 as commander-in-chief after [**Cornwallis**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#cornwallis)**’ surrender**.
* Nathanael Greene: A prominent **Rhode Island politician** prior to the revolution, he raised a militia company but was not elected their captain due to his **partial lameness**. Following his work in the **siege of Boston**, he marched his army to Long Island, where they aided in the battles around **New York**. Following the loss of Fort Washington, Greene led forces into victory at the **Battle of Trenton**, and then again distinguished himself by **protecting**[**Washington**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington)**’s force at the Battle of Brandywine**. Greene then led the main force at **Germantown**, and led the evacuation of positions along the Delaware River in fall 1777. The next year, Greene’s logistical talents led Washington to appoint him **quartermaster general**, a position he only accepted if he were allowed to **retain field troops**. He then led those troops as the right wing in the **Battle of Monmouth**. The quartermaster general position led to **conflicts with the Continental Congress**, and Greene resigned in 1780. Appointed to command to **replace the traitor**[**Benedict Arnold**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#arnold), he was sent south following [Gates](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#gates)’ loss at Camden. Joining with **Daniel Morgan**, he retreated from [Cornwallis](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#cornwallis)’ forces for two months until a crippling **counterattack at Guilford Courthouse**, which gave a costly victory to the British. Until the end of the war, Greene led a spirited **offensive against Lord Rawdon’s — and later Duncan Stuart’s — forces**, besieging **Augusta** and **Ninety-Six**, and establishing **headquarters in Charleston** following Washington’s victory at Yorktown.
* Sir William Howe: A veteran of the **siege of Louisbourg**, and the leader of the **ascent to the Plains of Abraham** (Quebec, 1759), he was dispatched in 1775 as **second-in-command to Gage**. After **directing the attack on Bunker Hill**, he **succeeded Gage** as commander, and coordinated a strategic **retreat from Boston to Halifax**. In Halifax, he coordinated a **joint army-navy attack** with his brother, Richard, an admiral, resulting in a campaign which allowed the British to **control New York City**. After his attempts to secure a peace in 1777 failed, he led the **attack on Philadelphia**, **defeating**[**Washington**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington)**at Brandywine**. After this, he wintered in **Philadelphia**, waiting for acceptance of his resignation, due to the failed peace negotiations. On May 25, 1778, he **relinquished command to Sir Henry Clinton** and returned home.
* Tadeusz Kosciusko: After receiving military training in his **native Poland** and France, he resigned his commission due to **poor advancement prospect**. Offering his assistance to the Americans, he helped **fortify the Delaware River** in 1776, earning himself the rank of colonel. That winter, he **planned the building of Fort Mercer**, and the next spring headed north with [**General Gates**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#gates), becoming **commander of the northern army** and **building fortifications** that helped win the **battle of Saratoga**. In 1780, he worked on building **defenses for West Point**, then headed south when Gates was appointed command of the Southern Department. Serving under [**Nathaniel Greene**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#greene), he distinguished himself in the **Race to the Dan River**, and at Charleston, but mishandled the **siege of Ninety-Six**. Following the war, he was **granted American citizenship but returned home to Poland**. Back home he resisted partition, and attempted to liberate the nation afterward.
* Marquis de Lafayette: Approached by the U.S. Minister to France, **Silas Deane**, he arrived in April 1777 with **Baron de Kalb**. First seeing action at **Brandywine**, his primary early action was in **supporting**[**Washington**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington)**during the winter at Valley Forge**. After participating at the battles of **Barren Hill**, **Monmouth**, and **Newport**, he returned to France, raising support for an **expeditionary force**. Returning to America a colonel, he served on the board that **sentenced Major Andre to death**, and then faced Andre’s confederate [**Benedict Arnold**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#arnold) in battle in 1781. Working in Virginia, he **evaded**[**Cornwallis**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#cornwallis)**’ forces**, until reinforcements arrived in June. Coordinating with **Anthony Wayne**, the two combined forces against Cornwallis in the battle of **Green Spring**. Pursuing Cornwallis to **Yorktown**, Lafayette helped the siege there until Cornwallis’ surrender.
* Francis Marion: Previously an **Indian fighter**, Marion was given command of **Fort Sullivan** in 1776. Commanding the **2nd South Carolina**, he fought at **Savannah**, and **escaped capture** when the British retook Charleston. From there, Marion fought a successful **guerilla campaign** against British troops, forcing [Cornwallis](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#cornwallis) to appoint **Colonel Banastre Tarleton** to eliminate Marion. Tarleton’s frustration at the task led to the remark “But as for this damned old fox, the devil himself could not catch him,” creating Marion’s nickname, **“Swamp Fox.”** Promoted to brigadier general in 1781, and later given command of the **North and South Carolina militias**, Marion fought the British at **Eutaw Springs**.
* John Paul Jones: A Scotsman who had **fled Britain** after killing two people, he added the last name Jones to his given name, John Paul, to hide from law enforcement. At the outbreak of conflict, he was commissioned to **outfit the *Alfred***, which he then used to help **capture New Providence** in the Bahamas. The next month, April 1776, he led the *Alfred* against the **HMS *Glasgow***, leading him to promotion and command of the ***Providence***. Ordered to raid until his provisions were expended, he **sank and captured ships** in operations along the Atlantic coast. Commissioned captain of the ***Ranger***, he sailed to France to acquire new ships, and captured the **HMS *Drake***. Leaving Europe in August 1779, he met the British ship *Serapis* in battle on September 23, 1779.
* Baron Friedrich Wilhelm von Steuben: Formerly part of **Frederick the Great**’s staff, the **Prussian** Steuben was recommended by Ben Franklin to [George Washington](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#washington). Accepted by the Continental Congress, Steuben joined Washington at **Valley Forge**, and began **training the army**. Appointed major general and inspector general in May 1777, he aided in the **Battle of Monmouth**, then spent two years writing the ***Regulations for the Order and Discipline of the Troops of the United States***, an **army training manual**. Sent to Virginia in 1780 to oppose [Benedict Arnold](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#arnold)’s actions, illness caused him to turn over his troops to **Lafayette**, but Steuben recovered in time to aid in the **siege of Yorktown**.
* George Washington: Selected by the Continental Congress to serve as **general-in-chief**, his first actions were to **blockade Boston**. Key to the success in Boston was the **capture of Dorchester Heights**, allowing cannon fire against the British and forcing the **withdrawal of**[**Howe**](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#howe). After failing to defend New York, Washington **retreated toward Pennsylvania**, extending British supply lines and allowing a successful **counterattack on Hessian mercenaries** at Trenton. Following victory at **Princeton**, Washington retired to **winter quarters at Morristown**. Sending his best forces north to deal with [Burgoyne](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#burgoyne)’s attack in spring 1777, he kept Howe engaged in the mid-Atlantic. Autumn setbacks at **Brandywine** and **Germantown**led to a demoralized **winter camp at Valley Forge**, countered by the work of [Lafayette](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#lafayette), [Steuben](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#steuven), and others. After a costly draw with Sir Henry Clinton’s forces at **Monmouth**, Washington sent [Greene](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#greene) south to replace [Gates](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#gates), and worked with the French general **Jean Baptiste Rochambeau** to plan the **Yorktown campaign**. The success of this campaign led to [Cornwallis](https://www.naqt.com/you-gotta-know/revolutionary-war-generals.html#cornwallis)’ surrender on October 19, 1781.