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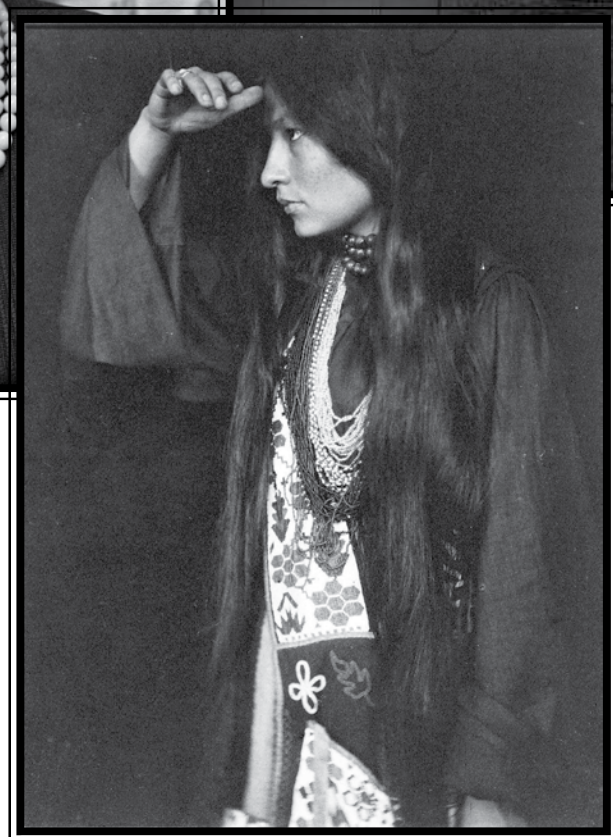
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# Women in History

# Rosalind Franklin

## Unsung Heroine of DNA Discovery

Rosalind Franklin, a pioneering chemist and X-ray crystallographer, played a crucial role in the discovery of the structure of DNA, yet her contributions were often overlooked during her lifetime. Born on July 25, 1920, in London, Franklin's scientific pursuits laid the groundwork for the groundbreaking revelation of the double helix structure of DNA.

Educated at Newnham College, Cambridge, during World War II, Franklin earned her Ph.D. in physical chemistry, and her early work focused on coal and graphite. She was the first to identify the microstructures of coal, research that was considered relevant to wartime needs because it helped identify the performance of coal.

She moved to France where she developed an international reputation among coal chemists, according to the UK National Library of Medicines. It was there she learned X-ray crystallography, also known as X-ray diffraction analysis.

Her expertise in X-ray crystallography, a technique that reveals the atomic and molecular structure of a crystal, caught the attention of researchers exploring the structure of DNA.

In 1951, Franklin joined King's College London and began working on DNA fibers. Employing her exceptional skills in X-ray crystallography, Franklin captured high-resolu-



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tion images of DNA, including the famous Photograph 51. This image provided critical evidence for the helical structure of DNA and hinted at the existence of a double helix.

Unbeknownst to Franklin, her colleague Maurice Wilkins showed Photograph 51 to James Watson and Francis Crick, who were also investigating the structure of DNA at the University of Cambridge. Watson and Crick used this information, along with other

data, to construct their famous model of the DNA double helix.

In 1962, Watson, Crick, and Wilkins were awarded the Nobel Prize in Physiology or Medicine for their role in the discovery, but Franklin, who had passed away in 1958 from ovarian cancer at the age of 37, was not eligible for the prize.

Despite her exclusion from the Nobel Prize, Rosalind Franklin's work laid the foundation for understanding the structure of DNA. Her rigorous

and meticulous approach to scientific inquiry, as well as her groundbreaking contributions to X-ray crystallography, paved the way for significant advancements in molecular biology.

In recent years, there has been a growing recognition of Franklin's role in the DNA discovery, and her legacy has been revisited. Acknowledging her contributions, the scientific community has come to appreciate the significance of

Franklin's work in unraveling the mysteries of the genetic code.

Rosalind Franklin's story serves as a reminder of the challenges faced by women in science during her time and underscores the importance of recognizing and celebrating the achievements of overlooked pioneers. Her legacy endures as a symbol of perseverance, intellect and the pursuit of scientific truth in the face of adversity.

# Hedy Lamarr

## Hollywood Icon, War Hero, Inventor

Every time you use a cell phone, you're using the technology that silver screen icon Hedy Lamarr developed.

Lamarr, born Hedwig Eva Maria Kiesler on Nov. 9, 1914, in Vienna, Austria, was a woman of remarkable talents and achievements. Although widely recognized as a Hollywood actress during the Golden Age of Cinema, Lamarr's legacy extends far beyond the silver screen.

Lamarr's early life was marked by a passion for acting, which led her to star in several European films before making a splash in Hollywood. She achieved international fame with her role in the controversial 1933 Czech film, "Ecstasy," and later signed a contract with Metro-Goldwyn-Mayer (MGM). Lamarr's Hollywood career reached its zenith in the 1940s, where she starred alongside some of the era's most prominent leading men, such as Clark Gable and Spencer Tracy.

Her first marriage played a pivotal role in shaping the trajectory of her life and contributing to her later groundbreaking invention. In 1933, at the age of 18, Lamarr married Friedrich Mandl, a wealthy Austrian munitions manufacturer and arms dealer.

While the marriage itself was tumultuous and challenging, it exposed Lamarr to the world of military technology and innovation. Mandl's business dealings provided her with a unique insight into the intricacies of weaponry and radio-controlled devices, igniting her curiosity about the intersection of technology and warfare.

Lamarr attended numerous meetings and gatherings where military and scientific discussions took place.

These experiences served as a formative education in applied science and engineering. Lamarr absorbed valuable knowledge about the latest advancements in military technology.

In collaboration with composer George Antheil, she co-invented a groundbreaking technology during World War II known as frequency hopping. This invention aimed to prevent the interception of radio-controlled torpedoes by enemy forces. The frequency hopping system involved rapidly switching radio frequencies, making it extremely difficult for adversaries to jam the signals. Although their invention was not immediately implemented by the military, it laid the foundation for modern wireless communication technologies, including Bluetooth and Wi-Fi.

Despite the significance of Lamarr's invention, she did not receive due recognition during her lifetime. It wasn't until later years that the world acknowledged the effect of her pioneering work in the field of technology. In 1997, Lamarr and Antheil were honored with the Electronic Frontier Foundation Pioneer Award for their contribution to the development of secure communication systems.

Her contributions to technology continue to shape our interconnected world. The principles of frequency hopping are integral to the functioning of modern communication devices, from smartphones to wireless networks. Lamarr's legacy serves as a testament to the fact that brilliance knows no bounds, transcending traditional labels and expectations.

In addition to her technological contributions, Lamarr's journey as a Hollywood actress challenged societal norms. She defied expectations and showcased that women could be both glamorous stars and intellectual innovators.



# Katherine Graham

## Trailblazing Publisher of The Washington Post

Katherine Graham made an indelible mark on history as the publisher of The Washington Post. Born on June 16, 1917, in New York City, she grew up in a privileged and influential family. Her father, Eugene Meyer, was a successful financier and later became the owner of The Washington Post.

Despite her privileged upbringing, Graham faced challenges as a woman in a male-dominated industry. She attended Vassar College, where she studied economics and graduated in 1938. After working as a reporter for the San Francisco News, she married Philip Graham, a promising lawyer, in 1940. Katherine Graham's journey into the world of journalism truly began when her father purchased The Washington Post in 1933 and handed the reins to her husband, Philip, in 1946.

Tragedy struck in 1963 when Philip Graham took his own life. In the aftermath of this personal loss, Katherine Graham found herself thrust into leadership at The Washington Post. At the time, female publishers were a rarity. Under her stewardship, The Washington Post transformed from a local paper into a national force.

She became the first-ever female CEO of a Fortune 500



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company in 1972 when she took over the reins of the Washington Post Company. She held that role until 1991. According to the Washington Post, under her leadership,

the company's revenue grew by more than \$1 billion and the stock price soared.

One of Graham's major achievements was navigating The Washington Post through

turbulent waters during the Watergate scandal.

The newspaper, led by Graham's steadfast commitment to journalistic integrity, played a pivotal role in expos-

ing the corruption and cover-up that eventually led to President Richard Nixon's resignation in 1974. The publication of the Pentagon Papers, a top-secret Department of Defense study on the Vietnam War, further solidified The Washington Post's reputation as a fearless investigative force.

Katherine Graham's leadership was defined by her commitment to the truth and by her advocacy for press freedom. In 1971, faced with the decision to publish the Pentagon Papers, she chose to prioritize the public's right to know over potential legal consequences. This courageous stance bolstered the principles of the First Amendment and set a precedent for journalistic courage in the face of government pressure.

As a pioneering woman in the media industry, she shattered glass ceilings and paved the way for future generations of female leaders. Her memoir, "Personal History," won the Pulitzer Prize in 1998, providing insight into her journey and the challenges she faced as a woman in the male-dominated publishing world.

Katherine Graham passed away on July 17, 2001, leaving behind a lasting legacy as a trailblazer, a fearless publisher and an advocate for a free and responsible press. Her effect on journalism, particularly during pivotal moments in American history, continues to inspire and resonate, making her an enduring figure in the annals of women's history.

# Louise Arner Boyd

## Polar Explorer and Fearless Adventurer

With a love for adventure, Louise Arner Boyd wasn't about to let gender norms keep her from exploring the world.

Born on Sept. 16, 1887, in San Rafael, California, she emerged as a pioneering figure in the realm of polar exploration during the early 20th century.

Boyd's journey into exploration began in the 1920s when she inherited a substantial fortune from her father. Instead of conforming to societal expectations for a woman of her stature, Boyd set her sights on the uncharted territories of the Arctic. In 1926, she set out on her first expedition to Greenland, marking the beginning of a series of groundbreaking journeys.

In 1928, she was part of the expedition that went seeking her childhood hero, Roald Amundsen, when he and his team disappeared at sea. She searched for 10 weeks, filming the entire trip — a total of 20,000 feet of motion picture film, according to the National Archives. While they did not find him, Norway decorated her with the Order of St. Olaf, first class, for her work.

Over the next two decades, Louise Boyd organized and led several expeditions to the Arctic region, making



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significant contributions to scientific knowledge and mapping. Her expeditions included geological studies, botanical research and mapping of previously unexplored areas. Boyd's commitment to advancing polar science earned her a reputation as a respected Arctic explorer.

On her trips, she worked as a photographer, cinematographer and botanist. According to the American Polar Society, she is credited with innovating the use of a heavy aerial mapping camera to capture high-quality photos at group level, photos that helped to create more detailed maps of the Arctic region. She also helped to measure the depths of the fjords and one of them is now named after her.

In 1955, at the age of 67, she became the first woman to fly over the North Pole. This historic flight made her a symbol of women's capabilities in the field of exploration. Boyd's accomplishments were not without challenges, as she faced harsh Arctic conditions, technical difficulties and the inherent dangers of polar exploration. Her resilience and determination in the face of adversity became a source of inspiration for future generations of women adventurers.

According to the National Archives, she financed and led a total of seven Arctic expeditions and published three books of photography through the American Geographical Society.

Beyond her exploration endeavors, Louise Boyd was a staunch advocate for environmental conservation. She recognized the fragile beauty of the Arctic landscapes and became an early proponent of conservation efforts to preserve these pristine regions.

She died in 1972, just before turning 85 and requested that her ashes be spread in her beloved Arctic land.

Boyd's effect on polar exploration opened doors for women in a field traditionally dominated by men. Her expeditions laid the groundwork for subsequent scientific research in the Arctic, and her dedication to environmental conservation left an enduring mark.

# Queen Seondeok of Silla

## Pioneering Ruler and Visionary Leader

Queen Seondeok, a remarkable figure in Korean history, ascended to the throne in the ancient kingdom of Silla during the 7th century. Born in 606, Seondeok was the daughter of King Jinpyeong and Queen Maya, and her reign from 632 to 647 marked a transformative era for Silla.

Seondeok's early life was marked by her exceptional intellect and leadership qualities, unusual for a time when women were rarely considered for positions of political power. In a society deeply rooted in Confucian traditions, her ascent to the throne was unprecedented, challenging societal norms and paving the way for future female leaders.

Her father had three daughters and no sons. At one point, he sent Seondeok's mother to a Buddhist nunnery and took another wife but still was unable to have any sons. While Jinpyeong and his advisors were reluctant to do so, they ended up naming Seondeok as heir because of

her intelligence.

Educated in the Confucian classics, Seondeok's reign was characterized by her commitment to scholarship and the promotion of education. She established the first national Confucian academy, Hwarangdo, which aimed to educate the elite youth in both academics and martial arts. This emphasis on education contributed to the cultural and intellectual flourishing of Silla, leaving a lasting effect on Korean society.

One of Queen Seondeok's notable achievements was her diplomatic acumen, which she displayed in both domestic and international affairs. Faced with external threats from neighboring kingdoms, she skillfully navigated alliances and negotiations to ensure the stability and security of Silla. Her commitment to diplomacy and strategic thinking elevated her kingdom's status on the Korean Peninsula.

During her reign, Queen Seondeok oversaw the construction of numerous architectural marvels, including the Cheomseongdae Observatory, one of the oldest surviving observatories in

East Asia. These projects showcased the technological advancements of Silla and demonstrated the queen's commitment to fostering a thriving cultural and scientific environment.

Seondeok's legacy is intertwined with her dedication to Buddhism. Despite Confucianism being the dominant ideology of the time, she actively supported the spread of Buddhism, contributing to the construction of temples and promoting the welfare of Buddhist monks and nuns. Her patronage of Buddhism had a profound and lasting effect on the religious landscape of Silla.

Queen Seondeok's reign came to an end with her death in 647 AD, but her legacy endured. Despite the challenges she faced as a female ruler in a patriarchal society, her achievements and leadership continue to be celebrated. The "Queen Seondeok" drama series, produced in the 2000s, brought her story to a global audience, further highlighting her enduring influence.

Queen Seondeok of Silla remains a revered figure in the annals of women's history and a symbol of empowerment for generations to come.

# Ruth Handler

## Visionary Mind Behind Barbie and Entrepreneurial Trailblazer

Last summer's blockbuster "Barbie" movie brought the accomplishments of her creator into the limelight.

Ruth Handler, born Nov. 4, 1916, in Denver, stands as a transformative figure in the world of toys and entrepreneurship, the visionary mind behind the creation of Barbie, a cultural icon that forever changed the landscape of the toy industry.

Handler, along with her husband Elliot, co-founded Mattel, a small picture frame company that would evolve into one of the world's leading toy manufacturers. The turning point came in 1959 when Ruth introduced the first Barbie doll at the American International Toy Fair in New York. Inspired by her daughter Barbara's imaginative play with paper dolls, Handler envisioned a three-dimensional adult-like figure that could serve as a canvas for a child's creativity.

Barbie, named after Handler's daughter, became an instant success, capturing the hearts and imaginations of children worldwide. With her distinct fashion sense, diverse careers, and varied accessories, Barbie represented more than just a toy; she became a symbol of aspiration and endless possibilities for young girls. Handler's creation challenged traditional gender norms, pro-



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viding a doll that encouraged girls to dream beyond conventional roles and professions.

Handler's entrepreneurial spirit and business acumen propelled Mattel to new heights. She played a pivotal role in the company's expansion into international markets, turning it into a global toy pow-

erhouse. Handler's innovative approach to marketing and product development revolutionized the industry, setting a precedent for future toy manufacturers.

However, Handler's journey wasn't without challenges. She faced criticism for introducing a doll with adult features to the

market. Nevertheless, her unwavering belief in the potential of Barbie as a positive influence on young minds prevailed, and Barbie continued to evolve to reflect changing societal norms and expectations.

In 1970, she co-founded the Ms. Foundation for Women, a nonprofit organization dedicat-

ed to advancing women's rights and social change.

That same year, Handler faced a personal health challenge that would lead her to make significant contributions to the lives of women who, like herself, had undergone mastectomy surgery due to breast cancer.

She became actively involved in addressing the needs of women who had undergone breast removal surgery. She co-founded the Ruthton Corporation, a company dedicated to producing realistic and comfortable breast prostheses for breast cancer survivors.

Under Handler's guidance, Ruthton developed and introduced Nearly Me, a line of prosthetic breasts designed to provide a natural look and feel. These prostheses aimed to restore confidence and self-esteem to women who had undergone mastectomy procedures. Handler's hands-on involvement in the design and production process ensured that Nearly Me prostheses were not just functional but also aesthetically pleasing, contributing to a sense of wholeness and femininity for breast cancer survivors.

She actively engaged in advocacy efforts to raise awareness about breast health and the importance of early detection. Handler's openness about her own experience with breast cancer helped destigmatize the conversation surrounding the disease and encouraged women to prioritize their health.

Handler died in 2002 in Los Angeles.

# Zitkala-Ša

## Advocate for Native American Rights and Cultural Revitalization

Zitkala-Ša, also known as Gertrude Simmons Bonnin, was a pioneering figure in the early 20th century, dedicated to advocating for Native American rights and cultural revitalization. Born on Feb. 22, 1876, on the Yankton Sioux Reservation in South Dakota, Zitkala-Ša's life journey reflects a tireless commitment to challenging stereotypes, fostering cultural pride and paving the way for Native American activism.

Zitkala-Ša faced the challenges of straddling two worlds from an early age. She experienced life on the reservation, immersed in her Yankton Sioux heritage, and later attended White's Manual Labor Institute, a missionary boarding school in Indiana. This dual cultural exposure would shape her identity and inspire her future advocacy.

According to *Women and the American Story*, when she arrived, she did not speak English and native languages were banned at the school. She was forced to get a haircut which in her culture was reserved for cowards.

After attending the boarding school, she enrolled in a teacher training program in Indiana before transferring to the New England Conservatory of Music, where she studied the violin.

A gifted writer and musician, Zitkala-Ša used her talents to amplify the voices of Native Americans. In 1900, she co-authored "The Sun Dance Opera," the first Native American opera, which blended traditional Sioux music with Western classical forms.

Through her creative endeavors, she sought to preserve and celebrate the

richness of Native American culture in the face of assimilationist pressures.

Zitkala-Ša's activism took a significant turn when she became involved in the Society of American Indians (SAI), an organization advocating for Native American rights and citizenship. Serving as the secretary of SAI, she addressed issues such as voting rights, educational reform and the protection of tribal lands. Her efforts contributed to the passage of the Indian Citizenship Act of 1924, granting citizenship to all Native Americans born in the United States.

A poignant expression of Zitkala-Ša's advocacy can be found in her writing, particularly in her autobiographical works, such as "American Indian Stories" (1921). She shed light on the harsh realities faced by Native Americans, challenging stereotypes and promoting a nuanced understanding of their history and struggles.

In 1926, Zitkala-Ša co-founded the National Council of American Indians (NCAI), which aimed to address issues facing Native communities on a national level. The NCAI became a leading force in advocating for tribal sovereignty, cultural preservation and improved living conditions.

Zitkala-Ša's legacy is multifaceted, encompassing her contributions to literature, music and activism. She remains a symbol of resilience and determination in the face of cultural suppression. Her work laid the foundation for later generations of Native American activists and scholars, inspiring ongoing efforts to reclaim, celebrate and preserve indigenous cultures.

Zitkala-Ša passed away on Jan. 26, 1938. Her legacy endures as a testament to the power of individual agency in the pursuit of justice, cultural pride and the preservation of Native American heritage.

