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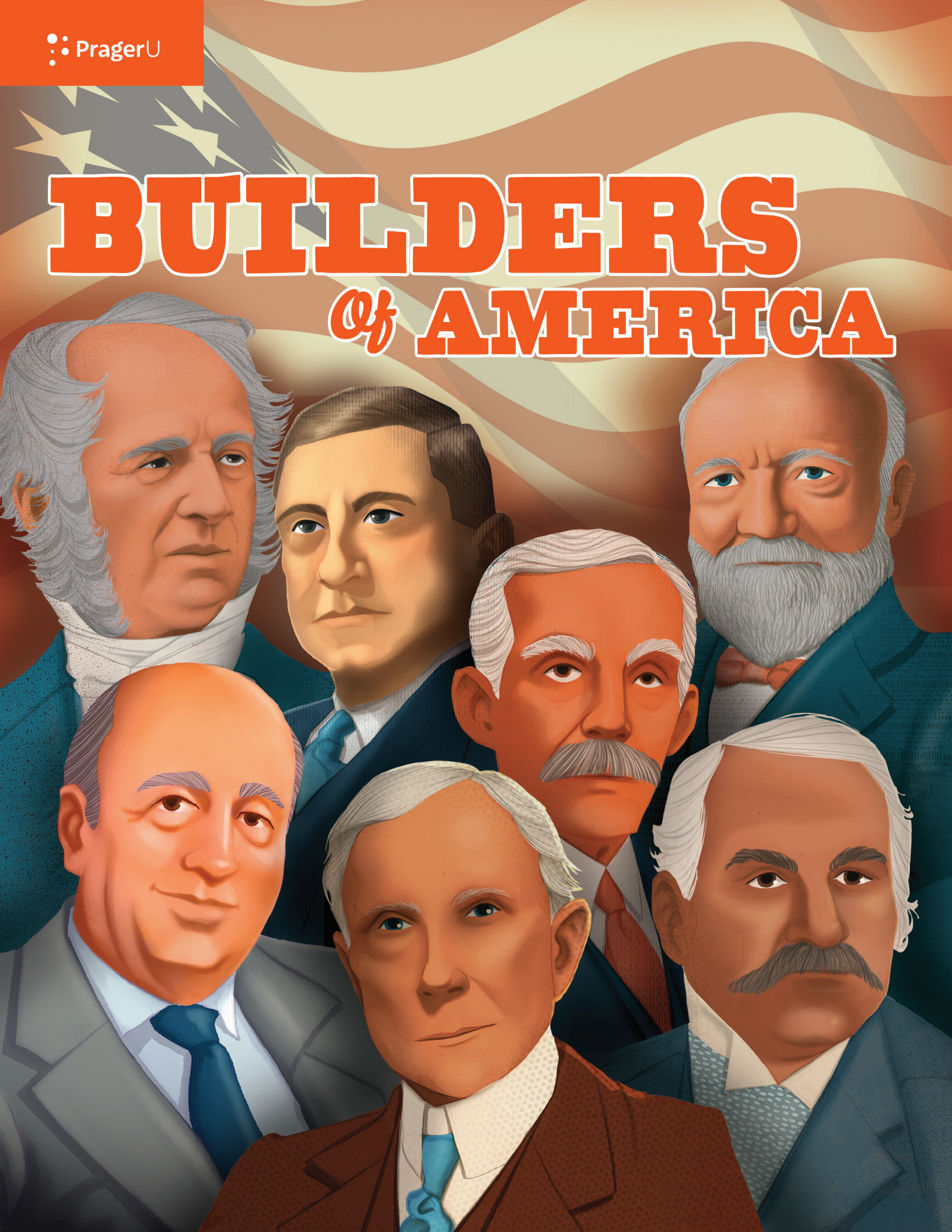
BUILDERS of AMERICA



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BUILDERS of AMERICA

Cornelius Vanderbilt 1

Andrew Carnegie 12

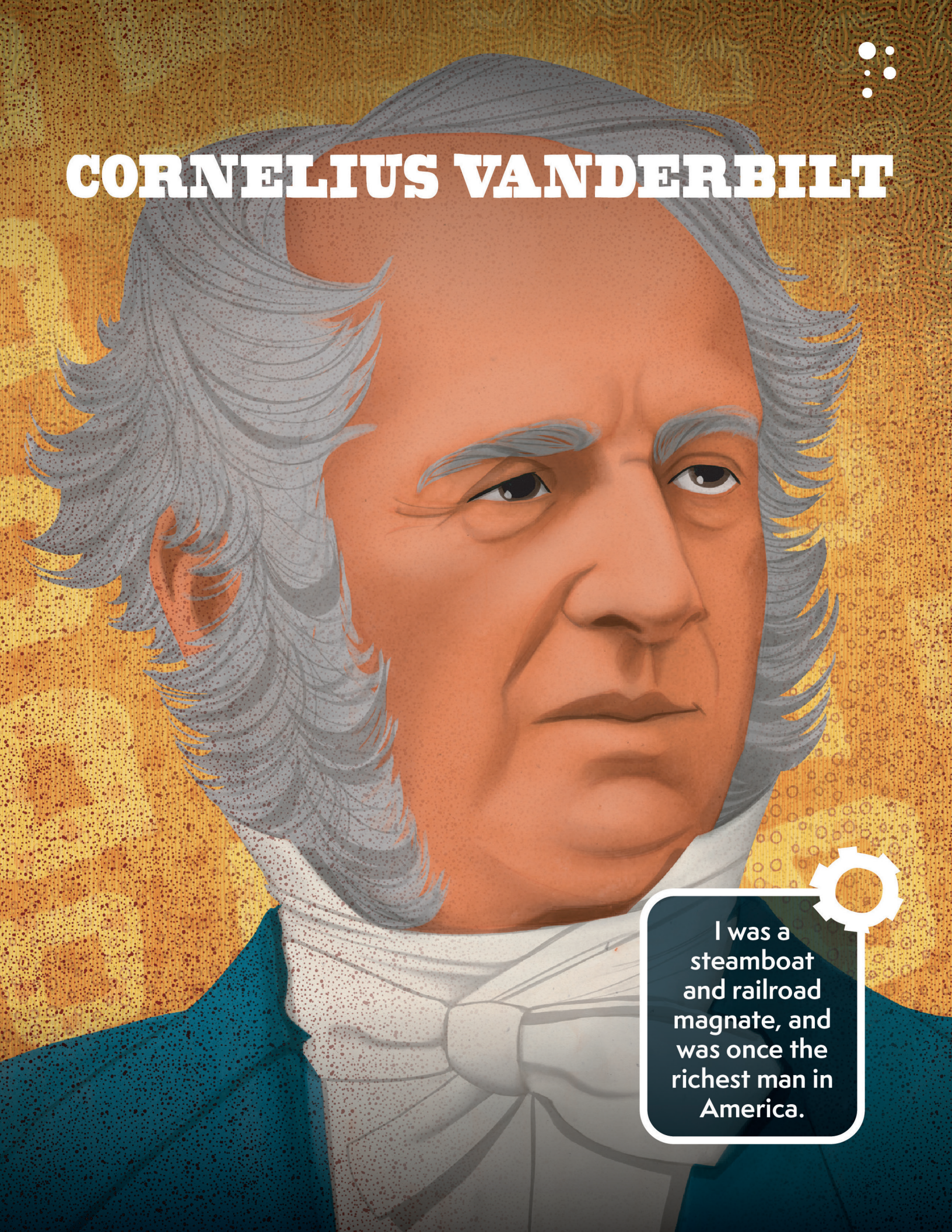
J.P. Morgan 22

John D. Rockefeller 32

Andrew Mellon 42

Charles Schwab 54

George P. Mitchell 66


CORNELIUS VANDERBILT
I was a steamboat and railroad magnate, and was once the richest man in America.

Meet Cornelius Vanderbilt

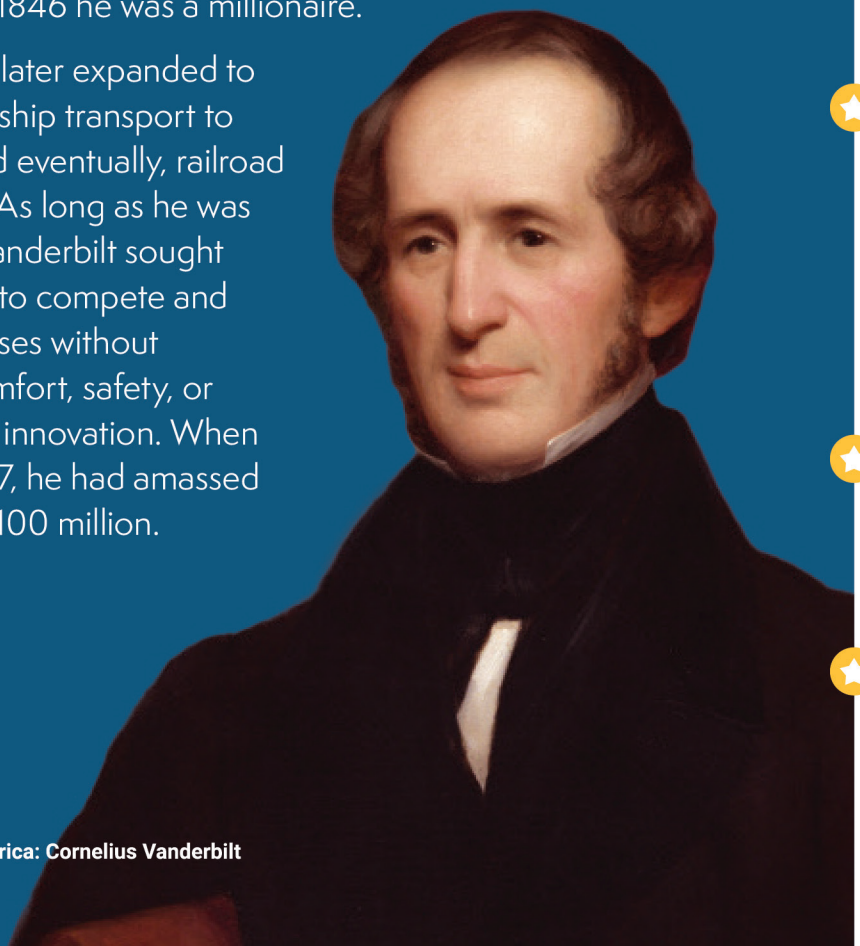
Cornelius Vanderbilt grew up on the waterfront as the son of poor farmers. At 16, he borrowed $100 to buy a flat-bottomed sailboat, which he used to ferry passengers between Staten Island and New York City.

Vanderbilt quickly earned a reputation as an able boatman who provided reliable service, even in the most **inclement** weather. During the War of 1812, he transported provisions to strategic government outposts.

He later worked as a steamboat captain for Thomas Gibbons, and the two conspired to break a government-enforced monopoly by charging much lower rates. Their efforts would succeed, ultimately resulting in an 1824 Supreme Court case that struck down the **monopoly.**

Over the next decade, Vanderbilt established his own steamboat business in the Northeast, offering **unprecedented** luxury, service, and low fares. He was so successful that his competitors paid him to leave, and by 1846 he was a millionaire.

His operation later expanded to include steamship transport to California, and eventually, railroad construction. As long as he was in business, Vanderbilt sought creative ways to compete and reduce expenses without sacrificing comfort, safety, or technological innovation. When he died in 1877, he had amassed a fortune of $100 million.



At-a-Glance

- Born on May 27, 1794, in Staten Island, New York.
- A shipping and railroad **magnate** who became the richest man in America.
- Called "Commodore" because of his work in the boating industry.
- Recognized as a central figure in America's industrial revolution.
- A classic market **entrepreneur** whose tactics spurred innovation and made travel more affordable for his customers.
- **Maligned** as a "Robber Baron" by many modern historians.
- Died on January 4, 1877, in New York, New York.

A Humble Mooring

Cornele (short for Cornelius) Vanderbilt was born on May 27, 1794–the fourth child of Cornelius Vanderbilt and Phebe Hand. He grew up near the water at Stapleton on Staten Island. From their modest home, the family enjoyed views of the Narrows and Long Island, where they could observe a steady stream of boats traversing the harbor. From an early age, Vanderbilt developed an eye for sailing vessels and could easily distinguish between them.

The family's farm produced meager crops, so Vanderbilt's father worked odd jobs on the water to supplement the family's earnings. In his small sailboat, Vanderbilt Sr. carried produce to sell at the city market.

Vanderbilt learned to sail at an early age so that he could help his family. He was eager to take on even the most demanding labor to avoid going to school. Under constant pressure to make ends meet, his father depended on his help and did not insist on a formal education.

At age 12, Vanderbilt was entrusted with a complex mission: to remove the cargo of a wrecked vessel off Sandy Hook and bring it to New York. His success in negotiating with the teamsters and ferrymen during the mission won his father's confidence.

Vanderbilt greatly respected his mother, Phebe, a resourceful woman who tended to and sold her own crops, stashing the earnings in the old family clock. She frequently rescued the family from financial ruin with her hidden savings.

Vanderbilt the Boatman

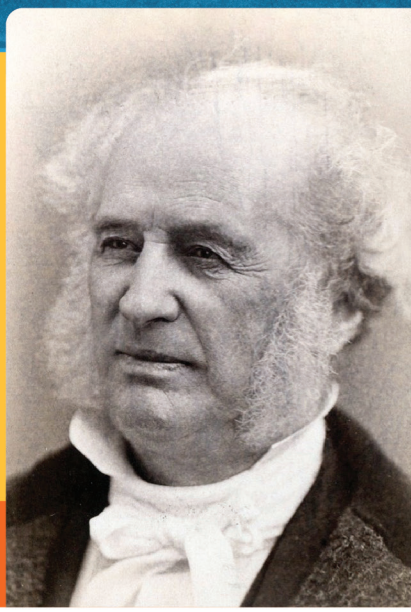
Just before his 16th birthday, Vanderbilt shared his dream of becoming a sailor with his mother. Since he was not permitted to leave home until age 21, they made a special arrangement. She would loan him $100 to buy his own sailboat, and he would repay the loan by carrying passengers between Staten Island and the city. Vanderbilt was also required to earn the loan by plowing and planting an eight-acre parcel on his family farm.

He accepted the challenge with confidence and completed the farming task in one month, enabling him to buy the sailboat and launch his business. In addition to ferrying passengers, he accepted various freighting assignments, working day and night.

At the end of his first season, Vanderbilt was so successful that he repaid the loan to his mother plus an additional $1,000. He gave his parents all of his daytime earnings and half of what he earned at night. His modest savings enabled him to buy two additional sailboats, expanding his operation in the harbor.

"I didn't feel as much real satisfaction when I made two million in that Harlem corner as I did on that bright May morning sixty years before when I stepped into my own [boat], hoisted my own sail, and put my hand on my own tiller."

Cornelius Vanderbilt



BUILDING A BUSINESS

On December 19, 1813, Vanderbilt married Sophia Johnson. They welcomed the first of 13 children in their first year of marriage, propelling Vanderbilt to work even harder. His wife's thriftiness in managing their household enabled him to reinvest his earnings in the business.

Vanderbilt hired other boatmen to manage his successful ferry business so that he could devote his energy to coastal trade. Leading merchants were eager to conduct business with him, and he increased his earnings by transporting their goods up and down the eastern coastline.

He continued to add vessels to his fleet and oversaw their design and construction, suggesting various innovations that came to be known as "Vanderbilt methods" and "Vanderbilt models."

By the end of 1817, Vanderbilt noticed that steamboats were appearing with greater frequency on New York waters. As his sailing profits began to decline, he realized that the future belonged to steam.

Fierce Competition

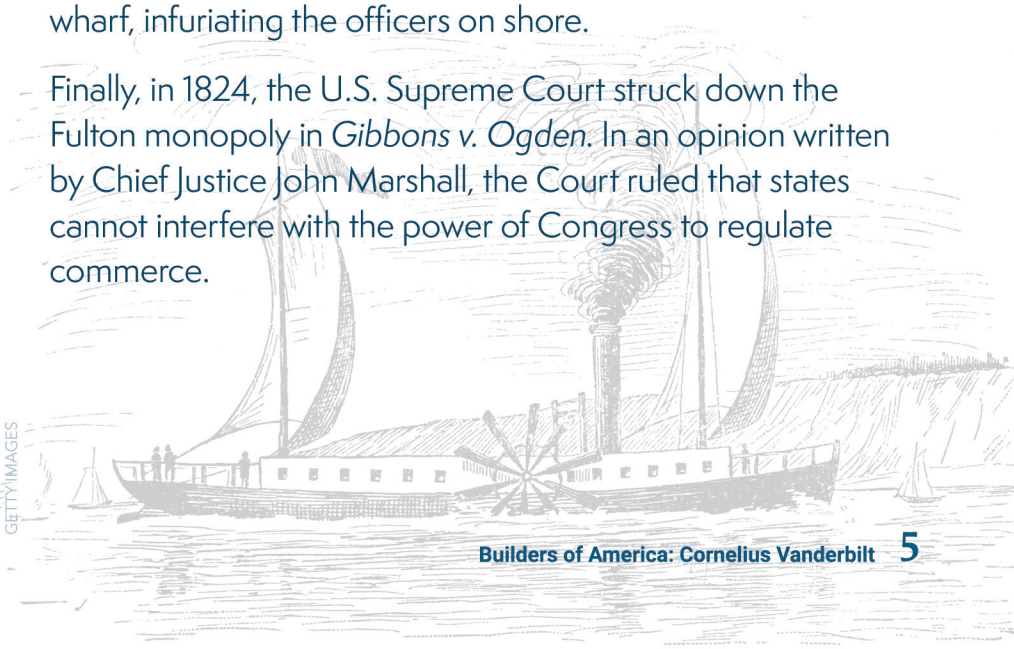
The first American to operate a steamboat on New York waters was Robert Fulton. In 1807, his famous steamboat, the *Clermont*, hissed and spurted four miles per hour up the Hudson River, transforming the boating industry. The New York government played an active role in establishing Fulton's business, granting him the right to carry *all* New York steamboat traffic for 30 years.

Thomas Gibbons, a New Jersey steamboat businessman, sought to break Fulton's monopoly and hired independent-minded Cornelius Vanderbilt to work as his captain. Vanderbilt accepted significantly less pay to learn the steamboat business from Gibbons, his first and only employer.

To crack the monopoly, Vanderbilt charged much lower rates, increasing the affordability of steamboat travel as well as his own popularity. However, by defying the monopoly, he was also breaking the law, and authorities attempted to arrest him for 60 consecutive days.

To avoid arrest, Vanderbilt devised several tricks. On the steamboat the *Bellona*, he constructed a secret closet accessed by a sliding panel. When police searched for him on board, he hid in the closet until one of his crew tapped on the panel, signifying that the officers had given up their search. The Bellona would mysteriously start up and leave the wharf, infuriating the officers on shore.

Finally, in 1824, the U.S. Supreme Court struck down the Fulton monopoly in *Gibbons v. Ogden*. In an opinion written by Chief Justice John Marshall, the Court ruled that states cannot interfere with the power of Congress to regulate commerce.



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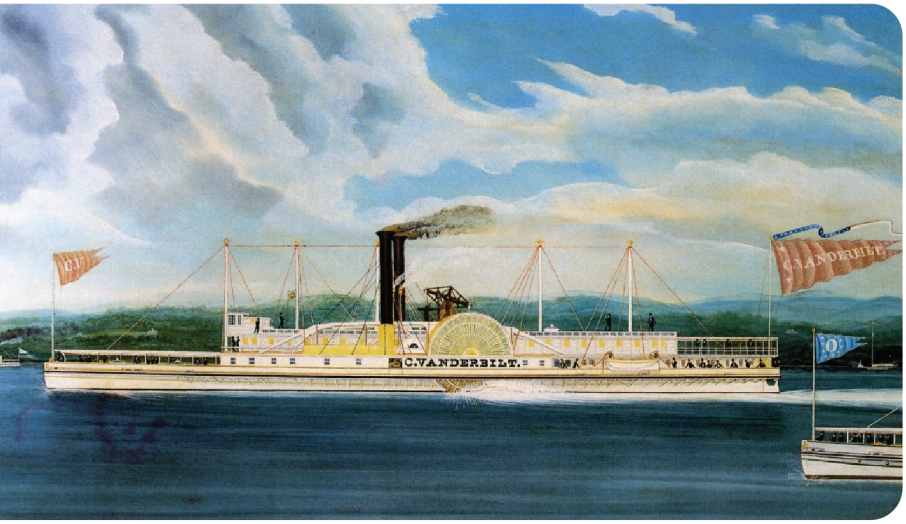


DID YOU KNOW?

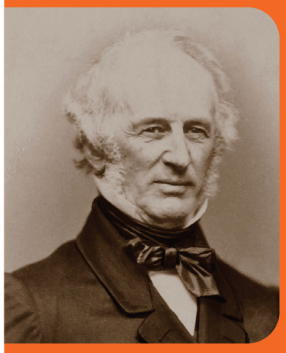
Historians have long debated the effects of entrepreneurs on American commerce. The steamboat industry offers a snapshot of how entrepreneurs responded to various challenges and how those responses did, or did not, contribute to growth.

Political entrepreneurs such as Robert Fulton relied on government aid to build their businesses through monopolies, **subsidies**, **price-fixing**, vote buying, or stock speculation. As a result, politics and business became corrupted and made America less competitive. Since Fulton didn't have to deal with any competition, he could raise prices on consumers, eating away at the money they worked hard to earn.

Market entrepreneurs such as Cornelius Vanderbilt succeeded on their own by providing a superior product at a low cost. They enabled new technologies to flourish and services to improve. Steamboat builders were free to invent tubular instead of heavy copper boilers. Fuel costs were reduced by 50% when engineers discovered that anthracite coal worked well under the new boilers. Vanderbilt passed on these savings to his customers, lowering fares from seven dollars to three dollars.

Full Steam Ahead

In 1829, Vanderbilt purchased two steamboats and went into business for himself, offering fast and reliable service at low rates. One of his largest competitors, the Hudson River Steamboat Association, tried to guarantee profits through a fixed three dollar fare. Vanderbilt challenged them by slashing the fare to one dollar, then to ten cents, and eventually to nothing. He counted on his 100 passengers buying at least two dollars of food on his boat to cover the daily $200 operating cost.



The Steamboat Association offered to buy Vanderbilt out, giving him $100,000 plus $5,000 a year for ten years if he would leave the Hudson River for the next ten years.

Vanderbilt invested his payoff money in bigger and faster ships. The *New York Evening Post* called him "the greatest practical anti-monopolist in the country" when he cut the New York City to Providence rate in half.

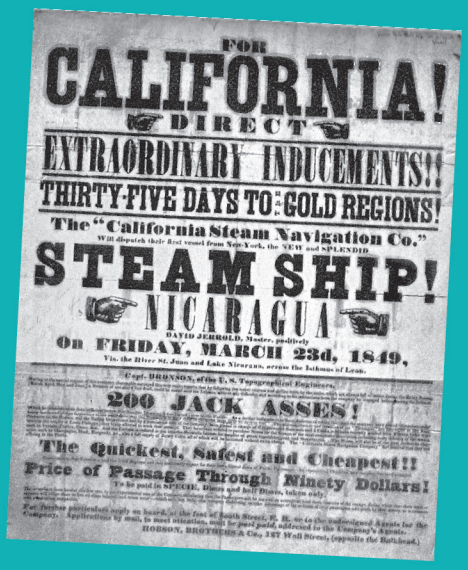
Subsidy on the Seas

To meet the demand for overseas trade, many steamship operators sought federal aid. The U.S. government hired Edward Collins to build five ships that would carry mail to California. He spent several years building four luxurious ships, using taxpayer money to create elegant saloons filled with marble tables, olive wood furniture, and plush carpet. His costs were **exorbitant**, but with annual government aid of $858,000, he had no incentive to reduce them.

Vanderbilt competed with Collins by slashing prices to carry mail and passengers, finding creative ways to cut expenses. Instead of paying high insurance rates, Vanderbilt hired excellent captains and invested in well-built ships that required little maintenance.

By contrast, Collins's ships cost more to build and were prone to leakage. By 1856, two of his ships sank and killed almost 500 passengers. He spent over $1 million of government money to build a replacement, but it was so poorly constructed that it only made two trips before he sold it at a huge loss. As a result, Congress revoked Collins's aid and forced him to compete with Vanderbilt. He soon went bankrupt, making Vanderbilt the leading American steamship operator.

To California!



Two steamship operators were hired by the government to deliver mail to California in exchange for $500,000 (later $900,000) per year. Passengers paid $600 to travel from New York to California via railroad over Panama.

From Vanderbilt's perspective, the subsidized California lines had been given an unfair advantage, so he devised clever tactics to compete with them. To shorten the route to California by 500 miles, Vanderbilt established a steamship line to take passengers to Latin America and a transit company to carry them through Nicaragua. He offered free mail delivery and a faster journey to California for a $150 fare.

When Vanderbilt later lost rights to the canal, he competed directly with the subsidized lines on the Panama route, reducing his fare to just $100. His competitors were infuriated that their business was being undercut, so they offered to pay him 75% of their government subsidy if he promised to stop running ships to California. In 1858, Congress was shocked to learn about the payoff and ended the mail subsidies. Vanderbilt had successfully exposed the corruption of the subsidy system.

Fascinating Facts about Vanderbilt

- Vanderbilt knew only basic math and was illiterate, relying on phonetics for spelling.
- In the most humiliating experience of his career, Vanderbilt's large 26-ton vessel, named *Dread*, capsized and sank.
- In his fight to break the Fulton monopoly, Vanderbilt raised a flag on the masthead of Gibbon's ship that read, "New Jersey Must Be Free!"
- Vanderbilt built a $600,000 steamship he named the *Vanderbilt*, the largest ship on the Atlantic. He later donated the ship to the U.S. during the Civil War.
- Vanderbilt ordered the construction of Grand Central Depot in New York City, creating jobs for thousands who had become unemployed during the Panic of 1873.

Fill-in-the-Blank

1. Cornelius Vanderbilt was born on _____ to poor farmers, Cornelius Vanderbilt and Phebe Hand.

2. At age 16, Vanderbilt received a $100 loan from his mother to buy a _____, which launched his business.

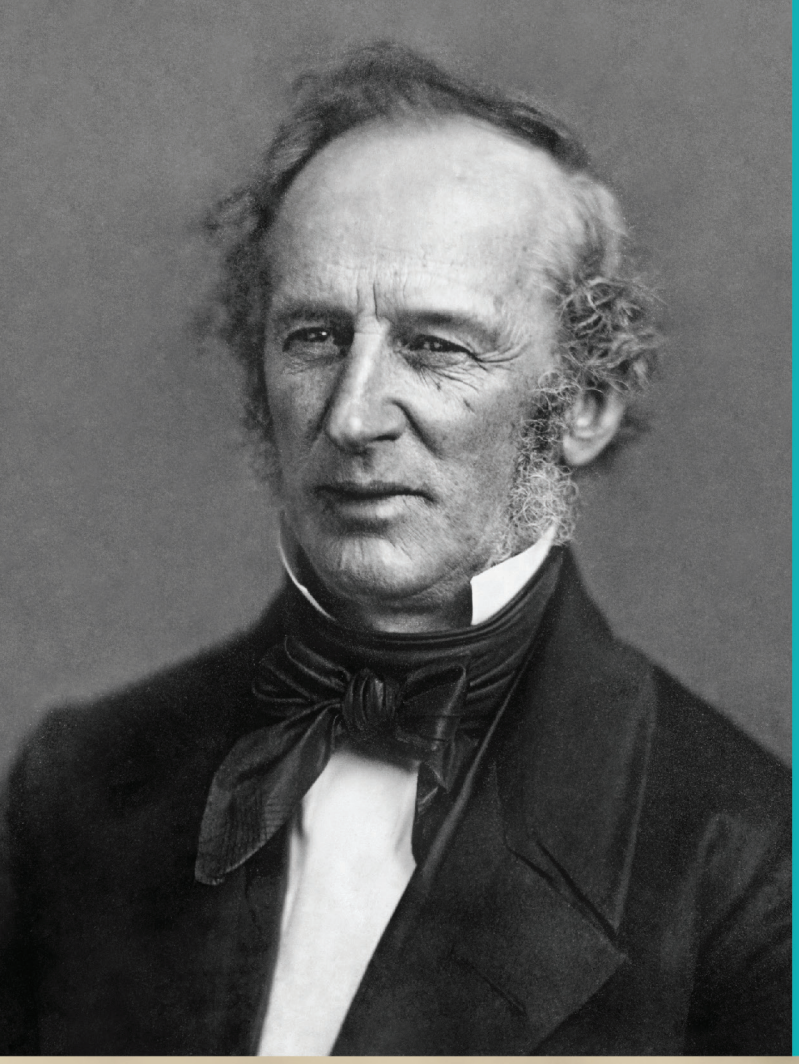
3. Vanderbilt learned the steamboat business from his first and only employer, _____.

4. _____ relied on government aid to build their businesses while _____ succeeded on their own by providing a superior product at a low cost.

5. To compete with the government-subsidized California steamship lines, Vanderbilt built a canal in _____ that shortened his route by 500 miles.

6. When Vanderbilt died in 1877, he was the _____ man in America, worth $100 million.

Answer key on page 11



Later Life

Vanderbilt had come a long way since he purchased his first boat in 1810. During the 1850s, he began investing in railroads, buying stock, and ultimately acquiring multiple railroad lines in the Northeast.

After the Civil War, Vanderbilt sold his steamship fleet and focused exclusively on railroads, which had become extremely profitable. His New York Central railroad line extended over one thousand miles to Chicago and other midwestern cities.

Vanderbilt continued to manage his business interests until his death in 1877.

Word Scramble

1. TLARNIVDBE
2. TIPNACA
3. AEOTSBATM
4. TEENURPRREEN
5. PLOONYMO
6. ISTVNE
7. DARLIROAS
8. ESIDBSSUI
9. ATNOVIRNO
10. ARENSSEGSP

The Profits Add Up!

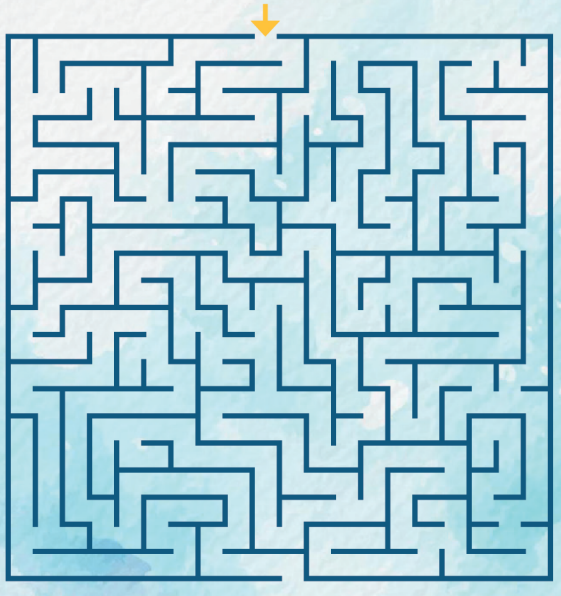
Help Vanderbilt calculate his earnings:

1. The Steamboat Association paid Vanderbilt $100,000 plus $5,000 a year for ten years to stop operating his steamboats on the Hudson River. How much did he earn?

2. When Vanderbilt challenged the California lines, his competitors offered to pay him 75% of their $900,000 government subsidy to stop running ships to California. How much money did they pay him?

Lost at Sea

Help Vanderbilt ferry passengers from Staten Island to New York City.



Answer key on page 11

GETTY IMAGES

Glossary

- **Inclement:** Severe, rough, or stormy, usually referring to the weather.
- **Monopoly:** When one company has so much control over a certain type of good or service that no other companies can make money selling that good or service.
- **Unprecedented:** Never before known or experienced.
- **Magnate:** A powerful or influential person, especially in business or industry.
- **Entrepreneur:** A person who starts and operates a business, usually with substantial initiative and risk.
- **Malign:** To make evil, harmful, and often untrue statements about someone.
- **Subsidy:** Money given by a government to a private person or company to support public programs or services.
- **Price-Fixing:** An agreement between companies in the same industry on what the price of a certain good should be, which often raises the price for consumers.
- **Exorbitant:** Going beyond what is reasonable in cost, quality, amount, or size.

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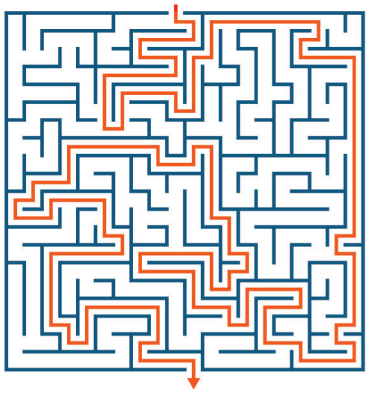
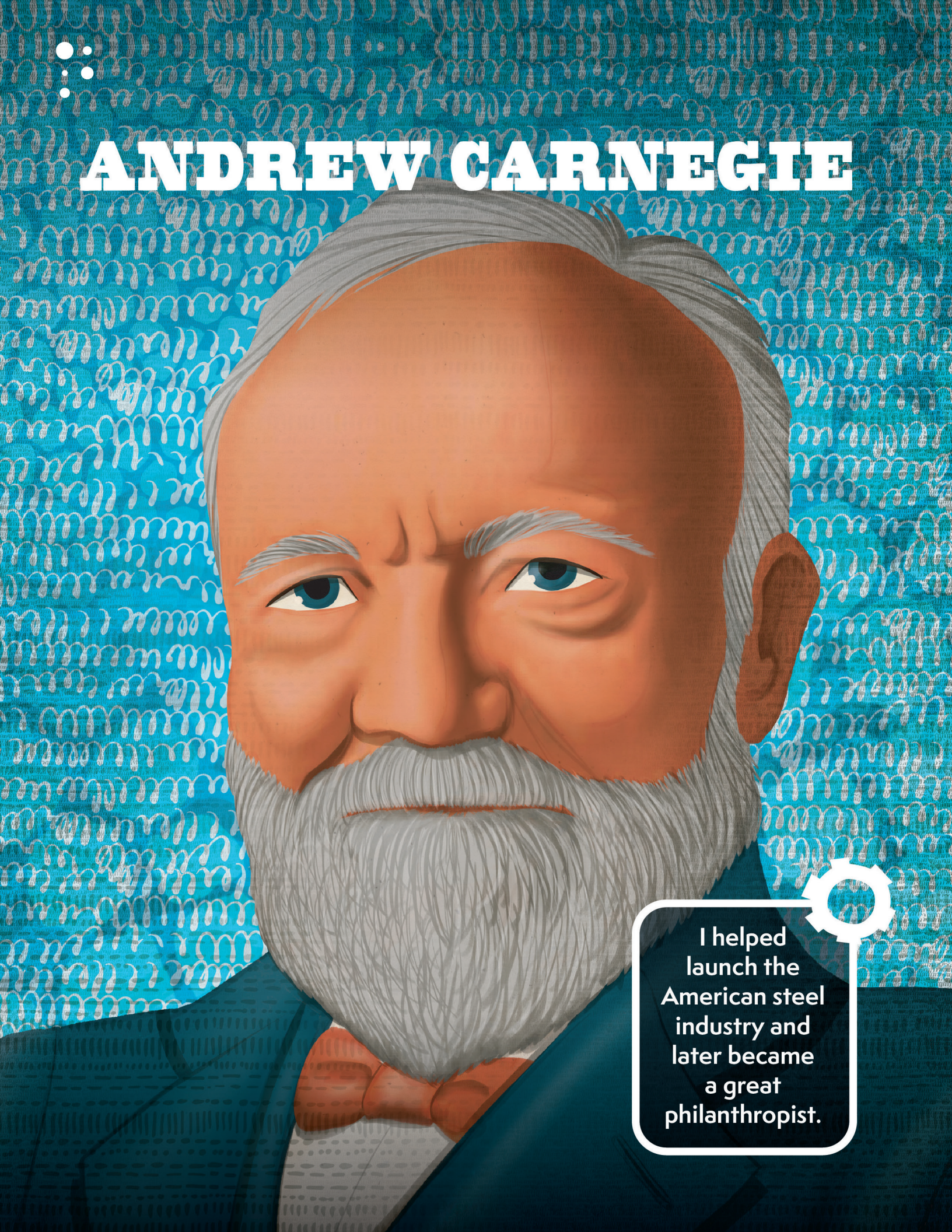


FILL-IN-THE-BLANK KEY: 1–MAY 27, 1794. 2–SAILBOAT. 3–THOMAS GIBBONS. 4–POLITICAL ENTREPRENEURS, MARKET ENTREPRENEURS. 5–NICARAGUA. 6–RICHEST.

WORD SCRAMBLE KEY: 1–VANDERBILT. 2–CAPTAIN. 3–STEAMBOAT. 4–ENTREPRENEUR. 5–MONOPOLY. 6–INVEST. 7–RAILROADS. 8–SUBSIDIES. 9–INNOVATOR. 10–PASSENGERS.

THE PROFITS ADD UP KEY: 1–$100,000 + ($5,000 X 10) = $150,000. 2–PART I: WRITE 75% AS A DECIMAL. 75 / 100 = .75 PART II: $900,000 X .75 = $675,000.

ANDREW CARNEGIE



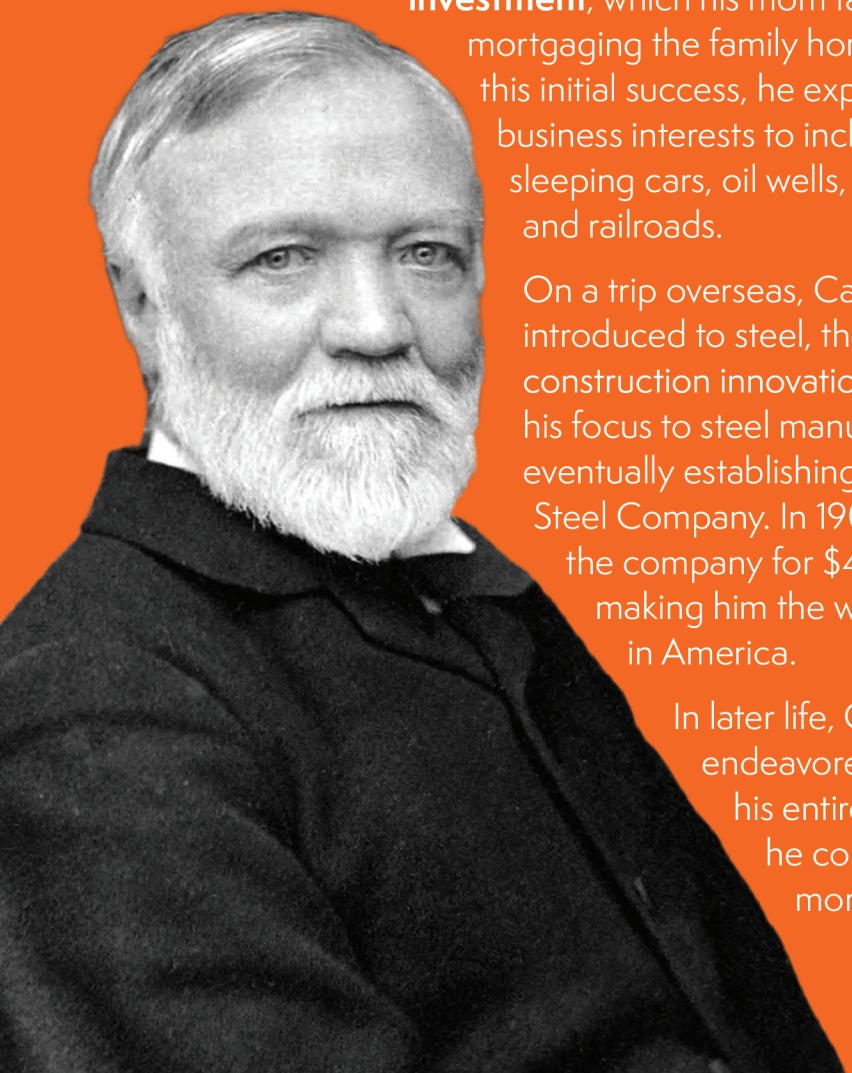
Meet Andrew Carnegie

A Scotland native, Andrew Carnegie emigrated to America with his parents and younger brother in 1848. They settled just outside of Pittsburgh and struggled to make ends meet when his father's weaving business collapsed.

To help support the family, Carnegie worked as a bobbin boy in a cotton factory. At 14, he became a messenger for a **telegraph** office where he taught himself how to use the equipment. With this new skill, he was soon promoted to telegraph operator.

Pennsylvania Railroad **superintendent**, Thomas Scott, took notice of Carnegie and offered him a position and an opportunity to learn the railroad industry. Carnegie later succeeded his boss as superintendent of the Pennsylvania Railroad's western division when he was just 24.

At Scott's recommendation, Carnegie made his first-ever **investment**, which his mom facilitated by mortgaging the family home. Following this initial success, he expanded his business interests to include railway sleeping cars, oil wells, iron works, and railroads.



On a trip overseas, Carnegie was introduced to steel, the latest construction innovation. He shifted his focus to steel manufacturing, eventually establishing the Carnegie Steel Company. In 1901, he sold the company for $480 million, making him the wealthiest man in America.

In later life, Carnegie endeavored to give away his entire fortune, which he considered a moral imperative.

At-a-Glance

- Born November 25, 1835 in Dunfermline, Scotland.
- Led the expansion of the American steel industry.
- Known for his ambition, keen eye for opportunity, and willingness to take calculated risks.
- One of the most important **philanthropists** of his time.
- Often referred to as the "Patron Saint of Libraries" for founding 2,509 libraries in English-speaking countries.
- Died on August 11, 1919 in Lenox, Massachusetts.

Humble Origins

The oldest of three children, Andrew Carnegie was born in the attic of a small one-story house in Dunfermline, Scotland. His sister died in childhood and the family later welcomed another boy, Tom.

Carnegie's father, William, worked as a highly skilled **damask** weaver. When an industrial textile factory opened in town, business shrank and the family fell into poverty. His mother, Margaret, opened a small shop to supplement their income.

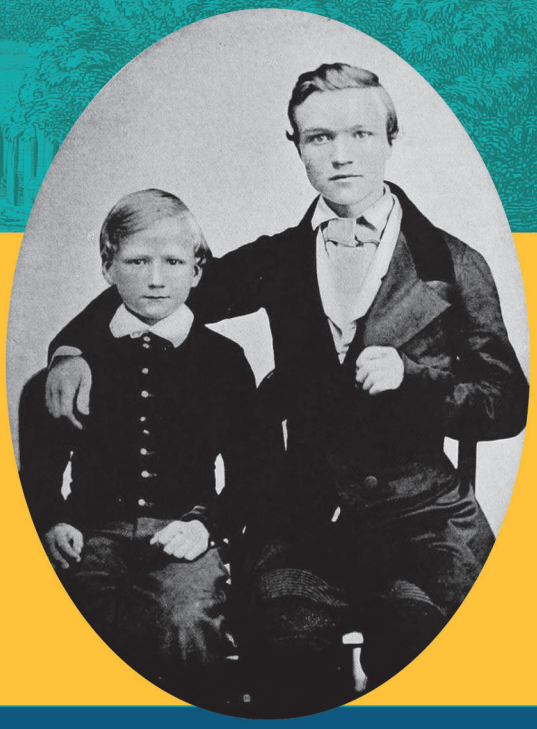
Carnegie took pride in becoming useful to his parents at age ten when he ran shop errands after school. He also handled the accounts of the shop's patrons, introducing him to business affairs at this early age.

At school, Carnegie developed a passion for books and reading. He memorized works of poetry and enjoyed reading about Scottish and American history. He and his family were strong admirers of the American Republic and one of his earliest memories was seeing a small map of America.

After his father sold the last of his hand weaving looms for a fraction of its value, the family decided to emigrate to America. A friend loaned them the money needed to pay for their passage. Later in life, Carnegie recalled his tearful goodbye from his beloved childhood town, despite his optimism about the future.

"Young people should know that a sunny disposition can be cultivated; that the mind like the body can be moved from shade into sunshine."

Andrew Carnegie



Andrew Carnegie and his younger brother, Tom

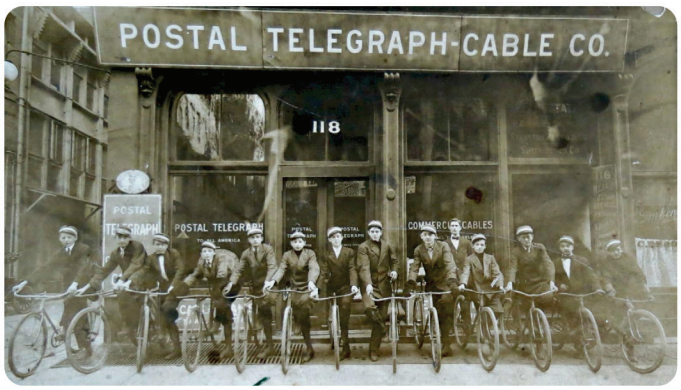
Immigrants in a New Land

Carnegie's family moved to Allegheny, Pennsylvania, and his father resumed weaving tablecloths that he sold door-to-door for a meager profit. He eventually gave up weaving and obtained work in a cotton factory where he found his son a job that earned $1.20 per week.

Carnegie later reflected on his role as a bobbin boy: "The hours hung heavily upon me and in the work itself I took no pleasure; but the cloud had a silver lining, as it gave me the feeling that I was doing something for our world—our family. I have made millions since, but none of those millions gave me so much happiness as my first week's earnings."

His mother worked binding shoes, a skill she had learned in childhood. She was Carnegie's heroine: a dignified lady who worked tirelessly to provide a proper upbringing for him and Tom.

Carnegie admired his parents and appreciated the sense of honor, independence, and self-respect that pervaded their household. Because they communicated openly about their financial situation, 14-year-old Carnegie determined that his family needed to earn $25 per month to support themselves.



FROM MESSENGER TO MESSAGES

Carnegie credited his real start in life to his job as a **messenger** boy for the Ohio Telegraph Company, where he earned $2.50 per week. He reported to work in his nicest clothes and expressed a willingness to memorize all of the city's streets so that he could deliver telegrams quickly.

In a few months, Carnegie received a pay raise. He shared all of his earnings with his parents, and they were soon able to repay the money they had borrowed for their journey to America.

Carnegie was soon entrusted with greater responsibilities. He was often asked to watch the office during his manager's short absences and began to receive messages and assign them to the other messengers.

Carnegie regularly came to work early to sweep the office before the telegraph operators arrived. In the quiet morning hours, he practiced on the equipment and taught himself the art of telegraphy. As a result of his new skill, he was sometimes asked to stand in for an absent operator. Carnegie soon learned to take messages by ear, an accomplishment so rare that people often came to the office just to watch him work.

Industrious Investor

Carnegie's unusual new skill did not go unnoticed. Thomas A. Scott, superintendent of the Pittsburgh division of the Pennsylvania Railroad, became a frequent visitor to the telegraph office and was impressed with Carnegie's ability, efficiency, and cheerful demeanor. When he offered him a job, Carnegie jumped at the chance to work for Scott, who taught him the railroad business.

Meanwhile, Carnegie's new income of $35 per month made it possible for his family to buy the lot and two small houses where they had been living. When his father died in 1855, Carnegie took on management of all household affairs. Although deeply distressed, he was satisfied that his father had lived to see the family become more financially secure.

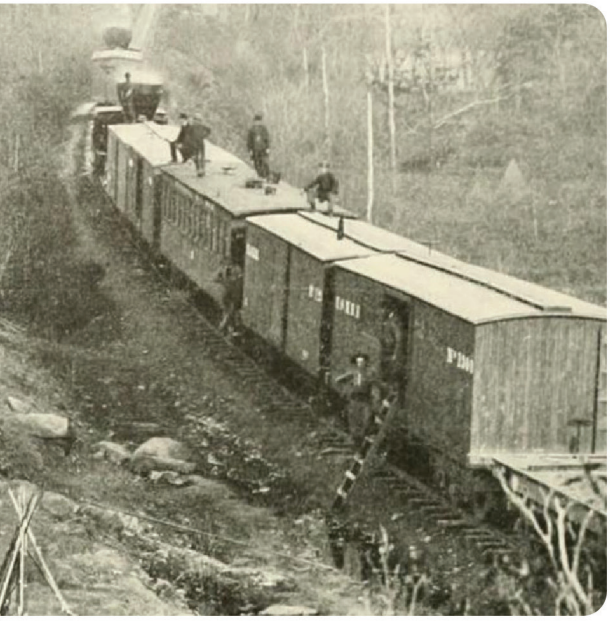
Carnegie began receiving monthly **dividends** of $10 from his first investment, sparking his interest in investing.

Soon after, inventor T. T. Woodruff approached Carnegie on a train to show him a model of his new sleeping car. Impressed with Woodruff's design, Carnegie quickly arranged a meeting with Scott, who promptly ordered the construction of two sleeping cars. In gratitude, Woodruff offered Carnegie an eighth interest in his venture.

When Scott became VP of the Pennsylvania Line in 1859, Carnegie was promoted to superintendent of the Pittsburgh division, for a salary of $1,500 per year. Finally, the Carnegies could afford to move to an upper-class neighborhood, and they settled into Homewood, just outside of Pittsburgh.

FUN FACT

When Carnegie was in charge of the telegraph office during the Civil War, he frequently came into contact with President Lincoln, who often came to the office awaiting replies to telegrams.



Civil War

When the Civil War erupted in 1861, Carnegie was summoned to Washington, D.C. by Scott, who was now Assistant Secretary of War in charge of the Transportation Department. Carnegie became Scott's assistant in charge of the military railroads and the government's telegraph office.

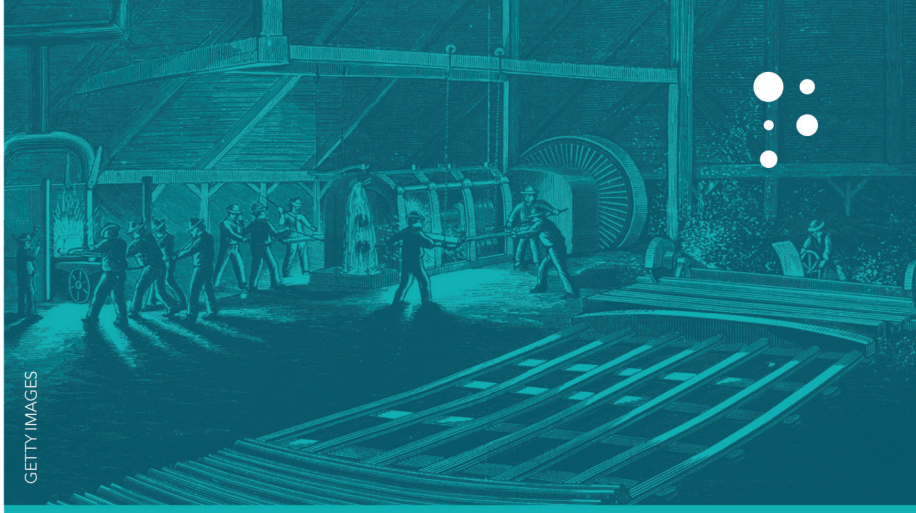
Carnegie's team contributed to the war effort by successfully transporting Union troops and wounded volunteers to safety. He organized groups of railway workers who repaired broken branches in the rail line, enabling heavy trains to pass. Carnegie also worked day and night to open telegraph communication to the South.

Iron Bridges and Oil Wells

During the war, Carnegie observed that wooden railway bridges were not sufficient as they were apt to burn in fires, causing major delays in transportation. Carnegie had once seen a small iron bridge and decided that iron should be the future of bridge-building. In 1863, with four colleagues, he established the Keystone Bridge Company, the first iron railway bridge construction company.

Carnegie attributed the company's success to their commitment to quality. They used only the best materials, critically inspected their own work, and declined any project that they could not build safely, earning them a reputation in dependability. In his autobiography, Carnegie remarked, "The surest foundation of a manufacturing concern is quality. After that, and a long way after, comes cost."

Around this time, the great Pennsylvania oil wells attracted Carnegie's attention, and he began investing earnestly in oil. As his personal investments grew and required greater attention, he decided to leave his position at Pennsylvania Railroad to focus exclusively on his personal business affairs.



GETTY IMAGES

"Steel is King"

Notwithstanding iron's significance, Carnegie happened upon a superior building material during a visit to Britain. There he met Henry Bessemer, an engineer who had discovered that blowing hot air through molten iron burned away impurities, resulting in a material known as steel. Carnegie returned to America and informed his partners, "Steel is king," reflecting his realization that steel would soon outpace iron. He then organized a group of investors to establish a steel-rail company in 1873.

Carnegie carefully studied his competitors to learn their strengths and weaknesses. He discovered that they were discarding thin steel shavings called "scale" that fell on the floor during steel manufacturing. He then offered to cart away their scale and used the shavings to make steel rails for his own company.

When Carnegie entered the steel business, England dominated world markets and the price of steel was $56 per ton. By 1900, Carnegie was manufacturing steel for $11.50 per ton, surpassing the entire production of England. Carnegie's success was due to his ability to improve his company's products. A classic market **entrepreneur,** Carnegie took huge risks, overcame competitors, and ultimately launched the American steel industry onto the world stage.

Vertical Integration

Carnegie believed that the path to success in any business was to master that business, rather than to invest in faraway operations. Therefore, he invested heavily in his own company to obtain greater efficiency and a superior product. From 1888 to 1897, Carnegie and his partners doubled investments in their mills to over $45 million and more than tripled their production of iron and steel to 18,000 tons per day.

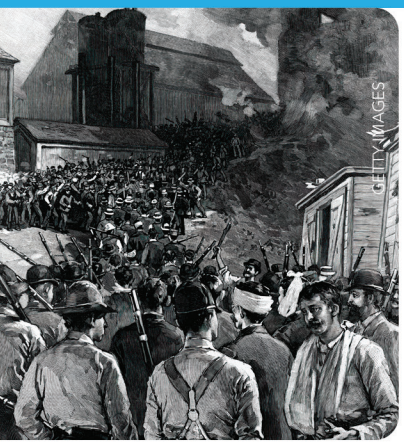
In an effort to control all stages of production, Carnegie organized the business accordingly, from acquiring raw materials to building the final product, a practice known as "vertical integration." He purchased coke fields and iron-ore deposits that furnished the raw materials for steel production. He also bought ships and railroads to transport these supplies to his steel mills. By controlling all levels of production, the company's earnings were significantly increased.

Innovation = Success

To maintain advantage, Carnegie and his partners erected three blast furnaces so that they could produce their own ferro manganese, an alloy of iron and manganese used in steel manufacturing. As a result of their experimentation, they were able to supply the entire American demand for ferro manganese, causing prices to fall from $80 to $50 per ton, single-handedly revolutionizing steel manufacturing.

On the human side of the business, Carnegie recruited only the most capable employees, supported paying higher wages, and offered incentives to high-performing employees as an investment that encouraged loyalty and success.

Carnegie's accounting team developed extremely detailed cost and production accounting procedures, giving the company the ability to analyze their standing and ultimately, a leading edge in manufacturing.

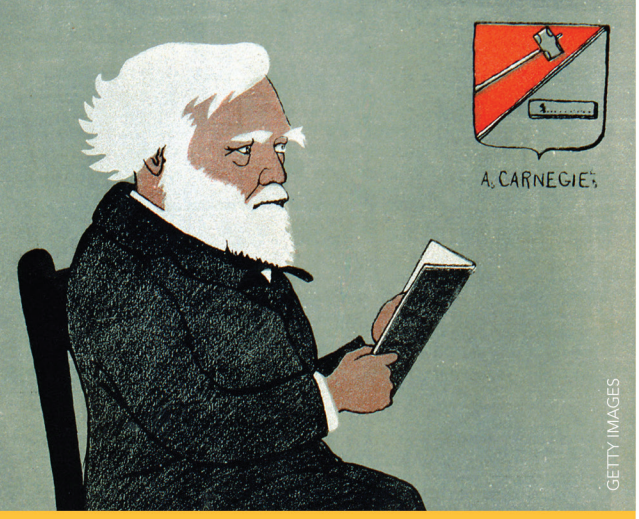


CONTROVERSY STRIKES

Many of Carnegie's employees were part of a union called the Amalgamated Association of Iron and Steel Workers. Carnegie's company, Carnegie Steel, had a contract with the union, but it was due to expire in July 1892. Carnegie was visiting Scotland, so he charged business partner Henry Clay Frick with ending the contract early and breaking the union so his employees couldn't join it. Frick cut the workers' wages, angering them into striking. This event became known as the Homestead Strike. Frick fired all 3,800 workers and hired a private security company to guard the mill.

Many of the workers revolted. Thousands stormed the plant. For the next 12 hours, the security team and workers exchanged heavy gunfire. Although the guards surrendered, many were severely beaten. When the workers took control of the factory, Frick summoned the National Guard to restore order. At least three guards and seven workers were killed in the riot.

Following the strike, many of the workers and union leaders faced criminal charges. Some workers returned to the mill, agreeing to work longer hours for reduced wages. Although Carnegie was abroad during the ordeal, some people criticized him for not returning to **quell** the dispute.



GETTY IMAGES

Later Life

In 1889, Carnegie published a pair of articles that came to be known as "The Gospel of Wealth." He wrote that a man who accumulates great wealth has a responsibility to use it to improve mankind through philanthropic causes.

When Carnegie sold his steel company to J.P. Morgan for $480 million in 1901, he began to distribute his massive fortune. His wealth helped establish numerous colleges, schools, and nonprofit organizations and associations across the U.S. and abroad. He also funded over 2,500 libraries and paid for thousands of church organs in the United States and around the world.

Carnegie's legacy includes the prestigious music venue Carnegie Hall, the creation of Sesame Street, and the establishment of Carnegie Corporation of New York (which has supported everything from the discovery of insulin to the dismantling of nuclear weapons).

Fascinating Facts

- In Scotland, young Carnegie kept pigeons and rabbits as pets. His first business venture involved organizing his friends to gather food for them. In return, he promised to name new rabbits after them.
- Carnegie developed an appreciation for libraries when Colonel Anderson made his 400-volume collection available to "working boys." Carnegie credits the Colonel with opening the light of knowledge to him when he was just a messenger boy.
- In 1883, Carnegie purchased a rival steel mill called Homestead Works. The mill provided beams for the first skyscraper in America, the ten-story Home Insurance Building in Chicago.
- In 1887, Carnegie married Louisa Whitfield in New York. In 1897, the couple welcomed their first and only child, Margaret, named after Carnegie's mother.
- The Carnegies resided for part of the year in Skibo Castle in northern Scotland.

True or False?

1. **Andrew Carnegie was born in Dunfermline, Scotland on November 25, 1835.**
2. **Carnegie credited his real start in life to his position as a bobbin boy in a cotton mill.**
3. **After his first successful investment, Carnegie expanded his business interests to include railway sleeping cars, oil wells, iron works, and railroads.**
4. **During a visit to Britain, Carnegie learned how to manufacture steel, a building material stronger than iron.**
5. **In vertical integration, a company attempts to control a single stage of production or a single industry completely, making it less competitive.**
6. **Upon his retirement, Carnegie bequeathed his fortune to his family.**

Answer key on page 21

Try Your Hand as a Telegraph Operator

As telegraph operator, Carnegie interpreted electrical pulses of various lengths and converted them to letters, creating meaningful communications called telegrams. Telegraph operators were versed in a language called Morse Code—a system for representing letters, numbers, and punctuation marks by an arrangement of dots, dashes, and spaces. Telegrams were typically used to communicate urgent messages because they were faster than the mail.

The Pennsylvania Railroad created its own telegraph office in order to manage railway traffic. Telegraphic orders were necessary to safely guide trains on and off their tracks, avoiding collision. Operators also communicated vital information about breakdowns and accidents.

A ·−/	G −−·/	M −−/	S ···/	Y −·−−/	: −−−···
B −···/	H ····/	N −·/	T −/	Z −−··/	+ ·−·−·
C −·−·/	I ··/	O −−−/	U ··−/	? ··−−··	- −····−
D −··/	J ·−−−/	P ·−−·/	V ···−/	. ·−·−·−	/ −··−·
E ·/	K −·−/	Q −−·−/	W ·−−/	, −−··−−	= −···−
F ··−·/	L ·−··/	R ·−·/	X −··−/	; −·−·−·	

Using the Morse Code key, decode these valuable messages from Andrew Carnegie:

1. ·−/ ···/··−/−·/−·/−·−−/ −··/··/···/·−−·/−−−/···/··/−/··/−−−/−·/
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Answer key on page 21

Mr. and Mrs. Andrew Carnegie, 1908

Glossary

- **Telegraph:** A communications system that transmits and receives coded signals by wire.
- **Superintendent:** A person who supervises or directs an enterprise, organization, or district.
- **Investment:** The outlay of money or capital in order to earn a profit.
- **Philanthropist:** One who helps others and society overall through charitable aid or donations.
- **Damask:** A patterned fabric of cotton, linen, silk, or wool.
- **Messenger:** A person who is hired to carry telegrams, letters, or parcels.
- **Dividends:** A sum of money paid to shareholders of a corporation out of earnings.
- **Entrepreneur:** A person who starts and operates a business, usually with substantial initiative and risk.
- **Quell:** To suppress, put an end to, or pacify.

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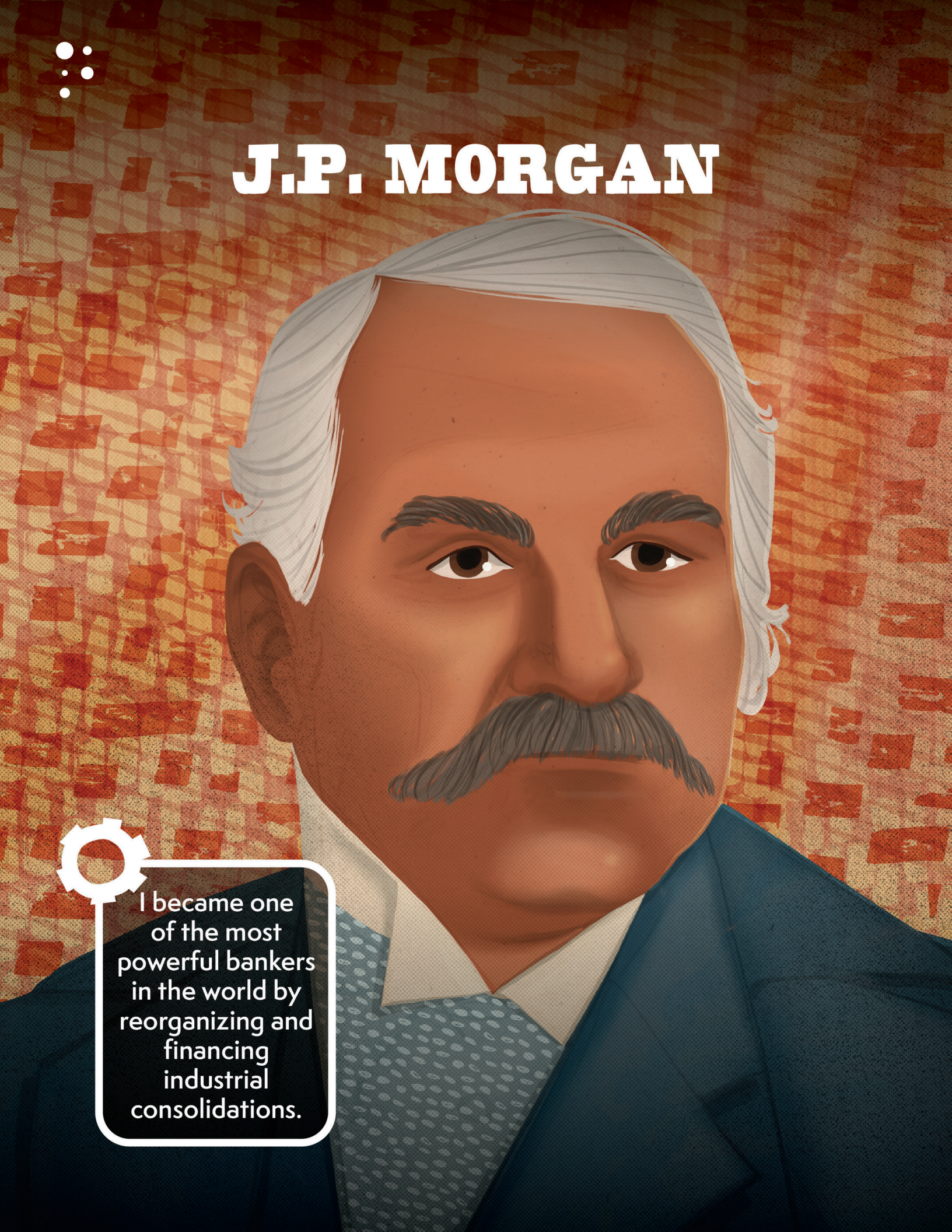
TRUE OR FALSE? 1–T. 2–F. 3–T. 4–T. 5–F. 6–F.
TELEGRAPH OPERATOR: 1–A sunny disposition is worth more than fortune. 2–The great aim of every child should be to do something beyond the sphere of his duties, something which attracts the attention of those over him.

J.P. MORGAN



I became one of the most powerful bankers in the world by reorganizing and financing industrial consolidations.

Meet John Pierpont Morgan

Born to a preeminent New England family, John Pierpont Morgan enjoyed opportunities that his **contemporaries** John D. Rockefeller and Andrew Carnegie could only have dreamed.

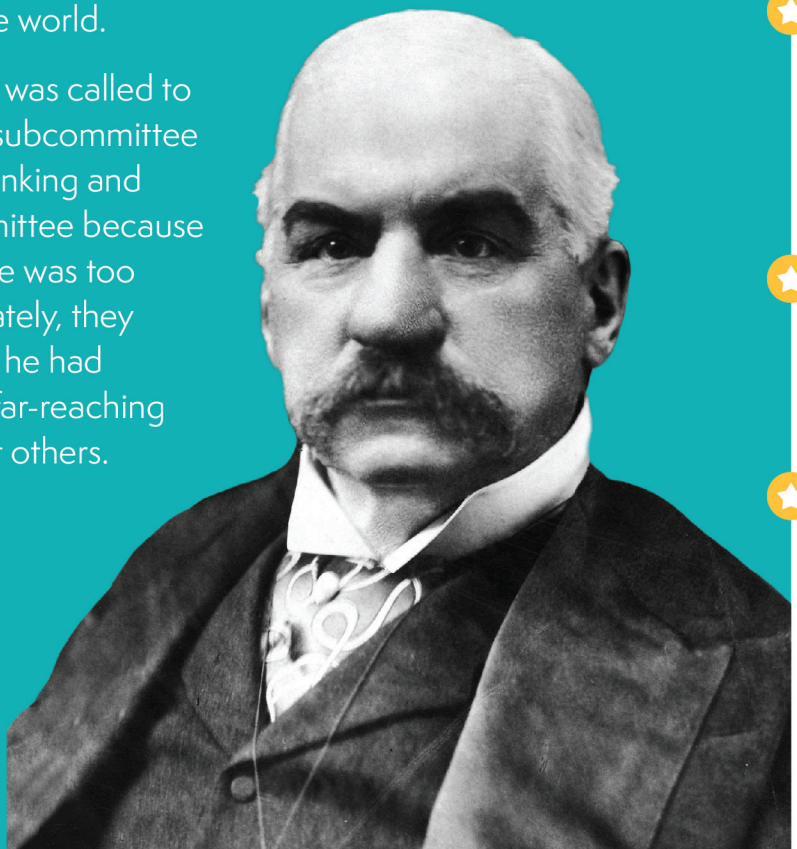
Morgan was well-traveled, university-educated, and well-connected to the international banking world through his father's associations.

Over the course of his career, Morgan's ties overseas enabled him to serve as a vital link between American and European financial markets. However, connections played only a partial role in his success. His natural abilities served him well; he was methodical, confident, persistent, and mathematically capable.

In 1885, Morgan began reorganizing the volatile U.S. railroad industry. He joined their boards and acquired their stock, expanding his influence. By 1902, he controlled nearly 5,000 miles of American railroad lines.

Morgan helped secure U.S. government financing during major economic crises. In 1895, his firm reorganized as J.P. Morgan & Company and became one of the most powerful banking institutions in the world.

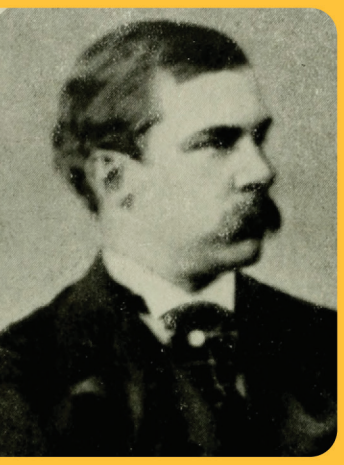
In 1912, Morgan was called to testify before a subcommittee of the House Banking and Currency Committee because people feared he was too powerful. Ultimately, they did not find that he had used his bank's far-reaching power to exploit others.



At-a-Glance

- Born on April 17, 1837, in Hartford, Connecticut.
- American **financier** and industrial organizer.
- Restructured the U.S. railroad industry to achieve rate stability.
- Financed industrial **consolidations** that formed General Electric. and U.S. Steel
- Led and helped stabilize the American financial markets during economic crises, including the panics of 1893 and 1907.
- Founded J.P. Morgan & Company in 1895, a predecessor of present-day banking company, JPMorgan Chase & Co.
- Art collector who donated many works to the Metropolitan Museum of Art.
- Died on March 31, 1913, in Rome, Italy.

Early Life



Born on April 17, 1837, the eldest of Junius Spencer Morgan and Juliet Pierpont's five children, including a brother who died in childhood, John Pierpont Morgan grew up in Hartford, Connecticut and Boston, Massachusetts. As a child, he was known affectionately as "Pip."

The Morgan family were regular churchgoers, attending services at the Episcopal church twice each Sunday, establishing a religious foundation that Morgan retained throughout his life.

Morgan was prone to illness throughout his life. At age 15, he became crippled with an attack of inflammatory rheumatism. His parents sent him to recover in the warm climate of the Azores Islands, a Portuguese archipelago. Throughout his journey, he wrote extremely detailed letters, chronicling his experience. The expedition afforded him a comfort with foreign life that prepared him for future business dealings with international clients.

When he regained his strength, Morgan traveled to England to join his family, where his father had joined the banking firm of George Peabody & Company.

Morgan attended University of Göttingen in Germany before returning to New York to begin his business career in 1857 at Duncan, Sherman and Company.

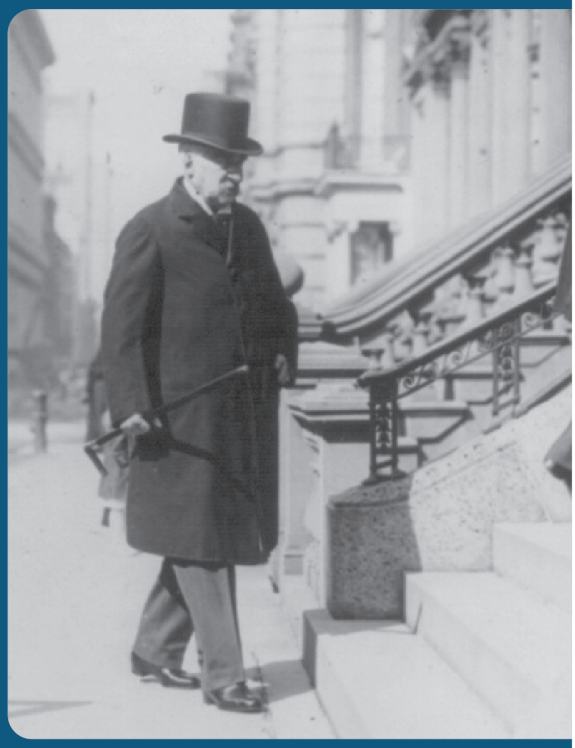
A Bold Transaction

In his new position, Morgan visited New Orleans to study the shipping business. He bustled from dock to dock, boarding vessels to inquire how their imports and exports were handled.

One day, Morgan boarded a cargo ship loaded with bags of coffee that the captain could not deliver because their buyer could not be located. The frustrated captain had been instructed by his Brazilian headquarters to dispose of the coffee.

Eying an opportunity, Morgan stuffed samples of the coffee in his pockets, solicited local merchants, took orders, and returned to the ship, offering to purchase the entire cargo on his employer's behalf.

When they learned the news the next day, Morgan's superiors in New York were outraged at his audacity. What they didn't yet know was that he had sold every bag of coffee *before* purchasing the cargo and at a tidy profit. Nonetheless, this bold transaction caused Morgan's bosses both alarm and respect.



"A man I do not trust could not get money from me on all the bonds in Christendom. I think that is the fundamental basis of business."

J.P. Morgan

Finding His Way

In 1861, Morgan married Amelia Sturges, the daughter of a respected New York merchant. She died from **tuberculosis** just four months after their wedding, leaving him a young widower. After months of grieving, he found New York teeming with Civil War business and was ready to reengage in business under a new name: J. Pierpont Morgan and Company.

Still suffering from frequent fainting spells and a skin condition, Morgan opted not to enlist in the Army. When the Civil War draft was instituted in July 1863, he took advantage of a regulation that permitted him to hire a substitute to take his place in the Army—for a $300 **commutation**.

During the war, Morgan facilitated the sales of American securities on behalf of the Peabody firm's anxious English clients, who doubted that the Union would survive and wanted to unload their American **holdings**.

Just after the end of the war, Morgan married Frances Louisa Tracy, and they settled comfortably on Madison Avenue, welcoming four children over the next decade.

Morgan began to suffer from health-related depression as he experienced perpetual exhaustion, severe headaches, and fainting spells. Already a wealthy man, he considered retiring at the age of thirty-three, but his father urged him to sell European **securities** in the United States. Junius arranged a meeting for his son with Anthony J. Drexel, and the two agreed to form a partnership.

In 1871, Drexel, Morgan and Company officially opened, and the association proved to be highly profitable.

Discreet Dealings

As the railroad industry expanded, it depended largely upon European **capital**. In America, Morgan represented the financial might of Britain through his vast connections. In 1879, William H. Vanderbilt, son and heir of Cornelius Vanderbilt, approached him for assistance. The Vanderbilts had bought several small railroads to form the New York Central line, which extended from New York to Chicago.

As the majority owner with eighty-seven percent of the line's shares, William Vanderbilt had been accused of ruling by might. He was unpopular with the public and wished quietly to sell his shares to English investors. Morgan jumped at the chance to sell shares of New York Central stock to overseas buyers.

When the operation was completed, the financial community was astounded at the transaction, garnering Morgan greater respect and influence. He now found himself in a position to do something about the economic chaos in American railroads.

RAILROADS: OFF THE RAILS

When Morgan joined the New York Central's board of directors in 1879, the railroad industry was booming with uncontrollable development.

As settlers moved west, railroad lines popped up to support the expansion. Big railroads purchased smaller ones to form connected rail systems. Freight rates and passenger fares fluctuated wildly, resulting in an uproar among small businessmen and farmers.

The railroad industry attracted not only ambitious and inventive men but also ruthless **charlatans**.

Some sought to drive their stock up and down in the market for personal profit. Some aspired to gain control of two railroads, using them to enrich the other for speculative profit. Additionally, "blackmail roads" were often built alongside prosperous lines, in the hopes that the roads would be bought out at an exorbitant price to avoid ruining the original line's business.

Back on Track

One such blackmail road, the West Shore Road, was constructed alongside William H. Vanderbilt's New York Central line. However, Vanderbilt did not buy it out, and it went bankrupt. Soon, a group of men began purchasing the West Shore's **depreciated** bonds in an effort to steal Vanderbilt's traffic.

Meanwhile, in response to high freight rates, Vanderbilt had begun construction of a parallel line to another railroad—the Pennsylvania—with funding from steel manufacturer Andrew Carnegie. The new line would carry freight across the Allegheny Mountains, from Philadelphia to Pittsburgh, in direct competition with the Pennsylvania line.

Morgan observed these dealings with displeasure. As a representative for English investors, he felt responsible for the Central's success. He also had an interest in saving the Pennsylvania line, as his firm had helped finance it. So, he developed an idea to bring order to the railroads.

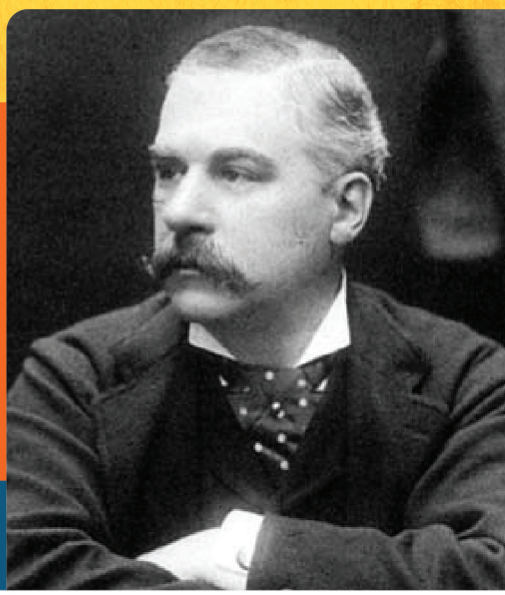
Morgan recommended reorganizing the West Shore Road under the wing of the Central. In return, the Central would turn over the South Pennsylvania project to the Pennsylvania. To present his plan, Morgan organized an afternoon meeting of the top executives from both railroads aboard his yacht, the *Corsair*.

By the time the yacht docked, the executives had accepted the deal, and Morgan had ensured his reputation as a broker of such arrangements. Through the mid-1890s, other railroads on the verge of bankruptcy approached him for reorganization assistance, and he became the dominant figure in restructuring railroad finances.

Morgan was later called upon to finance a series of giant industrial consolidations, including General Electric and U.S. Steel, helping reshape the American manufacturing sector.

"The first thing (in credit) is character... before money or anything else. Money cannot buy it."

J.P. Morgan



Central Banker

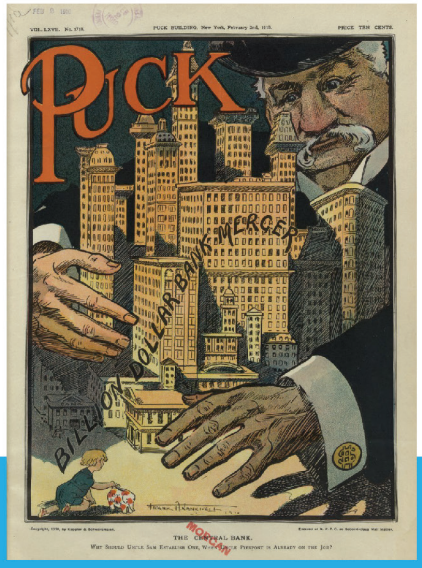
During two perilous instances of American institutional failure—the gold panic of 1893-95 and the stock market panic of 1907—Morgan assumed the role of Federal Reserve chairman without any legal authority.

After the 1893 Wall Street crash, foreign investors began to doubt America's economic strength and hurriedly sold gold-based railroad bonds. As a result, U.S. **gold reserves** plummeted. With no central banker on the American side, the issue could not be resolved with mere credit arrangements.

Morgan privately arranged to loan the Treasury $100 million in gold through his financial network. Despite initial fears of bankers wielding too much control over U.S. monetary policy, the White House eventually acquiesced, accepting $62 million in gold to avoid a total financial collapse.

Years later, Morgan was again summoned to intervene in another gold crisis—in the aftermath of the 1907 Wall Street crash. Many banks had come close to failing, and both the City of New York and the New York Stock Exchange were temporarily **insolvent**. Morgan emerged from semi-retirement to work 15 hour days, heading a group of bankers who helped determine how to manage government funds for financial relief. By preserving the solvency of major banks and corporations, Morgan was able to avert a crisis.

When news of his role sunk in, the public was in shock. Morgan was accused of engineering the crisis to enrich himself. People believed that he held too much sway over American capitalism.



Later Life

In 1912, just four months before his death, Morgan was called to testify before the Pujo Committee, a congressional hearing in Washington, D.C. The committee sought to expose the existence of a "money trust"—a small network of New York bankers led by Morgan—that controlled American business.

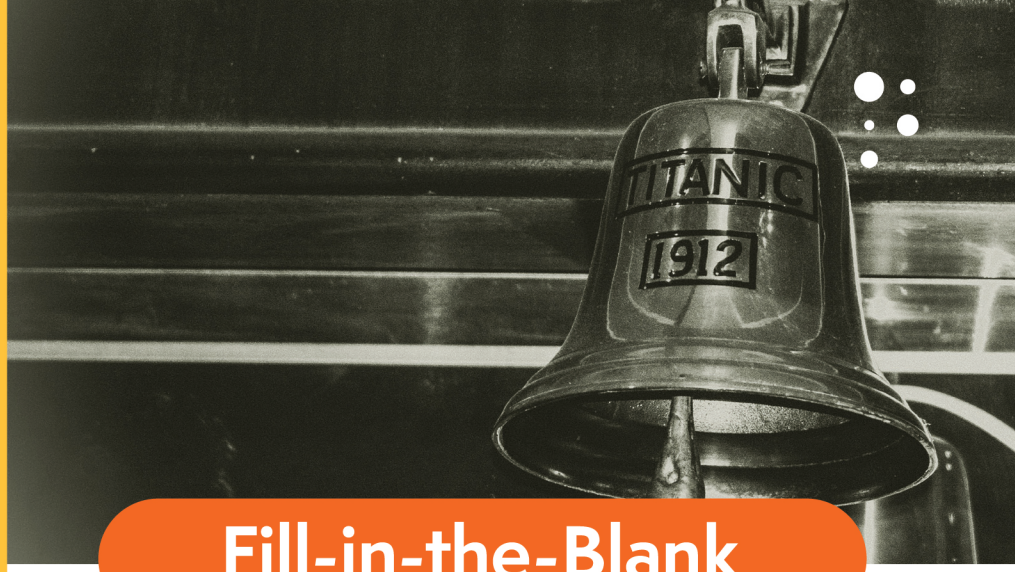
Although the claim was never conclusively proved, the 1907 crash and subsequent intervention led to the creation of the **Federal Reserve System** in 1913 and the **Clayton Antitrust Act of 1914.**

Morgan traveled to Europe with his daughter Louisa and died on March 31, 1913 just weeks before his 76th birthday. He left his vast estate to his widow and children. Everybody who worked for J.P. Morgan & Company received the equivalent of one year's salary. Morgan **bequeathed** most of his art collection to the Metropolitan Museum of Art.

Fascinating Facts about Morgan

- In April 1912, Morgan had a reservation on the *Titanic* but was forced to cancel due to illness. The ship infamously sank, resulting in great loss of life.
- The Morgan home at 219 Madison Avenue was the first electrically lit private residence in New York, powered by a basement generator.
- Morgan's most distinguishing feature was his bulbous nose, bright red from the skin disease, rosacea.
- In moments of anxiety or crisis, Morgan played solitaire to calm his nerves.
- Morgan collected stamps and the autographs of Episcopal bishops in his youth.
- The Christmas song "Jingle Bells" was written by Morgan's uncle, James L. Pierpont.

The Morgan residence at 219 Madison Avenue



Fill-in-the-Blank

1. In 1937, John Pierpont Morgan was born in _____, the eldest of five children.

2. To recover from a bad attack of inflammatory rheumatism, Morgan traveled to the _____.

3. With the help of his father's connections in London, Morgan helped facilitate the sales of American _____ during the Civil War.

4. Morgan helped stabilize the _____ industry by brokering deals with top executives.

5. Morgan financed the consolidation of major manufacturing industries, forming two new entities: _____ and _____.

6. After the 1893 Wall Street crash, U.S. _____ _____ plummeted.

7. Morgan intervened after the panics of 1893 and 1907 to prevent a financial _____.

8. The Pujo Committee tried to prove that Morgan was the leader of a "_____" that secretly controlled American business.

Answer key on page 31

Word Scramble

1. PTERPION
2. MCAIILTPAS
3. IARLORAD
4. TROPIF
5. ATNIICT
6. IYDUNTSR
7. KBORER
8. ACRHS
9. RSATONITNAC
10. SROVASEE

Making Order–Word Ladder

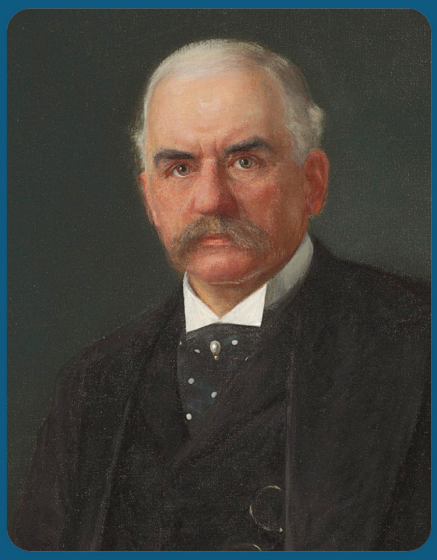
Morgan sought to bring order to the chaotic railroad industry to end lawless practices and stabilize rates.

To change the word BANKER into the word TRAVEL, move from top to bottom to form a sequence of words. On every step of the ladder, change each word by replacing one letter of the word. You can change the order of the letters. Use the clues to help you!

Answer key on page 31

1	B A N K E R	A person who owns a bank or has an important job in a bank.
2		One who gives support to someone or something.
3		To begin a journey, especially on a ship or airplane.
4		A place where products are bought and sold.
5		A person who talks a lot.
6	T R A V E L	To make a journey.

Glossary



- **Financier:** One who engages in investing or raising large amounts of money.
- **Consolidation:** The merger of two or more corporations into a single new corporation.
- **Contemporary:** Being of the same time or age.
- **Tuberculosis:** An infectious disease that affects human body tissue, usually the lungs, and that is characterized by fever, cough, and difficulty in breathing.
- **Commutation:** The substitution of payment for a type of service, such as military service.
- **Securities:** A financial instrument that has value and can be traded, such as a bond of stock certificate, that represents a certain financial amount.
- **Holdings:** Legally owned property, especially stocks, bonds, or real estate.
- **Capital:** Wealth, whether in money or property, often used in the production or accumulation of more wealth.
- **Charlatan:** A person who falsely pretends to have more skills or knowledge than they really have.
- **Depreciate:** To decrease in value; often refers to currency, homes, or cars.
- **Gold Reserve:** The gold held by a government or central bank, often to settle its international debts.
- **Insolvent:** Being unable to pay debts owed.
- **Federal Reserve System:** The central bank of the United States.
- **Clayton Antitrust Act of 1914:** An act to supplement existing laws against unlawful restraints and monopolies, and for other purposes.
- **Bequeathed:** To leave something to a person or other beneficiary by a will.

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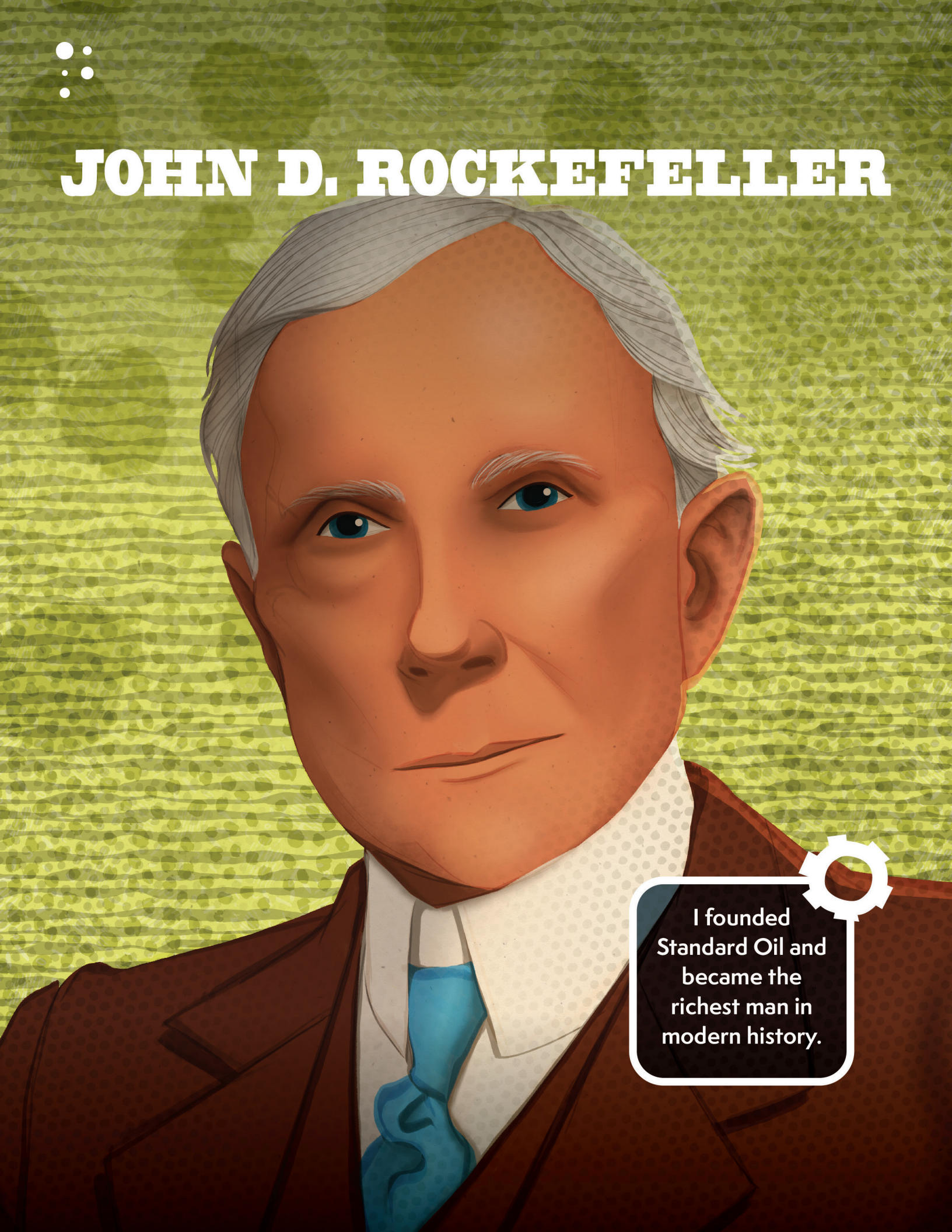
FILL-IN-THE-BLANK KEY: 1–HARTFORD, CONNECTICUT. 2–AZORES ISLANDS. 3–SECURITIES. 4–RAILROAD. 5–GENERAL ELECTRIC, U.S. STEEL. 6–GOLD RESERVES. 7–COLLAPSE. 8–MONEY TRUST.

WORD SCRAMBLE KEY: 1–PIERPONT. 2–CAPITALISM. 3–RAILROAD. 4–PROFIT. 5–TITANIC. 6–INDUSTRY. 7–BROKER. 8–CRASH. 9–TRANSACTION. 10–OVERSEAS.

MAKING ORDER KEY: 1–BANKER. 2–BACKER. 3–EMBARK. 4–MARKET. 5–TALKER. 6–TRAVEL.

JOHN D. ROCKEFELLER



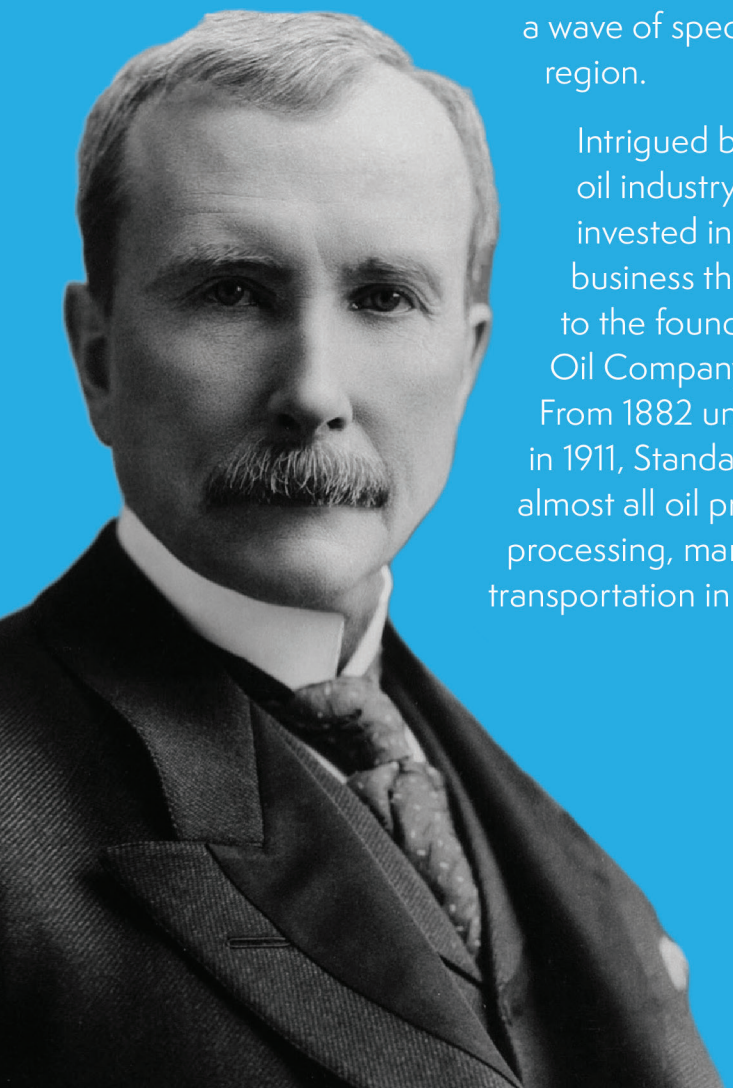
Meet John D. Rockefeller

John Davison Rockefeller so enjoyed business that he dreamed about it at night. His natural abilities, interests, and childhood lessons inclined him toward a successful life in commerce.

As a boy, Rockefeller learned his father's business sense and his mother's work ethic and faith. This combination of religion and industry shaped Rockefeller's life philosophy.

Rockefeller came of age during a period of rapid westward expansion in the United States. At 16, he began working as a bookkeeper for Cleveland merchants Hewitt & Tuttle. **Meticulous**, honest, and persistent, Rockefeller easily earned the trust of his employers.

In 1859, Rockefeller and associate Maurice Clark formed a profitable **logistics** company. Around this time, another entrepreneur named E.L. Drake drilled the first oil well in northwestern Pennsylvania, attracting a wave of speculators to the region.



Intrigued by the fast-growing oil industry, Rockefeller invested in an oil refinery business that eventually led to the founding of Standard Oil Company and Trust in 1870. From 1882 until its dissolution in 1911, Standard Oil controlled almost all oil production, processing, marketing, and transportation in the United States.

At-a-Glance

- Born on July 8, 1839 in Richford, New York.
- Industrialist and founder of Standard Oil Company, the first major U.S. **trust**, and most successful business in American history.
- His company's competitive practices led to its near **monopoly** on the U.S. oil business.
- Respected for his calm exterior, vision, precision, and attention to details.
- A devout Baptist, he devoted his later life to **philanthropy**, making contributions totaling more than $500 million.
- Died on May 23, 1937 in Ormond Beach, Florida.

Early Life

The second of six children and the eldest son, Rockefeller was born in the rural community of Richford, New York in 1839 to parents William and Eliza. His youngest sister Frances died in childhood.

His father, known as "Big Bill," was a traveling medicine salesman who spent extended periods of time away from home. His mother was a deeply religious homemaker who maintained stability through strict discipline.

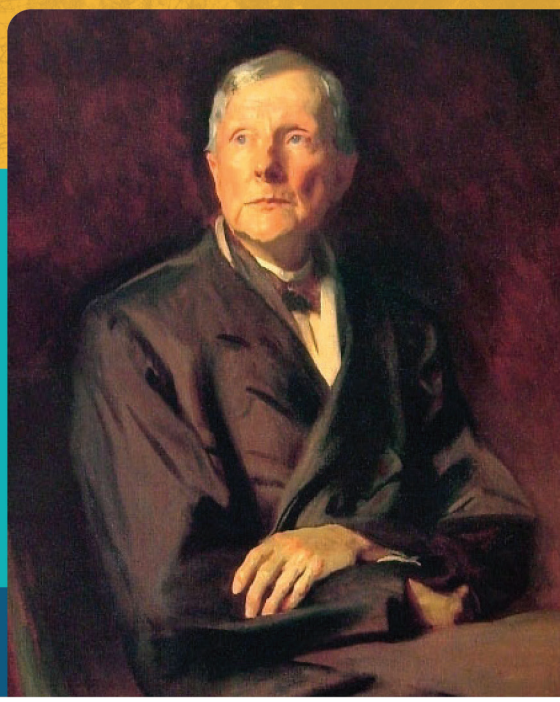
Rockefeller's father provided for the basic needs of his family, moving them to the more comfortable town of Moravia, and later to Owego. He encouraged an appreciation of music and taught sons John and William to row and fish. Big Bill had a larger-than-life personality; however, he was also a practical businessman. He trained his sons in business matters including punctuality and **frugality**. His mother saw to it that the children attended church and Sunday school each week.

At age seven, Rockefeller began to save his small earnings from running errands in a blue china bowl on the mantel. As his savings grew, his mother encouraged him to **tithe** to their church.

He later noted, "I had a peculiar training in my home. It seemed to be a business training from the beginning. I was taught to do things—simple things such as a boy could do." He learned to tend the garden, milk a cow, and ride a horse. He did his chores thoroughly and appreciated the value of labor. In adolescence, Rockefeller assumed a greater paternal role and additional responsibilities at home.

"From the beginning,
I was trained to work,
to save, and to give."

John D. Rockefeller



Considerable Calculations

In his youth, Rockefeller learned a valuable business lesson. A local farmer wished to borrow $50 for a year and was willing to pay seven percent **interest.** Rockefeller offered him the loan and collected $3.50 at the end of the year.

Around the same time, Rockefeller worked in his neighbor's field, digging potatoes for 37.5 cents per day. He calculated that it would have taken nearly ten days of back-breaking labor to collect what his savings had earned him without any struggle. Rockefeller concluded, "It was a good thing to let the money be my servant and not make myself a slave to the money. I have tried to remember that ever since."

In school, Rockefeller was not considered a standout student. His strongest subject was math, and he excelled in mental calculations. Indeed, this strength would serve him in future business negotiations. In later life, he recalled purchasing a $1 million oil pipeline from Doctor Hostetter. Rockefeller engaged him in idle conversation for half an hour so that he could compute the interest payments in his head while they were talking. He determined he had saved $30,000 on the interest by his mental calculations.

Westward and Beyond

Big Bill's business moved west, where he prospered in newer communities that lacked fully trained physicians. So, in 1853, the family relocated to Strongsville, a town near Cleveland, Ohio. There, Rockefeller became active at Erie Street Baptist Church where he served as clerk and taught a Sunday school class.

When Rockefeller graduated high school in 1855, his father announced that a college education would be too expensive. Although the family could indeed afford the price of the tuition, his father argued that a college degree would not be worth its cost and preferred practical success to book learning.

Rockefeller enrolled in a single business course at Folsom's Mercantile College in Cleveland before pursuing an apprenticeship. He searched in earnest for weeks, visiting every railroad, bank, and wholesale merchant firm in Cleveland, until finally he landed an assistant bookkeeper position at Hewitt & Tuttle.

At 16, Rockefeller's life as a businessman had officially begun.

A Practical Education

Rockefeller saw his new position at Hewitt & Tuttle as an opportunity to absorb as much as he could about the commission business. His employers earned a profit by connecting buyers and sellers of agricultural produce and arranging for the shipment and payment of their goods.

To understand how the business operated, Rockefeller inspected old office **ledgers.** He worked long hours, scrutinizing every bill that landed on his desk, and carefully verified the totals. He refused to approve a bill's payment until he confirmed the accuracy of every detail, as the bills frequently contained errors. Rockefeller also wrote letters and checked incoming shipments.

Controlling the cost of freight was essential to earning a profit at the firm, so Rockefeller devoted ample time to learning the particulars of the transportation business. He spoke regularly with railroad freight agents, barge owners, and schooner captains. He came to realize that even posted rates could be negotiated. As such, he was able to increase the profit margin by negotiating shipping **rebates**.

After three years with Hewitt & Tuttle, Rockefeller determined that he was ready to better his position. He later reflected that his time at the commission house had formed the foundation for his business career.

Independence

In the mid-1800s, America underwent a period of rapid transformation. New materials, new sources of energy, and machines enabled the mass production of manufactured goods. Additionally, the expansion of the railway system revolutionized transportation.

Cleveland quickly emerged as the center for rerouting the raw materials needed for the expansion of the West, and its merchants became middlemen in managing these basic commodities.

During this opportune period, a business acquaintance named Maurice B. Clark proposed an exciting **venture** with Rockefeller. They would open a commission house specializing in grain, hay, meats, and miscellaneous goods. On March 18, 1859, Clark & Rockefeller opened their doors.

After initial success, they continued to prosper throughout the Civil War. Although Rockefeller opposed slavery and felt called to serve, he decided not to abandon his new enterprise since many people were dependent on his business. Instead, he made financial contributions to help other men enlist.

As Rockefeller noticed the grain business moving farther west to Minneapolis, he began to consider additional investment opportunities.

Black Gold

Each year, America's demand for illuminants and lubricants increased. Kerosene lamps were now seen in most towns and cities. With the discovery of oil in the region, many men were enriched almost overnight. By the early 1860s, fortune-hunters were flocking to northwest Pennsylvania. Those who struck oil often wasted more than they collected, polluting local waterways.

Rockefeller watched with interest but was bothered by the industry's wastefulness and fluctuating prices. He opted instead to build a refinery near Cleveland with business partners Maurice Clark and Samuel Andrews, establishing Andrews, Clark & Co. in 1863. Within two years, it was the largest refinery in the area.

The oil refining process was cheap and simple. Crude oil was emptied into long wooden troughs, strained into a wooden tank, and then boiled in heavy stills. The oil then rose as a vapor into overhead pipes and was condensed into a bluish-white liquid called distillate from which gasoline, benzol, and kerosene were made.

Rockefeller constantly looked for ways to improve refinery methods and produce the best product at the lowest cost. His company hired their own plumber, bought their own plumbing material, and manufactured their own barrels. They further reduced costs by acquiring their own teams and wagons for hauling.

In 1865, the firm dissolved, and the Clark brothers sold their share of the business to Rockefeller and Andrews.

RELIGIOUS LIFE AND FAMILY

Religion played a prominent role throughout Rockefeller's life. He read the Bible and attended church services regularly, tithed, rested on the Sabbath, prioritized his family, and made a sincere effort to incorporate biblical teachings into his daily life. He believed that a strong religious foundation was a necessary counterpart to a successful life in business.

In 1864, Rockefeller married high school classmate Laura Celestia Spelman and the two became active at Erie Street Baptist Church. Their four children—Bessie, Alta, Edith, and John Jr.—were raised with the same values that Rockefeller himself had learned in childhood.

"We must ever remember we are refining the oil for the poor man and he must have it cheap and good."

John D. Rockefeller

Standard Oil Company

Through careful planning, Rockefeller expanded his business with the help of Andrews, his brother William, and Henry M. Flagler. The partners agreed to establish a new entity, and by 1868, Rockefeller headed the largest oil manufactory in the world. In 1870, they reorganized as Standard Oil Company and Trust, and by 1882, they controlled almost all U.S. oil production.

Standard Oil's success was due to the partners' constant reinvestment of profits into the business. They purchased pipelines and more efficient equipment and hired chemists to develop 300 by products from each barrel of oil.

Standard also earned rebates from the major eastern railroads who wanted to ship oil and were willing to give discounts to their biggest clients. As the largest oil refiner, they were in an excellent position to negotiate. Although such rebates were a customary practice, Rockefeller was condemned for receiving them because most other refiners were not able to compete.

Standard Oil's success was met with enormous criticism despite the benefits their products bestowed upon the American people. Before 1870, only the rich could afford the whale oil and candles needed to light their homes. The rest of the population went to bed early to save money. However, by the 1870s, the price of kerosene was so low that working class people could light their homes at night for just one cent per hour.

First U.S. Trust Company

Rockefeller was determined to become the best refiner in the world. He believed that a few large companies could prosper, but smaller companies could not survive. Thus, he actively sought to buy competing refineries, offering the owners cash or stock in Standard Oil. Additionally, he pursued markets in the United States and abroad, dominating the market share.

In 1882, Standard Oil Company established the first U.S. trust by consolidating the stock of Standard and its affiliates under the control of nine trustees, including Rockefeller. By the agreement, companies could be purchased, created, dissolved, merged, or divided.

Although this new arrangement advanced the distribution of oil products, many thought that Standard dominated the market unfairly. In 1911, the Supreme Court ruled against Standard Oil Company, citing the Sherman Antitrust Act of 1890, and the company was broken into smaller, separate companies.

Later Life

At around age 60, Rockefeller shifted his attention to philanthropy, family, and leisure, and less on business. His lifelong religious values informed his giving. Before he died, he had given away more than any other American to higher education, scientific research and medicine, schools, churches, and missionaries around the world.

Fascinating Facts about Rockefeller

- Rockefeller's first business opportunity came as a young boy. His mother challenged him to find their turkey's secret nest and rescue the eggs from rodents and foxes. Rockefeller found the nest, cared for the baby turkeys, and later sold them.
- By age 25, Rockefeller had become the real head of the family as his father's absences grew longer.
- Rockefeller organized his life to put God first, his family second, and his career third.
- Since he was a young man, Rockefeller took a daily nap, sometimes two.
- Rockefeller gave away more than $500 million during his lifetime. He paid teams of scientists to find cures for yellow fever, meningitis, and hookworm.

Attention to Detail

1. John D. Rockefeller is best known for:

- ○ a. Discovering oil in northeast Pennsylvania
- ○ b. Building the most successful business in U.S. history
- ○ c. Inventing the oil refining process

2. During the Industrial Revolution:

- ○ a. The railway system expanded, revolutionizing transportation
- ○ b. Machines enabled the mass production of goods
- ○ c. New sources of energy were discovered
- ○ d. All of the above

3. During the Civil War, Rockefeller:

- ○ a. Fought for the Union Army
- ○ b. Wrote articles opposing slavery
- ○ c. Made financial contributions to help other men enlist in the army

4. Rockefeller organized his life by putting:

- ○ a. Business first, God second, and family third
- ○ b. Family first, business second, and God third
- ○ c. God first, family second, and business third

5. Standard Oil was broken up because:

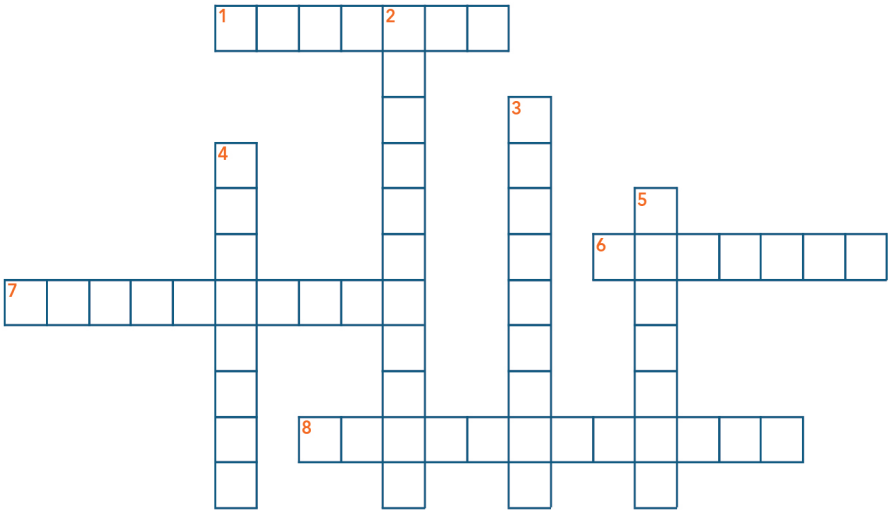
- ○ a. The company and its affiliates had attained a near monopoly
- ○ b. Rockefeller and his partners had over-invested in the business
- ○ c. Foreign producers drove them out of business

6. Rockefeller devoted much of his retirement to philanthropy, funding cures for:

- ○ a. Lung disease and ringworm
- ○ b. Yellow fever and meningitis
- ○ c. Cancer and malaria

Answer key on page 41

Crossword Puzzle



Answer key on page 41

ACROSS

1. Rockefeller's middle name
6. Rockefeller negotiated these from the major eastern railroads to increase profits
7. At age 16, Rockefeller landed his first job as a _____
8. Rockefeller's primary focus during retirement

DOWN

2. The name of the first U.S. trust company
3. The city that emerged as a hub for western expansion
4. What Rockefeller collected when he made a loan to a local farmer
5. Rockefeller inspected these in order to learn about his employer's commission business

Detect the Difference

Rockefeller's success in business was due in part to his eye for detail. His first business partner, Maurice Clark, said that Rockefeller "was methodical to an extreme, careful to details, and exacting to a fraction." Challenge your eye to find the five differences in these nearly identical images of a Standard Oil tank being transported on a wooden wagon.

©rjfiskness/123RF.COM

Answer key on page 41

Glossary

- **Meticulous:** Acting with extreme care and concern for details.
- **Logistics:** The planning and coordination of the details of an operation.
- **Trust:** A group of corporations formed by a legal agreement, for the purpose of reducing competition in an industry.
- **Monopoly:** When one company has so much control over a certain type of good or service that no other companies can make money selling that good or service.
- **Philanthropy:** Activities that help others and society overall through charitable aid or donations.
- **Frugality:** Careful management of material resources and especially money.
- **Tithe:** To give a portion of one's annual income, generally to support a religious institution.
- **Interest:** An amount paid or charged for borrowing money.
- **Ledger:** A book in which the monetary transactions of a business are recorded.
- **Rebate:** A return of part of an amount given in payment.
- **Venture:** A business project involving some risk in the hope of future gain.

Share of the Standard Oil Trust, issued January 18, 1883

ATTENTION TO DETAIL KEY: 1–b. 2-d. 3-c. 4-c. 5-a. 6-b.

CROSSWORD KEY: ACROSS: 1. Davison. 6: rebates. 7. bookkeeper. 8. philanthropy. DOWN: 2. Standard Oil. 3. Cleveland. 4. interest. 5. ledgers.

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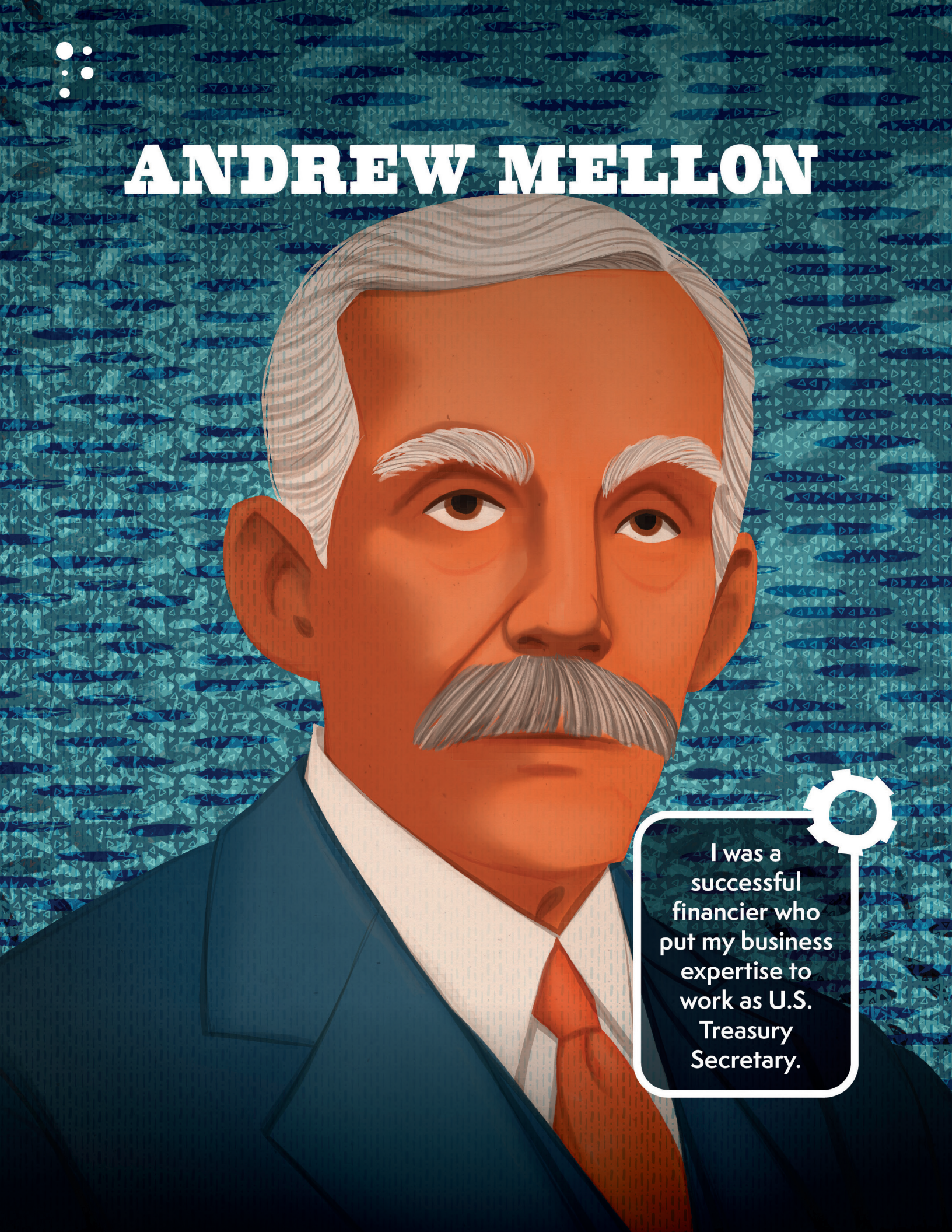
ANDREW MELLON

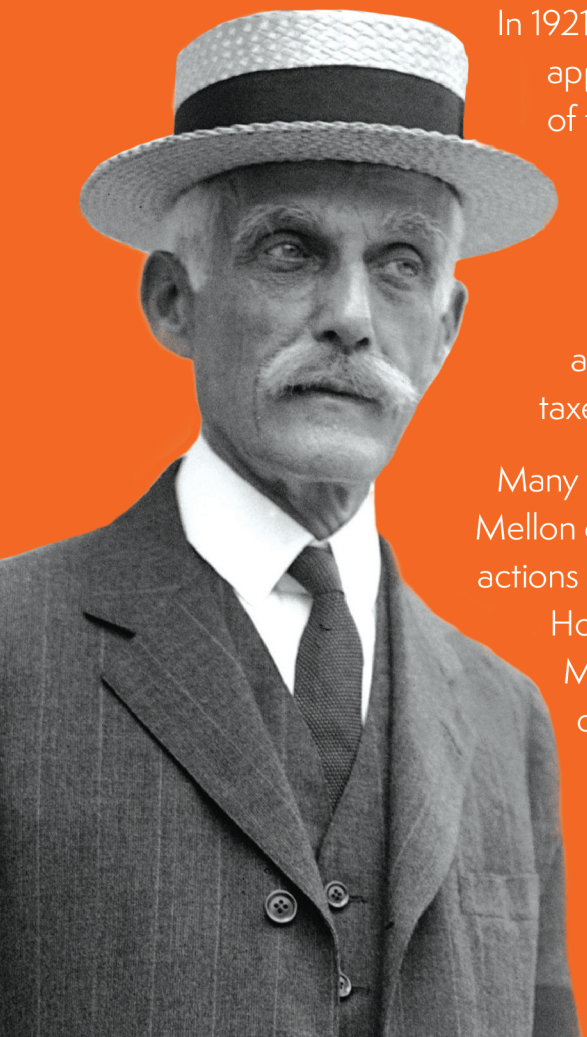


Meet Andrew Mellon

One of the most misunderstood men in American history, Andrew Mellon, contributed greatly to America's prosperity during the 1920s.

The son of respected judge and bank owner Thomas Mellon, young Andrew learned about **economics** around the family dinner table. His father began sending him on business trips when he was just a teenager. At 18, Mellon joined T. Mellon & Sons, where he granted loans to start-up ventures. He proved so capable that in 1882, his father turned the entire bank's operation over to him.

Through his investments, Mellon rose to become one of the wealthiest businessmen in America, establishing leading corporations in industries such as steel, aluminum, insurance, railways, and oil.



In 1921, President Warren Harding appointed Mellon as Secretary of the Treasury to address the national debt, which had reached an all-time high due to the massive cost of World War I. Mellon proposed a controversial tax policy: lower taxes to increase **revenue**.

Many modern textbooks claim that Mellon only aided the rich, and that his actions led to the Great Depression. However, a closer exploration of Mellon's tax philosophy reveals a different narrative.

At-a-Glance

- Born on March 24, 1855, in Pittsburgh, Pennsylvania.
- American **financier** and **philanthropist.**
- U.S. Secretary of the Treasury (1921-32) under three successive administrations.
- Reformed the tax structure of the U.S. government in the 1920s.
- Major art collector who donated his collection, valued at $25 million, to the U.S. government in 1937.
- Founded the National Gallery of Art in Washington, D.C.
- Died on August 26, 1937, in Southampton, New York.

Early Life

Andrew William Mellon was born on March 24, 1855 in Pittsburgh, Pennsylvania—the sixth of eight children to Judge Thomas Mellon and Sara Jane Negley. Two sisters died in infancy, while Mellon's older brother Selwyn died in childhood, leaving five sons.

His mother was a devout Presbyterian who organized church attendance and oversaw the household. Although the family had a small domestic staff, Mrs. Mellon baked and cooked most of the family's meals.

An Irish immigrant, Mellon's father was a well-educated, successful lawyer, businessman, and banker who also served as a judge in Allegheny County. He was convinced that his sons were destined for a life in business, so they were taught about money-making from a young age.

Early on, determined young Mellon exhibited an aptitude for business. As a child, he cut grass from his family's meadows and sold it to passing farmers for horse feed. He also sold produce from the family garden to local shops. In addition, Mellon developed a keen interest in his father's banking business.

At age 14, he entered Western University (now the University of Pittsburgh). Remembered by his classmates as painfully shy and deeply **pensive,** he received good grades but was not a stand-out student.

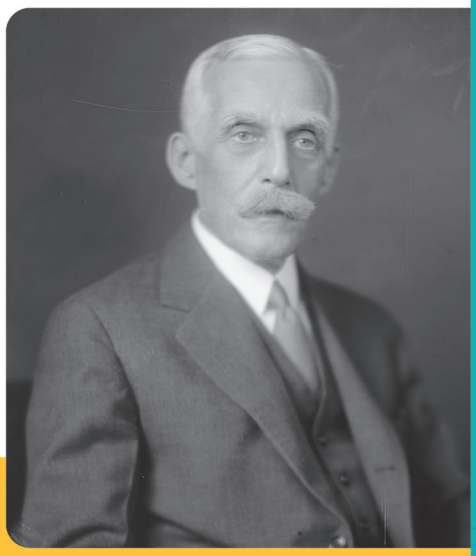
Meanwhile, Judge Mellon retired from the bench in 1869 and opened a second small bank in Pittsburgh that focused on mortgages, property investments, and business loans. Mellon learned the banking business by working on Saturday mornings and during school breaks.

Chaos ensues at the stock exchange during the Panic of 1873.

Making Change

Mellon left university early to establish a lumber business with his brother, Richard. The brothers obtained a loan from their father for the start-up **capital** and participated in every aspect of the business. Their success enabled them to repay the loan quickly. Anticipating an approaching economic downturn, they leased a part of the business at a profit before the Panic of 1873.

The brothers' keen judgment impressed their father, who offered 19-year-old Mellon a full-time position at the bank for a salary of $75 a month. By now, T. Mellon & Sons had become a respected financial institution in Pittsburgh that granted loans to aspiring businessmen. They were, in turn, given free rein to conduct their affairs as they saw fit. In his new position, Mellon was given the authority to grant loans at his discretion.



"I have never viewed taxation as a means of regarding one class of taxpayers or punishing another. If such a point of view ever controls our public policy, the traditions of freedom, justice, and equality of opportunity, which are the distinguishing characteristics of our American civilization, will have disappeared, and in their place we shall have class legislation with all its attendant evils."

Andrew Mellon

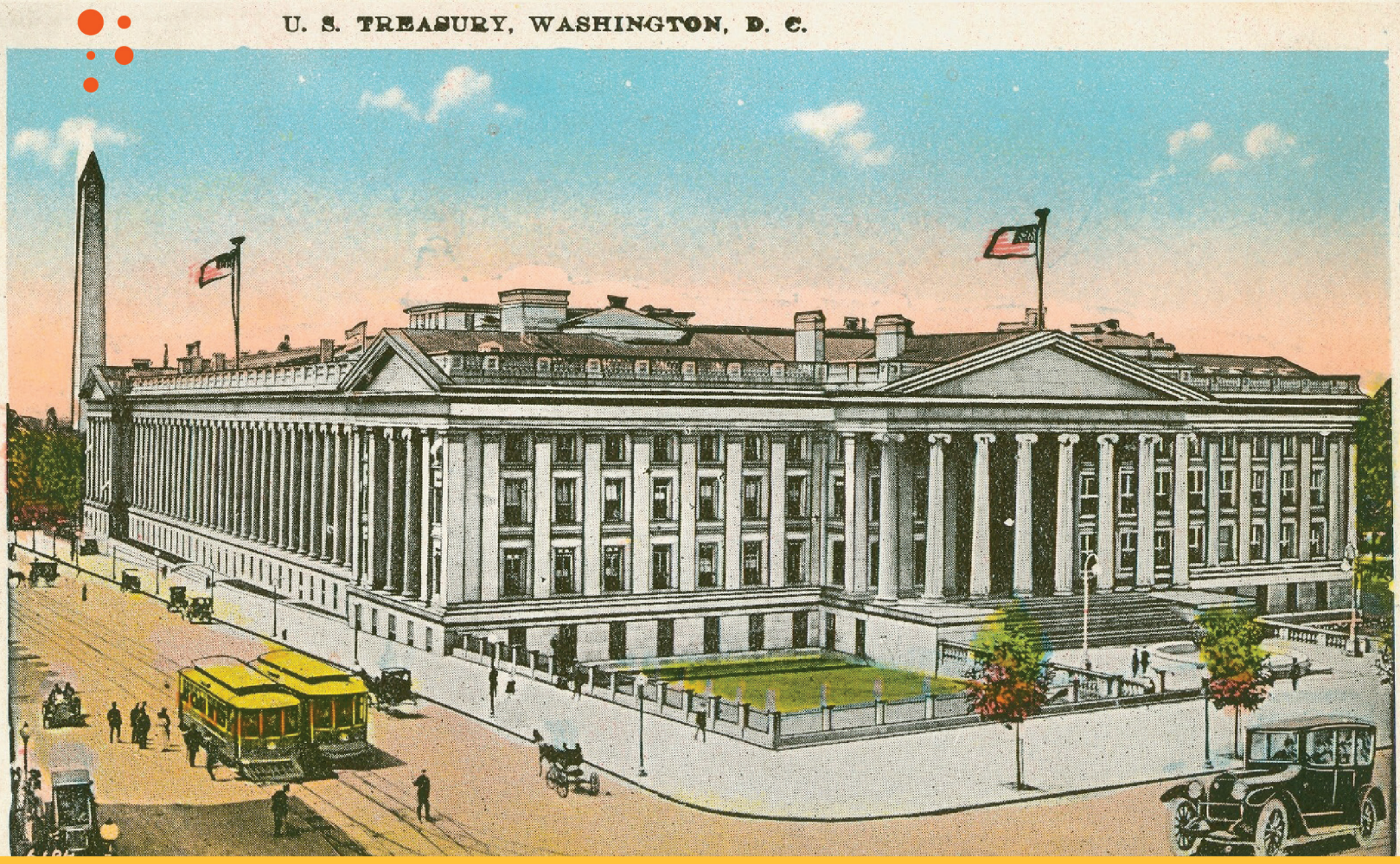
Banking on Success

In 1882, Mellon's father turned over the entire management of the bank to Mellon, who broadened the family's financial operations beyond T. Mellon and Sons.

From 1890 onward, Mellon was given authority over his father's investments in real estate, mortgages, bonds, and coal fields. He was also charged with managing and dividing the fortune among his siblings.

Over the next few decades, the family empire expanded as Mellon supplied capital to Pittsburgh-based industrialists who had innovative ideas, but lacked the funding to get them off the ground.

Mellon's masterful ability to assess entrepreneurs and new technologies, along with his willingness to take financial risks, contributed greatly to his success. He helped develop Pittsburgh's aluminum, steel, oil, coal, and **coke** industries and later founded the Aluminum Company of America (Alcoa) and Gulf Oil Corporation. By 1920, Mellon had become one of the richest men in America and had captured the attention of political leaders, including President Warren Harding's advisors.



From Capital to the Capitol

By the time Warren Harding was elected president, the national debt had ballooned to a then record of almost $26 billion. Americans were burdened by oppressive taxes and a sluggish economy. Accordingly, Harding sought a highly competent Treasury Secretary who could reduce the massive debt and improve the economy. Harding sought an unusual man for the job—someone outside politics—and selected a wealthy businessman Andrew Mellon.

At his family's urging, Mellon accepted the challenge, bringing his real-world business experience to the government. In order to accept the appointment, he had to resign his positions on the boards of directors of 60 corporations and accepted a meager salary of $12,000 a year. In 1921, Mellon relocated from Pittsburgh to Washington, D.C.

Many people voiced concerns about Mellon's potential loyalties, given his reputation as a very wealthy man. Would he be able to approach his new post with a disinterested attitude of service?

Builder News

239/8 Today

THE BUILDERS OF AMERICA

HELP WANTED

Secretary of the Treasury

Job Duties:

- Manage the national finances
- Oversee collection of revenue
- Grant warrants for money drawn from the Treasury
- Direct forms of keeping and rendering public accounts
- Prepare plans for the improvement of the revenue and for the support of public credit
- Submit an annual report to Congress on the condition of public finances and the results of activities under your supervision
- Control construction and maintenance of public buildings
- Control coinage and printing of money

Job Overview:

Established by the First Session of Congress in 1789, the Treasury Department is the executive agency responsible for promoting economic prosperity and ensuring the financial security of the United States.

The U.S. Department of the Treasury's mission is to maintain a strong economy and create economic and job opportunities by promoting conditions for economic growth and stability. This includes strengthening national security, protecting the integrity of the financial system, and managing the U.S. government's finances and resources effectively.

Taxing Work

Americans had long debated the idea of taxing income. In general, conservatives opposed an income tax, while progressives favored it as a means of increasing government revenue.

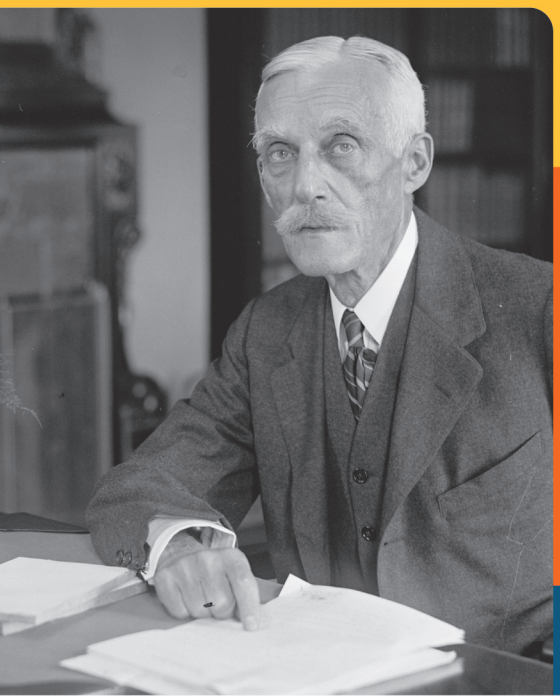
During the Civil War, Congress passed a 3% tax on all incomes over $800, but repealed the tax in 1872. In 1894, Congress passed a flat 2% tax on incomes over $4,000. However, the Supreme Court declared the law unconstitutional the following year.

Then, in 1913, the progressives secured the 16th Amendment, enabling Congress to tax personal incomes. Initially, the income tax was only 1%, but then it became progressive, with rates increasing as income increased. When the cost of running the government was small, rates ranged from 2-7%. As the size of government grew, more income was needed to operate it.

On March 4, 1921, Mellon entered his new office at the Treasury Building and began carefully collecting and reviewing data on the American economy. He approached his new position from a business perspective, viewing the Treasury Department as a large corporation of which he was the chief executive.

Mellon quickly recognized that World War I had been a turning point for the government's role in economic life. Before the 1910s, the government played a small part in operating, regulating, and taxing American business. Federal budgets amounted to less than $1 billion per year, so taxes were easier to collect.

When the country entered World War I, expenses soared. To cover the costs, the highest **marginal tax rate** was raised to 77%. By the end of the war, the national debt had increased from $3.6 billion in 1916 to almost $26 billion in 1920.



"The government is just a business, and can and should be run on business principles."

Andrew Mellon

The Mellon Plan

Mellon developed a plan to lower the national debt, reduce taxes, and balance the budget. Known as the Mellon Plan, his tax reform program was presented in his 1924 book, *Taxation: The People's Business*. Mellon's four main points were:

1) **Cut the top income tax rate to 25%.** Mellon argued that 25% was the most that investors would pay before sheltering their money in tax-free bonds. He believed that this tax cut would attract large fortunes back into enterprise and generate a **surplus** for the government.

2) **Cut taxes on low incomes.** Mellon believed that tax policy "must lessen, so far as possible, the burden of taxation on those least able to bear it." He proposed a 25% credit on earned income—that is, income earned by wages would be taxed less than income earned through investments. He also suggested a repeal of federal taxes on movie tickets, telegrams, and telephones.

3) **Reduce the federal estate tax.** Mellon opposed the Progressive Party's desire to tax estates at a rate of 45%. He thought that states should receive the revenue from such taxes, not the federal government. He contended that high estate taxes would tempt the wealthy to shift their fortunes into tax-exempt shelters.

4) **Government efficiency.** Mellon sought to lower the federal budget from $18 billion to around $4 billion. In his department, he pursued cost-cutting measures. Since fewer people were needed to process tax returns, he decreased his Treasury staff by an average of one person per day during the 1920s. He also reduced the size of paper bills to fit wallets more easily, saving on printing expenses for paper and ink.

NATIONAL DEBATE

Mellon's tax plan became the subject of intense debate during the 1920s as two political theories clashed. Progressives opposed lowering taxes, even on lower-income groups. They wanted to collect massive tax revenues to expand government spending.

By contrast, Mellon and the Republicans wanted to use any surplus tax revenue to pay down the national debt. Mellon believed that the Progressive Party's agenda took "money out of the pockets of *all* the people in order that it would find its way back into the pockets of *some* of the people," which he believed was wrong.

The debate continued until President Harding died and Calvin Coolidge took office in 1923. In Coolidge, Mellon had a strong ally, and Congress passed most of the Mellon Plan in 1926.

Political cartoon showing President Calvin Coolidge riding in a car with Treasury Secretary Andrew Mellon.

Calculating the Difference

The result? From 1921 to 1926, tax revenue increased as the tax burden shifted toward the rich. In 1921, people who earned less than $10,000 paid almost as much as those who earned over $100,000 per year. In 1926, those who earned over $100,000 per year paid over ten times as much as those who earned less than $10,000 per year.

By 1929, income tax revenue surpassed $1 billion, and Americans earning $100,000 or more paid 65% of it. Those earning under $10,000 paid only 1.3% of the total tax.

The progressives could not challenge the Mellon Plan's actual success, so instead, they challenged Mellon's integrity. They accused him of manipulating tax audits and refunding $3.5 billion to Republican friends.

In reality, Mellon had little to do with refunds, which were assessed and ruled on by a Board of Tax Appeals. Records show that during the same period, the Treasury Department collected more revenue despite its loss in reassessments.

True or False?

1

Born in 1855, Andrew Mellon was raised by poor farmers in Pittsburgh, PA.

TRUE **FALSE**

2

Mellon had a knack for investing in businesses run by capable men with innovative ideas.

TRUE **FALSE**

3

Mellon became one of the richest men in America by developing Pittsburgh industries and founding the Aluminum Company of America (Alcoa) and Gulf Oil Corporation.

TRUE **FALSE**

4

The high cost of the Civil War caused the national debt to balloon to nearly $26 billion.

TRUE **FALSE**

5

The Mellon Plan included four main points: cut the top income tax rate to 25%; cut taxes on lower incomes; reduce the federal estate tax; and increase government efficiency.

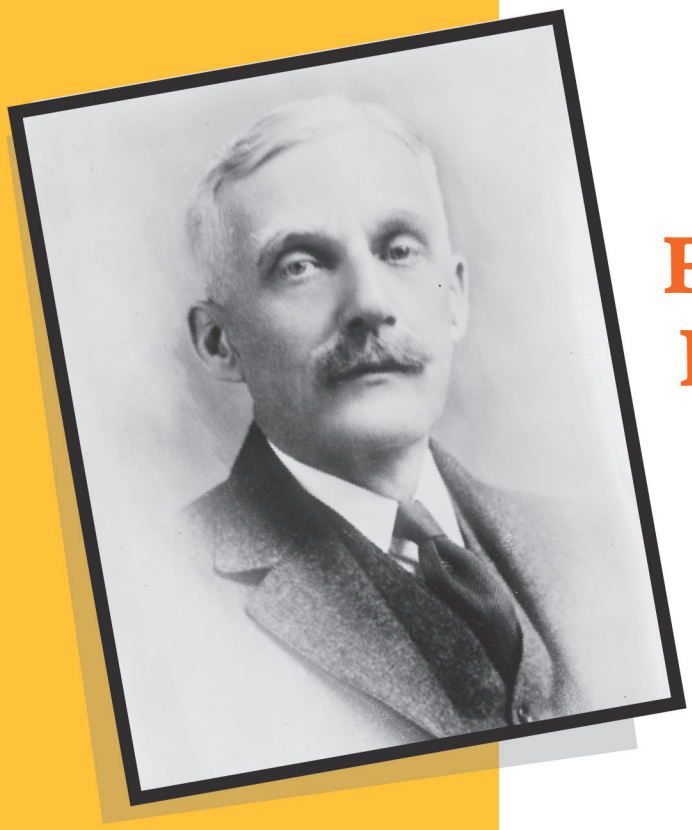
TRUE **FALSE**

6

Mellon's controversial tax policies helped the rich, hurt the poor, and decreased national tax revenue, increasing the national debt.

TRUE **FALSE**

Answer key on page 53



Later Life

During Hoover's presidency, Mellon continued to serve as Treasury Secretary, but the two men had different opinions about how to respond to the Great Depression. In 1932, Mellon resigned as Treasury Secretary and served as Hoover's Ambassador to Great Britain until 1933.

After Mellon left the Treasury Department, the government again raised taxes at a rate of nearly 80% on top earners during the late 1930s. As Mellon had predicted, investors avoided the heavy tax burden by sheltering their investments. Congress passed excise taxes on movie tickets, telephone calls, gasoline, tires, cars, and electricity, mostly to fund President Roosevelt's New Deal.

Even though Mellon's tax policies were overturned, he hoped that history would prove his strategies correct. He retired from politics, donated his extensive art collection to found the National Gallery of Art, and died in 1937.

Fascinating Facts about Mellon

- At age 45, Mellon married Nora McMullen in 1900, but they divorced 13 years later. They had two children, Ailsa and Paul.
- Mellon and his brother founded The Mellon Institute of Industrial Research in 1913 as a memorial to their father. The Institute benefited American manufacturers through research and investigation.
- Mellon spoke in a soft, whisper-like voice, yet his mental acuity always commanded respect.
- Mellon was known for his low-key personality. In one example, he was mistakenly called to the phone at a press banquet. The caller asked him to take a long message for a reporter named George. He proceeded to take three pages of notes from the stranger and later delivered them to George.
- As Treasury Secretary, Mellon's signature can be found on much of the U.S. paper currency printed from March 1921 to February 1932.

Word Search

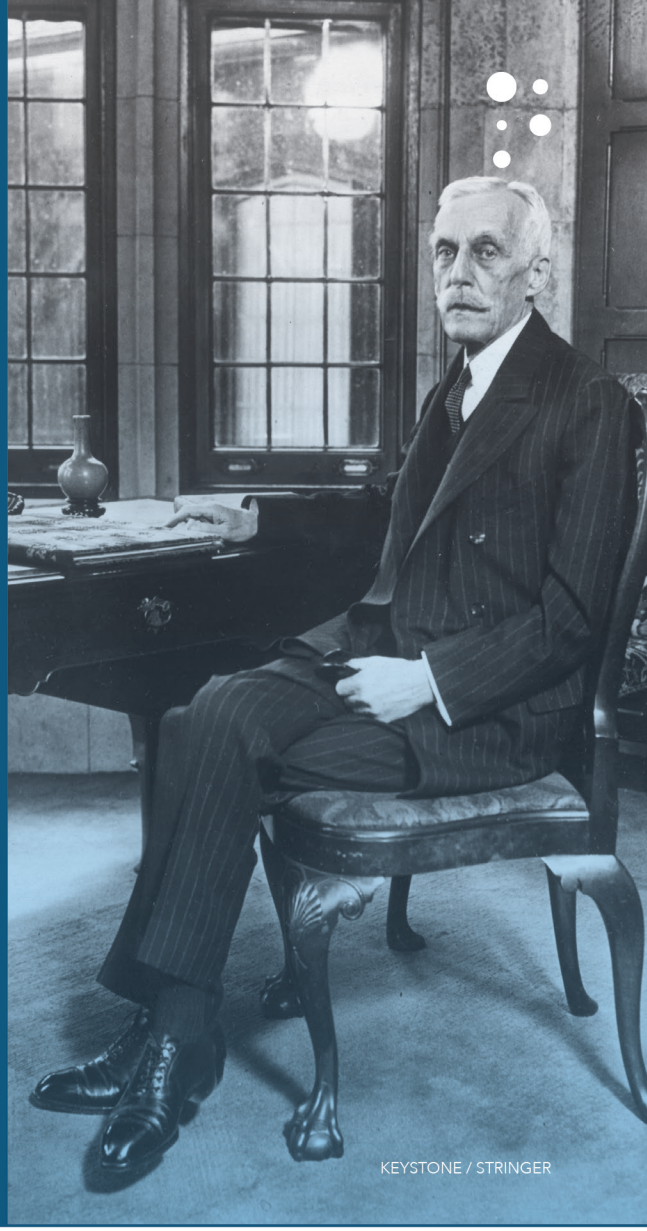
H G R U B S T T I P Q
S S T E T B E D L N T
E I R S I Q T J Z D Y
C G E E N C B D E M C
R N A I R D N G P A B
E A S C N E D A P J N
T T U I T I V I N O M
A U R L L A T E L I B
R R Y O N A X L N M F
Y E O P L B E E X U R
T C Q Z B M Y D S N E

Answer key on page 53

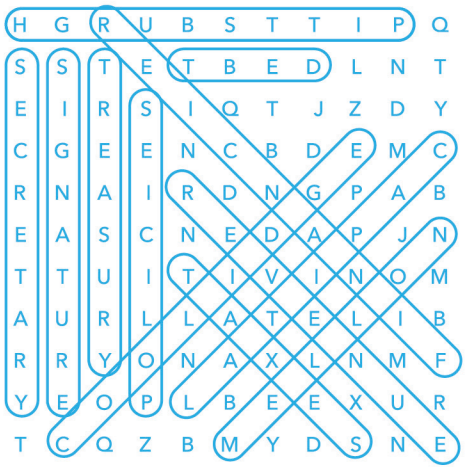
REVENUE
PITTSBURGH
TREASURY
MELLON
CAPITAL
TAXES
DEBT
POLICIES
SECRETARY
FINANCIER
SIGNATURE
COOLIDGE

Glossary

- **Economics:** The social science that deals with the production, distribution, and consumption of goods and services, and with the theory of monetary systems.
- **Revenue:** Total income produced by a given source.
- **Financier:** One who engages in investing or raising large amounts of money.
- **Philanthropist:** One who helps others and society overall through charitable aid or donations.
- **Pensive:** Engaged in deep and serious thought.
- **Capital:** The money invested in a business venture, including debt and equity.
- **Coke:** A grey, hard, and porous coal-based fuel with a high carbon content and few impurities, made by heating coal or oil in the absence of air.
- **Marginal Tax Rate:** The rate at which income over a certain amount is taxed by the federal government.
- **Surplus:** An amount in excess of what is needed.



KEYSTONE / STRINGER



TRUE OF FALSE KEY: 1–F. 2–T. 3–T. 4–F. 5–T. 6–F.

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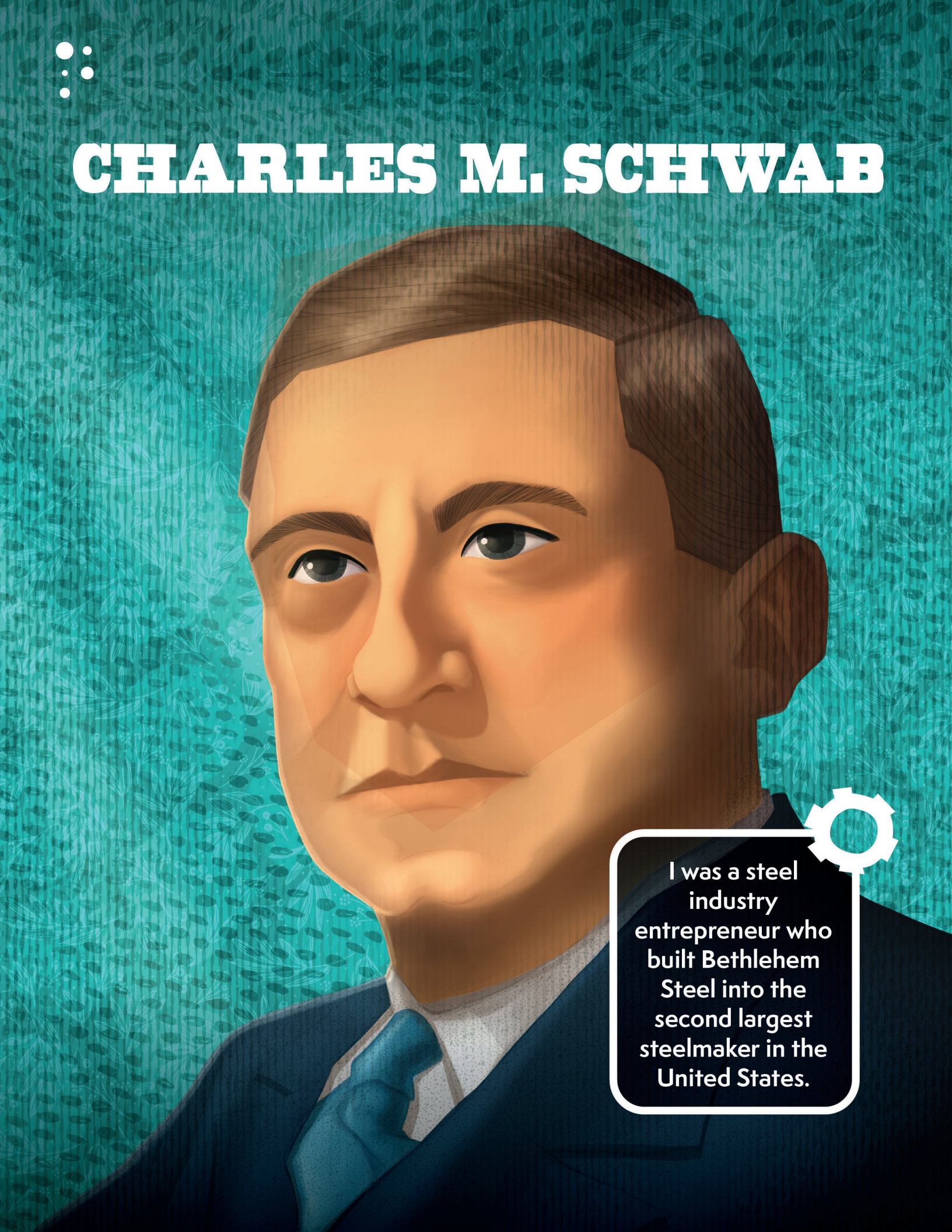
CHARLES M. SCHWAB



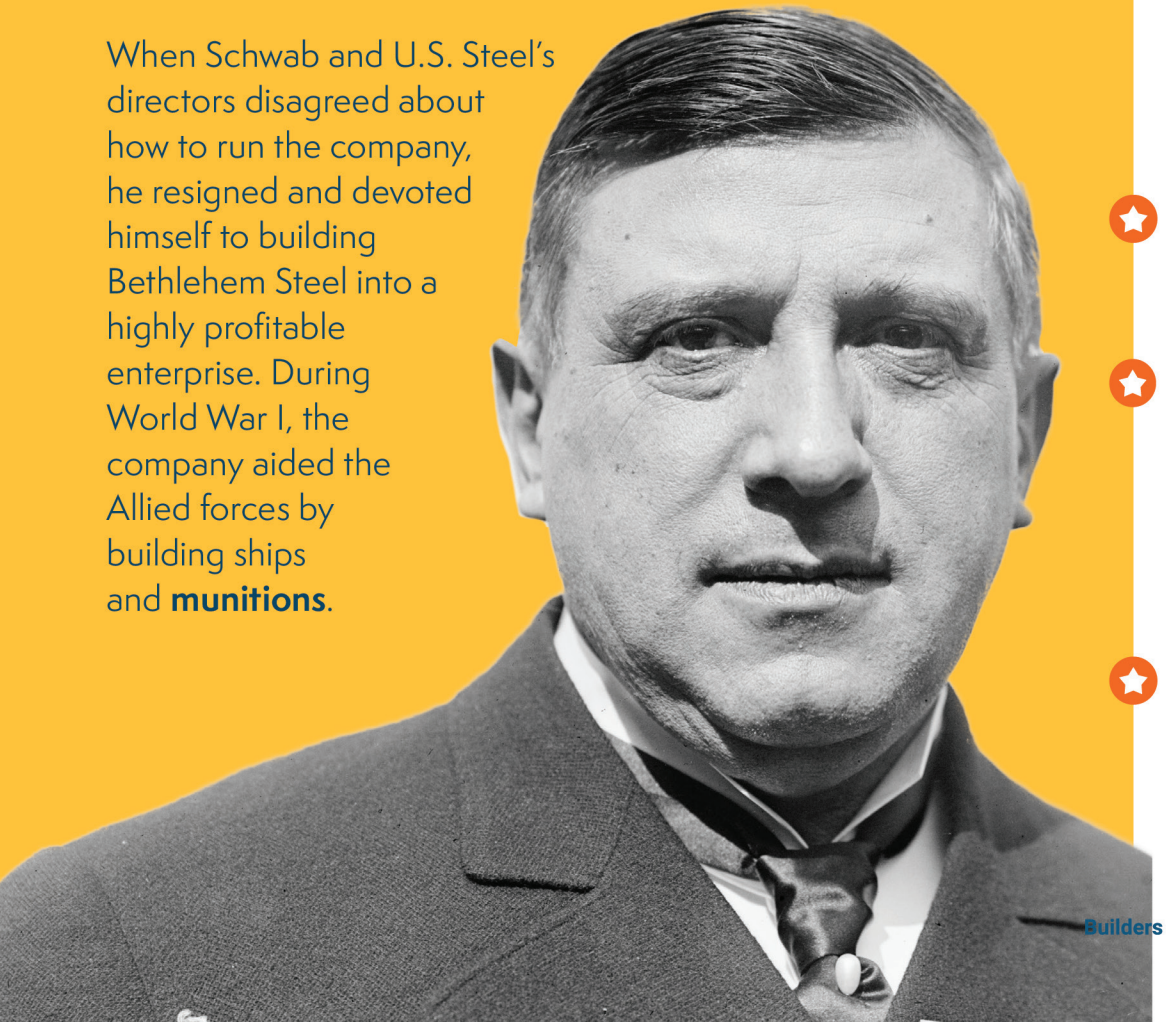
Meet Charles M. Schwab

Charles M. Schwab (also known as "Charlie") emerged from a modest upbringing to become the foremost production expert in the U.S. steel industry. A natural entertainer, young Schwab delighted family and friends with his musical talent and outgoing personality.

From a young age, Schwab desired to make a favorable impression. He never wanted to admit when he didn't know the answer, often pretending that he did. Then, he worked really hard to figure it out quickly.

At 17, Schwab entered the steel industry as a day laborer in Andrew Carnegie's mill. He pleased his supervisor through hard work and initiative. Soon, he became the mill's assistant manager and continued his ascent to the top of the steel trade. He eventually served as president of the Carnegie Steel Company and later, of the United States Steel Corporation.

When Schwab and U.S. Steel's directors disagreed about how to run the company, he resigned and devoted himself to building Bethlehem Steel into a highly profitable enterprise. During World War I, the company aided the Allied forces by building ships and **munitions**.



At-a-Glance

- Born on February 18, 1862, in Williamsburg, PA.
- Revolutionized the steel industry with his innovative business practices.
- Worked with J.P. Morgan to consolidate competing steel companies into the United States Steel Corporation in 1901.
- Established Bethlehem Steel Corporation, which became the second largest steel-producing firm in the world.
- Known for his genius in dealing with people.
- By the time of his death, he depleted his entire fortune, estimated at $200 million (nearly $4 billion in today's dollars).
- Died at 77 years old on September 18, 1939, in New York City.

Humble Beginnings

Charles Michael Schwab was the eldest of Pauline and John Schwab's eight children, three of whom died in infancy. Born in Williamsburg, Pennsylvania on February 18, 1862, Schwab and his family later moved to the small Catholic village of Loretto, Pennsylvania.

His father and grandfather worked as weavers and traded wool products. During the Civil War, they produced blankets and overcoats for the Union Army.

Although the Schwabs earned enough money to cover the basic necessities, **frugality** was emphasized at home. His mother made all of the family's clothing. The Schwab children did not own many toys, nor did they receive many gifts. Later in life, Schwab recalled that there was even one Christmas where his stocking contained only a single marble.

The family's primary source of entertainment was music. On Saturday evenings, Schwab's grandfather would borrow a small church organ and lead his children and grandchildren in song.

From an early age, Schwab felt comfortable in front of an audience and exhibited a natural talent for singing. He liked to entertain relatives and guests with songs, jokes, and magic tricks. Schwab usually played the starring role in his school's recitals and pageants.

A STAR IS BORN

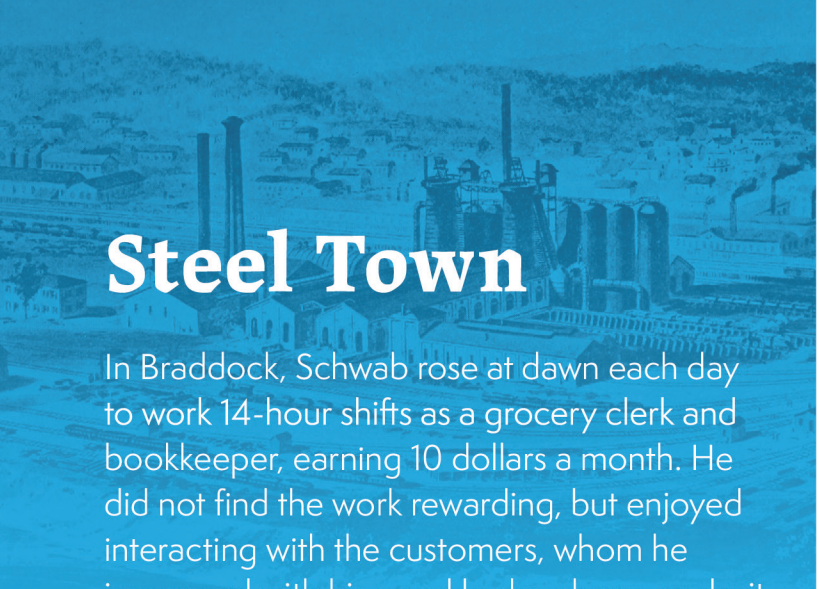
Schwab was a star student at St. Francis College, where he studied Christian doctrine, literature, history, and math. He also took courses in public speaking, perspective drawing, bookkeeping, surveying, and engineering.

Schwab was fiercely competitive and driven to excel. One of his teachers later reflected that Schwab was a boy who never said, "I don't know." He operated under the principle of "pretend that you know, and if you don't, find out mighty quick." Thus, some of his success was due to bluffing.

When he wasn't at school, he delivered mail to neighboring villages. Occasionally, he also carried passengers in his mail wagon. He earned a reputation as the "singing cabby" for entertaining them with ballads.

One passenger gave him a travel book that opened his eyes to the world outside of small-town Loretto. An ambitious young man, Schwab longed to begin a career in the theater. Instead, his parents arranged a position for him as a grocery clerk in Braddock, a suburb of Pittsburgh.

At age 17 and a year before high school graduation, Schwab left home.



Steel Town

In Braddock, Schwab rose at dawn each day to work 14-hour shifts as a grocery clerk and bookkeeper, earning 10 dollars a month. He did not find the work rewarding, but enjoyed interacting with the customers, whom he impressed with his good looks, charm, and wit.

One man, William "Captain Bill" Jones, mill superintendent of the Edgar Thomson Steel Works, took an immediate liking to Schwab. They discovered a mutual interest in music and became friends. Captain Bill asked if Schwab might be qualified for a position at the steel mill.

Although he hadn't graduated from high school, Schwab presented his certificates for completed coursework in surveying and engineering. Captain Bill offered him a position at Edgar Thomson Steel Works, and he began work in September 1879. Initially, he worked as a laborer for the engineering corps that designed plans for building furnaces.

Schwab relied on his basic knowledge of engineering to give the impression that he was skilled in surveying and engineering. He then learned on the job, asking questions whenever they would not reveal his lack of experience. At night, he increased his knowledge by reading books about the steel industry.

Schwab worked overtime to master his craft, and within months, he had become Jones's right-hand man. In this role, he often delivered messages to mill owner Andrew Carnegie.

Standout Worker

Thankfully for Schwab, Carnegie promoted workers based on merit, not based on wealth or family standing. He sought employees who could help make the best possible steel at the lowest price and rewarded those who excelled through bonus payments and partnerships.

Capable and competent, Schwab advanced through the organization, soon becoming Andrew Carnegie's chief problem solver. As he completed small assignments successfully, he was given greater responsibility. Schwab installed meters in the factories and reduced natural gas waste. He redesigned a rail-finishing department, resulting in reduced manufacturing costs. He helped calm angry workers during a violent strike in the Homestead plant. When Captain Bill died in a blast furnace explosion in 1889, Schwab became the superintendent at Braddock.

Schwab greatly admired Carnegie's efficiency and thorough knowledge of the business, watching and learning as Carnegie rose to the top of the American steel industry. At 35, Schwab became president of Carnegie Steel, and the two men ran the company together. The company's profits soared as they made further innovations, increasing efficiency and reducing production cost.

U.S. Steel

When Carnegie retired, he sold Carnegie Steel to J.P. Morgan for $480 million (nearly $10 billion in today's dollars). Schwab served as his **emissary** and worked with Morgan to combine Carnegie Steel with other companies to establish U.S. Steel, the first billion-dollar company in American history. At Morgan's insistence, Schwab served as its first president, earning an annual salary of over $2 million.

Schwab's role as president was short-lived. Morgan had organized the new company to be run by an executive committee that set company policies and relied on Schwab to implement them. The board valued stability over riskier strategies such as price-cutting, technology development, and profit-sharing. This management structure inhibited Schwab's ability to innovate at U.S. Steel in the same ways he had at Carnegie Steel, and he soon found himself at odds with the company's board of directors.

Personal Struggles

Under Carnegie's **tutelage** and influence, Schwab kept his extravagant tastes and tendencies in check. However, after Carnegie's retirement, Schwab's life took a different direction. He built a massive New York City mansion that consumed an entire city block and cost a fortune to maintain.

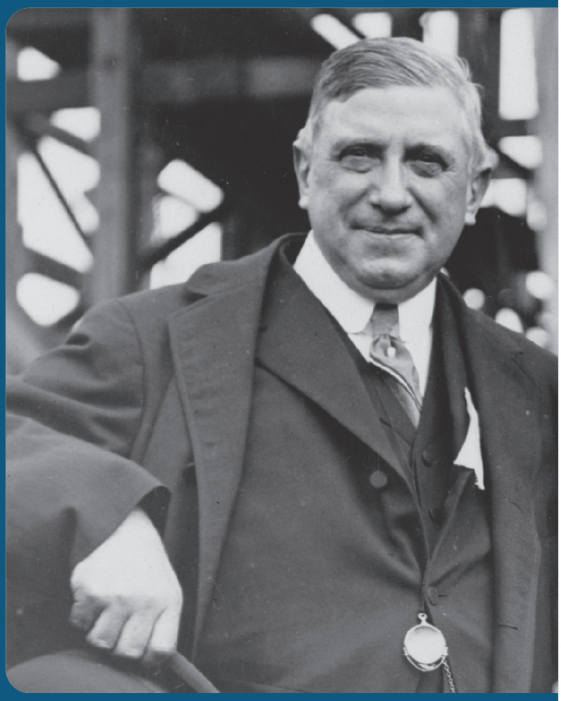
He began gambling in the casinos of Monte Carlo and was frequently absent from home, straining his marriage. The combined stress of work-related demands, gambling pressures, and high home expenses took a toll on Schwab's physical and mental health; and in 1904, he resigned from U.S. Steel.

While employed at U.S. Steel, Schwab made a private investment in a much smaller steel company known as Bethlehem Steel. Founded in 1857 as Bethlehem Iron, the company had successfully manufactured wrought-iron railroad rails, but after the Panic of 1893, it had survived mostly on government contracts.

Bethlehem's future was in doubt when Schwab arrived in 1904 and boldly announced that he would make it "the greatest armor plate and gun factory in the world."

"The fellow who sits still and does what he is told will never be told to do big things."

Charles M. Schwab



"I love to appeal to the American spirit of conquest in my men, the spirit of doing things better than anyone has ever done them before. There is nothing to which men respond more quickly."

Charles M. Schwab

The "Bethlehem Beam"

Schwab wanted to challenge U.S. Steel through a multi-pronged approach. First, he began to move Bethlehem Steel away from its reliance on government contracts. Then, he shifted to the **open-hearth process** for steel production, as opposed to the older technology that U.S. Steel employed.

He clashed with the conservative Bethlehem staff, who viewed him as an outsider. So, he reorganized the staff from the top down, offering 15 young men out of the mill the opportunity to be his partners.

Finally, Schwab also looked to technology to challenge his former employer. He took advice from inventor Edward Grey, who had developed a way to make steel beams differently. Grey claimed that beams could be made directly from an **ingot** as a single section instead of riveting small beams together, offering stronger beams at a lower cost. Other steelmakers rejected Grey's theory, but Schwab took a chance.

He invested his own fortune and persuaded other wealthy investors, raising $5 million to design the plant, build the mill, and pay Grey's **royalties.** Bethlehem Steel soon began manufacturing steel **girders** for skyscrapers. Schwab aggressively recruited big contracts for his "Bethlehem beams," making it his greatest innovation.

By the 1920s, the Bethlehem beam had become such a powerful product that U.S. Steel began secretly making Bethlehem beams to keep up with the competition.

Innovation Through Incentives

U.S. Steel offered bonuses based on the overall profitability of the company, not on individual performance. By contrast, Bethlehem Steel offered an elaborate profit-sharing system based on Schwab's belief that every man should get exactly what he makes himself worth. In *Succeeding with What You Have*, Schwab wrote: "This is the only plan I know of which is equally fair to the employers and every class of employee."

Schwab rewarded workers with bonus pay based on the time allotted for each task. Therefore, any shortcuts the worker could devise to complete it faster, or any unusual energy he may have shown, were turned into profit for him.

In the case of specialized tasks, Schwab was more concerned with the quality of work rather than the quantity turned out in a given time. If workers rushed too much, a lot of steel would have to be thrown out. In the case of efficiencies, Schwab took into account every element that depended on the initiative, originality, energy, or manual dexterity of a worker.

To manage the system, Schwab created a costly department of statisticians to measure operational productivity, arguing that "it paid for itself a hundred times over."

The incentives were aligned such that Bethlehem Steel's workers were motivated to give their best efforts to their work, and **per capita** output in some departments almost doubled. Schwab's employees were the best-paid men in the American steel industry.

Through his unique approach to profit-sharing, Schwab made Bethlehem Steel even more competitive, doubling its workforce every five years from 1905 to 1920. During the same period, U.S. Steel's workforce stagnated.

The result? Bethlehem Steel's sales increased 2,200% from $10 million in 1904 to $230 million in 1916.

The Schwab residence, known as "Riverside."

ADAPTING THE SYSTEM

Schwab believed that his profit-sharing system could be adapted to any industry. He used it in his own home. When expenses soared, he offered his steward ten percent of the first thousand dollars he could save in house expenses, twenty-five percent of the second thousand, and one-half of the third thousand. The expense of operating the house was cut in half.

World War I

When the U.S. entered World War I, victory was uncertain. More ships were needed, resulting in delays in shipping cargo and sending troops to Europe. To find a solution, President Woodrow Wilson appointed Schwab Director General of the Emergency Fleet Corporation for the U.S. government. Schwab investigated the shipping industry and found inefficiencies, including laziness, incompetence, and poor coordination.

He approached the problem by rearranging incentives, tying profits to cost-cutting, and rewarding workers. He often paid productive shipbuilders out of his own profit. By the fall of 1918, ships were being completed on time or ahead of schedule.

Schwab's success with the shipbuilding industry soon resulted in more government contracts, and Bethlehem Steel began making military equipment including armor plating for ships, gun forgings, and shrapnel.

Government Tensions

The federal government sought to build a large navy, so it urged steel companies to diversify into the **ordnance** business from their primary business of making rails. However, military equipment was complicated and costly, and the steel industry was reluctant to make the shift with the government as its only customer.

With such limited demand, companies like Bethlehem Steel faced high upfront costs to build a production factory. As a result, the government threatened to go build its own factory using federal funds.

Schwab challenged this notion, leading the effort to defeat the bill being proposed in Congress. Eventually, the bill passed in the House and Senate, and the federal plant was built in South Charleston, West Virginia. By 1921 it was making guns, projectiles, and armor, all at much higher prices than that of Bethlehem Steel. Within one year, the entire federally funded plant had to be shut down.

Later Life

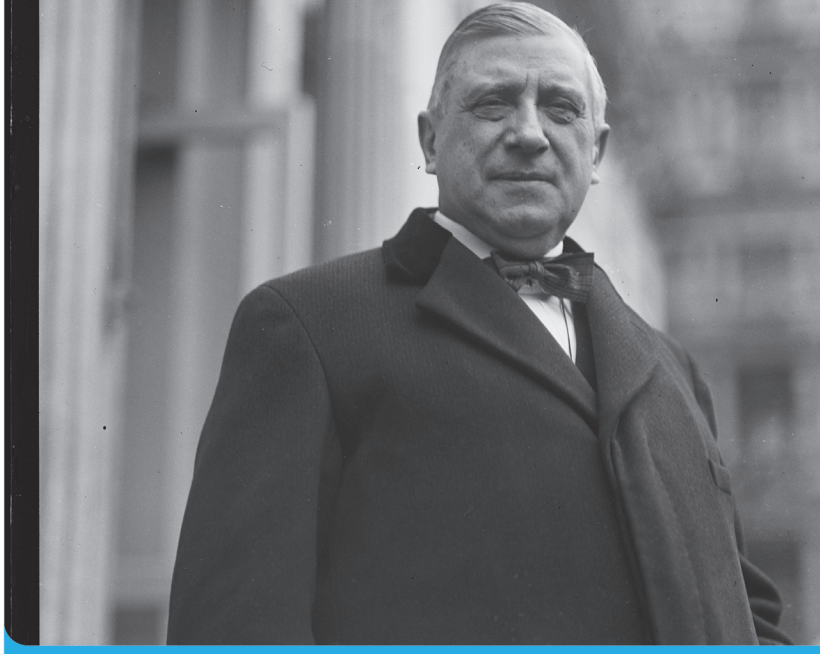
In the 1920s and 1930s, Schwab seemed to lose his entrepreneurial drive. He had accomplished much in his life. Before his death, Andrew Carnegie acknowledged the greatness of Schwab's career by writing, "I have never doubted your ability to triumph in anything you undertook."

In 1927, Schwab urged the American Iron and Steel Institute members to "live and let live," urging them to fix prices instead of cutting them. He urged the steel men to use their existing plant capacity and not expand.

In 1930, America began charging high taxes on many items following the **Smoot-Hawley Tariff**, which Schwab supported. Many countries responded by closing their borders to American-made exports, including steel products.

When Schwab retired, he ran through his fortune by gambling in Monte Carlo casinos, as well as on Wall Street. Even as the Great Depression loomed, he continued to spend. His enormous mansion featured a swimming pool, gymnasium, bowling alley, six elevators, and 90 bedrooms and required a staff of 20 servants to maintain it.

Near the end of his life, Schwab suffered from poor health. He had to move into a small apartment when creditors seized his mansion. When he died on September 18, 1939 at age 77, his debts exceeded his **assets** by more than $300,000.



Fascinating Facts about Schwab

- At age seven, Schwab won first prize in a poetry recital.
- When he was eight, Schwab solicited his neighbors who wanted their pathways cleared of snow. He earned just five cents per driveway and earned a reputation as a "good boy."
- Schwab married Emma Eurania Dinkey, known as "Rana," on May 1, 1883. The couple never had children.
- Schwab took organ and singing lessons from Reverend Horace S. Bowen, a pupil of composer Franz Liszt.

How to Solve Big Problems

Writing Exercise

Schwab believed that "the best place to succeed is where you are with what you have."

1. What do you think he meant by this statement?

2. What special talents or skills do you possess that might help you succeed at school? At a job? In your life?

3. How can you make the most with what you have every day?

What Do You Know?

1. Charles M. Schwab is best known for:
   - a. His ability as a performer
   - b. Revolutionizing the American steel industry
   - c. Serving as president of U.S. Steel

2. Schwab learned about the steel industry by:
   - a. Learning on the job
   - b. Reading books about it at night
   - c. Asking questions
   - d. All of the above

3. Schwab greatly learned from and admired his longtime employer:
   - a. J.P. Morgan
   - b. Andrew Carnegie
   - c. William "Captain Bill" Jones

4. Schwab transformed Bethlehem Steel by:
   - a. Investing in a new manufacturing technology for steel beams
   - b. Offering employee bonuses based on overall profits
   - c. Actively seeking government contracts

5. Schwab's profit-sharing plan resulted in:
   - a. Lower quality of work
   - b. Increased production and sales
   - c. Poorly paid employees

6. During World War I, Bethlehem Steel focused on:
   - a. Steel beams for skyscrapers
   - b. Wrought-iron railroad rails
   - c. Shipbuilding, guns, projectiles, and armor

Detect the Difference

Find the five differences in these nearly identical images of Bethlehem Steel's towers and machinery (as it appears today).

Answer key on page 65

Glossary

- **Munitions:** Military weapons, ammunition, equipment, and stores.
- **Frugality:** Careful management of material resources and money.
- **Emissary:** An agent sent on a mission to represent the interests of another.
- **Tutelage:** Protection of or authority over someone or something.
- **Open-Hearth Process:** A 19th-century steel making technique invented by William Siemens that uses the wasted heat given off by a furnace. The process redirects those fumes through a brick checkerwork and back into the furnace, increasing the flame temperature and resulting in a superior product. Although the process has now mostly been replaced by newer technologies, it is still used in about one-sixth of worldwide steel production.
- **Ingot:** A block of steel, gold, silver, or other metal, typically oblong in shape.
- **Royalties:** A share in the proceeds paid to an inventor or proprietor for the right to use their invention or services.
- **Girders:** Beams used as main horizontal supports in a building or bridge.
- **Per Capita:** Per unit of population; per person.
- **Ordnance:** Military supplies, including weapons, ammunition, combat vehicles, and equipment.
- **Smoot-Hawley Tariff:** The 1930 Smoot-Hawley Tariff Act raised the United States's already high tariff rates to protect American businesses and farmers. The tariff added strain to the international economic climate of the Great Depression.
- **Assets:** The entire property owned by a person, association, corporation, or estate, including cash, accounts receivable, securities, inventories, goodwill, fixtures, machinery, or real estate.

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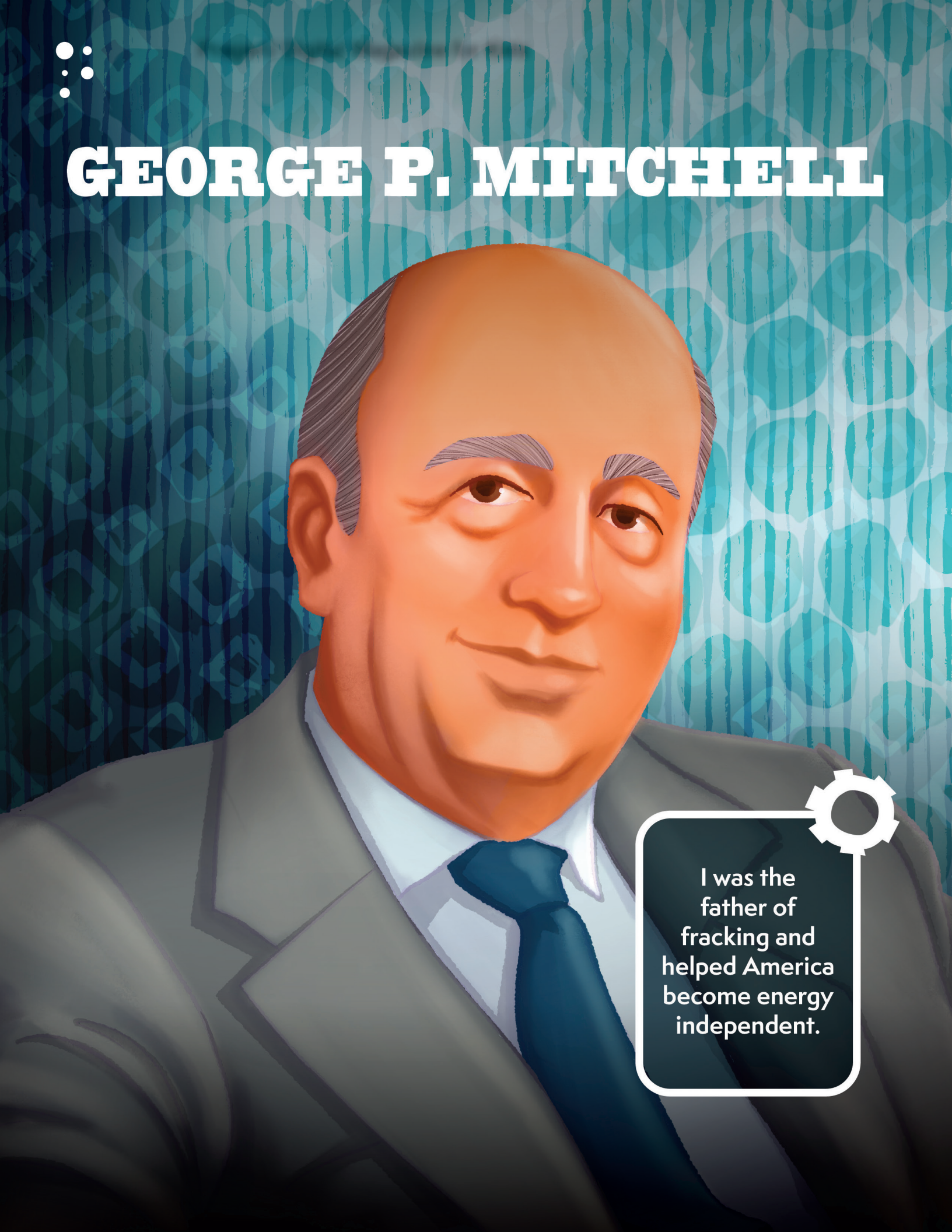
WHAT DO YOU KNOW? KEY: 1–B. 2–D. 3–B. 4–A. 5–B. 6–C.

GEORGE P. MITCHELL



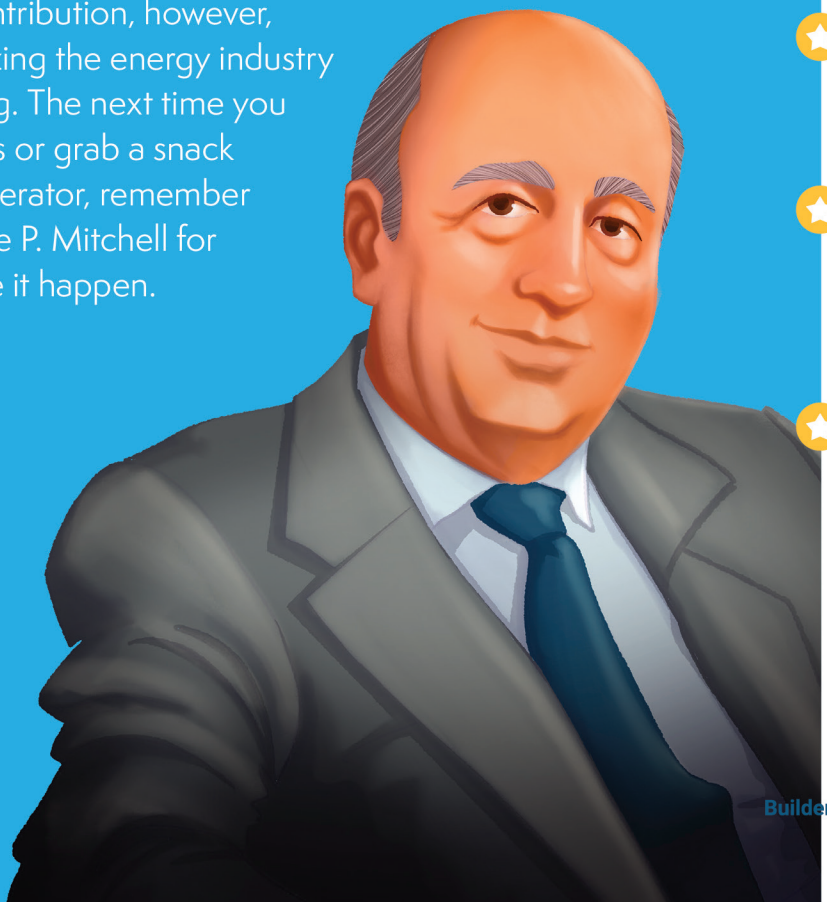
Meet George P. Mitchell

Does your family use a refrigerator? Do they use a gas stove, a laundry dryer, or a heater? If they do, they've needed natural gas to power all of these things. Few people have done more to provide Americans with natural gas than George P. Mitchell.

For much of the 20th century, America relied on other countries to obtain energy. Mitchell, however, popularized a process called **fracking**—a technique that involves extracting gas from rock. Thanks to the increased supply of natural gas made possible by this process, Americans can access energy more cleanly and cheaply than ever before—something that has helped millions of people, both rich and poor. Although many people doubted that fracking would ever work, Mitchell never gave up on trying to perfect the technique.

Mitchell lived the American dream. He came from a poor immigrant family and rose to become one of the wealthiest men in the world. He was an entrepreneurial genius, willing to work hard and take big risks to earn big rewards. He married a lovely woman named Cynthia and had a large, beautiful family.

His greatest contribution, however, was revolutionizing the energy industry through fracking. The next time you dry your clothes or grab a snack from your refrigerator, remember to thank George P. Mitchell for helping to make it happen.



At-a-Glance

- Born on May 21, 1919, in Galveston, Texas.
- Served in the U.S. Army Corps of Engineers during World War II.
- Participated in approximately 10,000 wells and 1,000 wildcat wells.
- Pioneered an efficient method of fracking, helping the United States become more energy independent.
- Attained a net worth of about $2 billion.
- Donated hundreds of millions of dollars to various causes.
- Died July 26, 2013, in Galveston, Texas at the age of 94.

Young George

George Phydias Mitchell was born on May 21, 1919, in Galveston, Texas. Although George was destined to become one of the world's wealthiest men, he and his family started out with almost nothing. His father, Savvas Paraskevopoulos, was a **goatherd** from Greece. Savvas wanted a better life, so he walked fifty miles to get on a ship headed for Ellis Island in New York City. When Savvas arrived in the United States, he changed his name to Mike Mitchell because his original name was too hard for many Americans to pronounce. In 1905, he married a woman named Katina Eleftheriou and settled in Galveston.

Mike and Katina had four children, and Mitchell was their third child. In their household, only Greek was spoken, so Mitchell didn't learn English until he went to school. When he was 13, tragedy struck his family: his mother, Katina, died of a stroke. Young Mitchell was heartbroken, saying, "Words cannot describe the feelings I have in me now."

College Student

Despite this painful loss, Mitchell resolved to succeed in school. He was an excellent student in high school and got into Texas A&M University. Prior to her death, his mother had hoped Mitchell would become a doctor. After one summer of working at an oil field in Louisiana, though, he fell in love with the oil industry. He later said, "Making discoveries by looking at maps seemed exciting."

Mitchell also had a passion for **entrepreneurship**. He raised money by selling candy to his fellow students. He later said, "It was kinda fun." When students started stealing his candy bars without paying for them, Mitchell found another way to raise money: selling fancy stationery. Soon, he was making $300 a month.

Mitchell wasn't just good at making money. He also got good grades and captained A&M's tennis team. He ended up graduating in 1940 as his class's valedictorian with a degree in **petroleum** engineering.

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Early Career

The year after Mitchell graduated, the United States entered World War II. He decided to serve his country by enlisting in the U.S. Army Corps of Engineers. Mitchell eventually rose to the rank of major and managed various military engineering projects.

He also met a lovely, well-educated woman named Cynthia Woods. They got married in 1943 and eventually had ten children.

Entering the Gas Industry

After the war, Mitchell decided he wanted to have a career in the energy industry. He and his brother Johnny bought a small company named Oil Drilling, Co. They were "**wildcatters**"—traveling across the desert looking for oil and gas **wells**. It was a risky lifestyle because there was no guarantee they'd strike it rich, but Mitchell had a knack for spotting productive wells. Soon, they were drilling not just in Texas, but also in Louisiana and New Mexico, attracting many wealthy investors.

At the time, most energy companies were focused on oil fields. They ignored gas, which was a cheaper form of energy. Mitchell and his brother, however, decided to focus on gas because there were fewer competitors. In 1952, a friend of theirs gave them a tip about a 3,000-acre area in Wise County, Texas that potentially had gas buried underneath the ground. Mitchell decided to visit, and, after drilling, he felt confident about the site. Soon, Mitchell and his company **leased** 300,000 acres in the area.

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Mitchell the Boss

Like many businessmen, Mitchell was very ambitious and motivated. Sometimes, he could be tough with his staff and had high expectations.

Over the years, however, as his family grew larger and he became wealthier, he became more relaxed. He got to know his employees personally and walked around the office informally in checkered pants and jackets. His workers admired him for being so approachable and hardworking. One of his executives noted that he "avoided all publicity. He was just work, tennis, work, tennis, work, tennis."

Gas Tycoon

Running a business isn't easy, especially in the energy sector. It costs a lot of money to buy and maintain equipment, so Mitchell needed to convince investors that his company would be profitable.

Mitchell also rented out land to people and promised them **royalties** from his company's profits. When the profits remained low, many of those people began complaining. In 1956, Mitchell invited about 3,000 of them to a large barbecue where he promised them their profits would come. All they had to do, he said, was to be patient.

Mitchell's efforts paid off when he made a deal with the Natural Gas Pipeline Company of America to supply gas to the city of Chicago, Illinois. The gas was transported from Texas through a pipeline all the way to Chicago. The deal earned Mitchell's company a lot of money, which made his investors and renters happy. Over the years, the Mitchell brothers would acquire new fields and over a thousand wells.

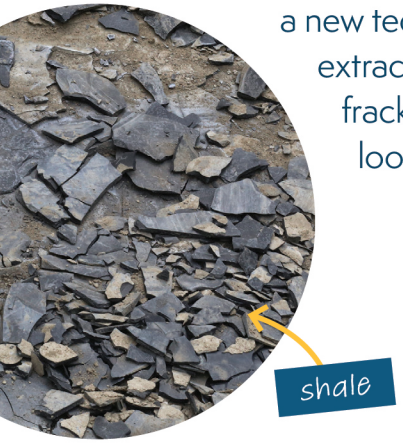
By 1957, Mitchell was CEO of the company. It would eventually be called the Mitchell Energy & Development Corporation. Four years later, the company was Texas's top independent gas producer and one of America's top interstate gas corporations. Mitchell was now a very wealthy man.

Mitchell's Dilemma

By the late 1970s, however, Mitchell Energy was in trouble. The Wise County field began to run dry, and experts at the company predicted that they could only count on ten more years at their regular level of production. "You could see it fading," Mitchell said of the field. "In a few more years, I knew we'd be in trouble." He still had to supply gas to the city of Chicago, and he had no idea how he would get that supply.

The solution, it turned out, was literally right under his nose. One of Mitchell's employees, geologist Jim Henry, told him about a layer of thick rock, called **shale**, underneath the Wise County fields that might have **abundant** levels of gas. The layer in Wise County was called the Barnett Shale (named after the nearby Barnett Spring), and it was about a mile below the surface.

Mitchell also heard about a new technique to extract gas, called fracking, that looked promising.



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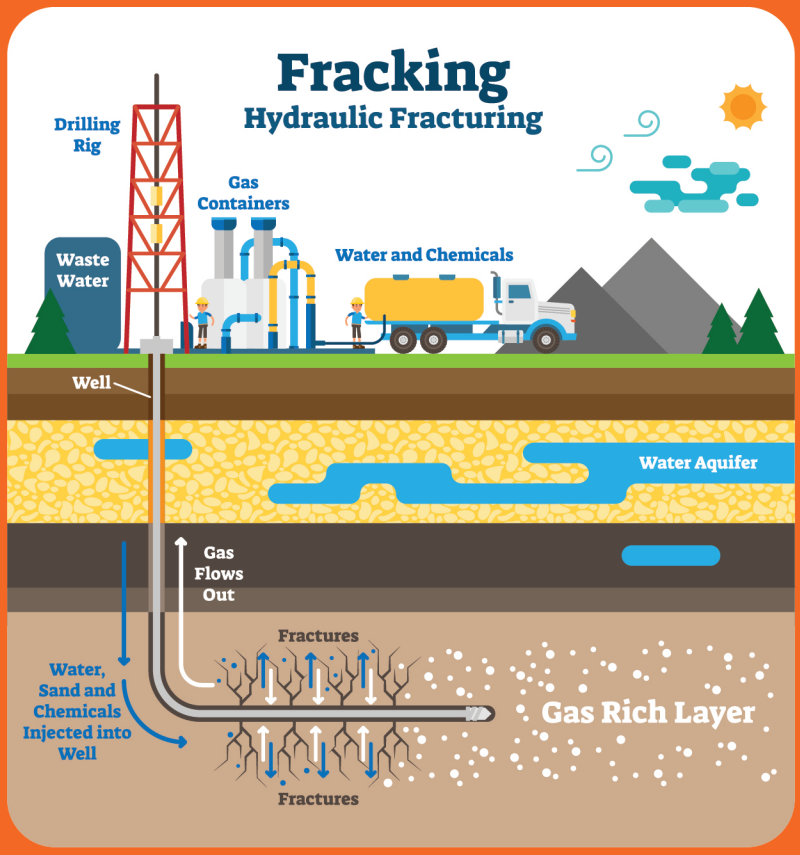
Early Fracking

Fracking is a technique used to extract **fossil fuels**, such as oil or gas, from the earth. These fuels are created when organic material in the earth is transformed by heat and pressure. Drilling companies tap into reservoirs of that fuel underground, but a lot of it is trapped in rocks, such as shale. It takes a great deal of force to extract the trapped fuel.

Attempts at extraction began in the 19th century when drillers would detonate explosives or blast rock with ammunition to access the oil trapped underground. In the 1940s, an oil company in Indiana began blasting high-pressure liquid to break up underground rock formations. Although fracking wasn't widely used across the energy industry at the time, many knew that, if done effectively, it could revolutionize extraction.



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Mitchell's Solution

Mitchell had known about fracking for some time and felt it might be used to tap into all of the gas in the Barnett Shale. Many others in the energy industry, however, felt that drilling so deep into the ground would be too expensive. In addition, the fuel was so **embedded** into the rock that the experts felt it was too hard to get to.

Mitchell, however, was determined. No one in the industry had ever successfully extracted a significant amount of fuel through fracking, but he wanted to be the first. Investment banker Dave Pursell later said, "The guy just wouldn't give up... it was dogged determination."

Starting in the 1980s, Mitchell's company began drilling into the Barnett Shale layer.

His team worked hard to improve the fracking process. They used a technique that involved pumping thousands of gallons of water and other substances into rock, creating small cracks that released gas.

For the first two decades, the team was able to extract a little bit of gas, but not as much as it had hoped. Mitchell Energy's profits continued to decline. By 1998, the company had spent about $250 million drilling in shale, with little to show for it. Mitchell knew he was in trouble and might have to declare bankruptcy. That same year, however, a Mitchell engineer, Nicholas Steinsberger, developed a mix of water and gel that, when blasted at shale, released an incredible amount of gas. No well in the Barnett area had ever produced one million cubic feet of gas after 90 days, but with this technique, they were producing even more than that. Mitchell realized that they had discovered the exact mix that they needed. Soon, they were blasting shale at a rapid rate and extracting untold levels of gas. By 2001, the company's gas production had more than doubled. The profits were rolling in. Mitchell's worth skyrocketed to almost $2 billion.

FACTS ABOUT FRACKING

- Water and sand are the main materials used in fracking, making up 99% of the materials pumped into a well.
- Fracking allows us to drill up to 10,000 feet into the ground.

- It helps reduce air pollution. It increases the supply of natural gas, which is cleaner than oil and coal.
- It has led to a 47% drop in the price of natural gas, which benefits all Americans.

A World Transformed

The fracking revolution had begun, and it would affect more than Mitchell's own company. Energy firms across the country began adopting the process. The United States experienced a boom in natural gas production, which accelerated in 2010. This created hundreds of thousands more jobs and helped the country recover from the devastating 2008 recession. Thanks in part to fracking, by 2015, half of all U.S. natural gas production came from shale.

Fracking has benefited every American. The increased availability of oil and gas has reduced the cost of energy, which means Americans have more money to save or spend on other things they need. It has helped America become more independent when it comes to its energy supply instead of relying on other countries. In fact, by 2018, the United States had exceeded oil giants Russia and Saudi Arabia in production for the first time in decades. America is now the largest global oil and gas producer in the world.

Also, fracking has reduced pollution. Natural gas burns more cleanly than coal. As America replaced much of its coal production with gas, it became the world leader in reducing carbon pollution.

THE MITCHELLS GIVE BACK

Throughout their lives, the Mitchell's used their wealth to help communities and the less fortunate. Throughout the 1960s, Mitchell's wife volunteered for the United Fund (now called United Way). She and her children wrapped hundreds of gifts during the Christmas season and delivered them to nearby neighborhoods.

In 1978, the Mitchells established the Cynthia and George Mitchell Foundation, which has provided more than $400 million in grants to various charities. A few years later, Mitchell launched the Houston Advanced Research Center, which eventually raised $20 million a year to help keep our air and water clean. The Mitchells have also given tens of millions of dollars to help victims of natural disasters and to advance the arts and sciences.

Word Scramble

1. TANUNDBA
2. SLOSIF SLUFE
3. FIKARGNC
4. ELESA
5. HMLTCEIL
6. ERLTMPOEU
7. ILYRTOEAS
8. ASELH
9. LLWE
10. RWLDTCTAEI

Answer key on page 75

Later Life

By the early 2000s, Mitchell was a respected figure in the energy industry. He spoke out on ways to provide clean forms of energy. His wife was diagnosed with Alzheimer's disease in 2002 and died in December 2009 at the age of 87. Mitchell died a few years later, in July 2013, at the age of 94. The President of Texas A&M, Rear Admiral Robert Smith, said of Mitchell, "To say he was a great man with foresight and generosity isn't enough... He will be deeply missed, but his spirit shall go on forever..."

Fascinating Facts

- Mitchell's father was a goatherd from Greece who came to the United States to live the American dream.
- Mitchell built a planned community near Texas called the Woodlands, which now has 75,000 residents.
- He and his wife had ten children, 23 grandchildren, and five great-grandchildren.
- In his free time, he was an avid tennis player, fisherman, and amateur astronomer.

Glossary

- **Fracking:** The process of injecting liquid at high pressure into rocks to extract oil or gas.
- **Goatherd:** A person who tends goats.
- **Entrepreneurship**: The activity or process of creating a business and taking on financial risks in the hope of generating profit.
- **Petroleum:** A naturally occurring liquid composed of hydrocarbons. It is a fossil fuel and is extracted from the Earth and refined to produce oil products and gasoline.
- **Wildcatter:** An individual who drills for oil in areas not known for having oil.
- **Well:** A hole drilled into the ground that is used to access oil.
- **Lease:** To allow someone else to rent something, such as land, a house, or an apartment.
- **Royalties:** A payment made to an individual or a company for the ongoing use of their assets.
- **Shale:** A sedimentary rock that breaks easily into thin layers. It is often used to extract fossil fuels through fracking.
- **Abundant:** Available in large quantities.
- **Fossil Fuels:** A natural fuel, such as oil or gas, formed in the Earth from the remains of living organisms.
- **Embedded:** Fixed or snugly enclosed within something or under a surface.

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WORD SCRAMBLE KEY: 1–ABUNDANT. 2–FOSSIL FUELS. 3–FRACKING. 4–LEASE. 5–MITCHELL. 6–PETROLEUM. 7–ROYALTIES. 8–SHALE. 9–WELL.10–WILDCATTER.

Take some notes!

Which of these "Builders of America" was your favorite?

What was something that all of the Builders of America had in common?

What would you build to make America a better place?

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