

No Pain!

No Gain!



**KIDS
DISCOVER**



Ben Franklin

What did
Ben, Mozart,
and Beethoven
do with
37 glass bowls
in a case
filled with
water
?

**GO
FLY A
KITE
!**

**HOW
BEN
DISCOVERED
THE
GULF
STREAM**

**ELECTRIFYING
EXPERIMENT**



IN PARTNERSHIP WITH
Houghton Mifflin Harcourt.



A Few of Franklin's Contributions

Young Ben Franklin wanted to be a sailor and see the world beyond colonial Boston. Instead, he learned the printing trade and became the most famous American of his day. He was the best-known writer, scientist, and inventor in the New World.

Europeans admired

Franklin too. They were impressed by his discoveries – especially his experiments with electricity. They also enjoyed the common sense and humor that made his *Poor Richard's Almanack* an international best seller.

Franklin was the oldest – and many believe the wisest – of the United States' founders. He was a legislator (lawmaker), the postmaster general, a diplomat, and a statesman. He helped write both the Declaration of Independence and the U.S. Constitution. He talked the French into taking the American side during the Revolutionary War, and he negotiated peace with Britain. Ben Franklin was quite a person.

► **IN FRANKLIN'S** day, there were no fire hydrants. There were also no public water systems. When a fire broke out, anyone unlucky enough to be trapped in a burning building usually died. Franklin orga-



nized the Union Fire Company – Philadelphia's first firefighters. Each one carried a leather bucket to haul water and a canvas bag to

remove household goods. Once these volunteer firefighters were in place, Franklin offered Philadelphia homeowners America's first fire insurance.



▲ **FRANKLIN WAS** deputy postmaster of the colonies. He rode America's postal routes, measured distances, and shook up management. He also improved service. For example, he had the mail between New York and Philadelphia



delivered three times a week in the summer instead of once, and he introduced home delivery for a small fee. After the colonies began to fight for their freedom, the Second Continental Congress elected Franklin postmaster general. He was the first person to hold that position.

▲ **IN FRANKLIN'S** time, there were no hospitals, so sick people were often cared for at home. Franklin believed that hospitals would be useful, and he fought to get one started. He is responsible for the first American hospital, which opened in 1751.

BEN & HIS STAMPS



The United States didn't start issuing stamps until 1847. To honor the country's first postmaster general, it placed Ben's face on the first 5¢ stamp.



Ben's face was also on 1¢ stamps issued in 1898 and 1903.

Place stamp here.





FRANKLIN PROPOSED paper money to replace gold and silver coins. His portrait appears on the \$100 bill. Today the only other note that does not feature a U.S. president is the \$10 bill. It shows Alexander Hamilton, the first secretary of the treasury. The \$20 bill is scheduled to be redesigned with abolitionist Harriet Tubman on the front. She will replace President Andrew Jackson.

Young Ben

Ben Franklin was born in Boston in 1706. He was the 10th of 17 children. Ben went to school for just two years before going to work in his father's soap and candle shop. At that time, school was a luxury that most tradespeople couldn't afford. But Ben hated soap-making, so his father sent him to his older brother James to learn printing. As an apprentice – a tradesperson in training – Ben had to promise to work for James until he was 21.



A MAGNIFYING GLASS MAY HELP!



That was nine long years away.

Ben loved to write. But he knew James would never knowingly print the writings of his 16-year-old brother. So Ben signed his witty essays "Silence Dogood." He slipped them under the print shop's door. James didn't realize this and published several of Ben's essays in the *New England Courant*, the newspaper he had started.

The brothers did not get along. After one bitter quarrel, Ben ran away to New York and then to Philadelphia, the place he called home for the rest of his long life.



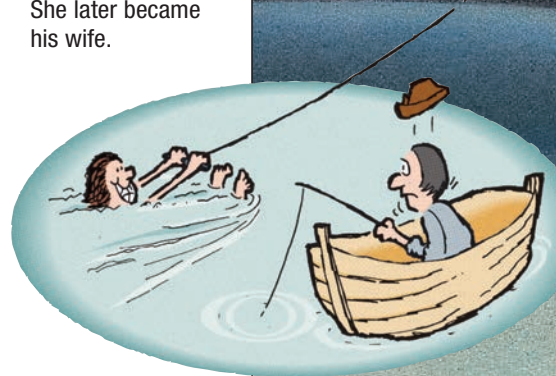
Try This!

Ben created many rebuses. A rebus is a puzzle made up of pictures or symbols. Can you figure this one out?

◀ **AS SOON AS** he reached Philadelphia, hungry young Ben bought three large rolls. He then walked through the city, holding one roll under each arm while he munched on the third. A teenage girl who stood in her doorway that morning, laughing at Ben, was Deborah Read. She later became his wife.



◀ **BEN WAS BORN** in Boston, in the Massachusetts Bay Colony. In the early 1700s, the land along the Atlantic coast was home to settlers and Native Americans. It was divided into 13 colonies ruled by the British king. To the west lay a huge amount of land where Native Americans lived.



▲ **BEN LOVED TO** experiment. One day, he was lying on his back in the water while hanging on to a kite string. As the wind pushed the kite, it pulled Ben through the water for almost a mile.

► **WHEN BEN RAN** away from his brother's shop, he took a ship to New York. Once he learned there was already a printer in New York, he left. Philadelphia was

less than 50 years old when Franklin arrived in 1723. It was the starting point for most pioneers heading west, and it was already about as big as Boston.



MORE THAN ANYTHING else, Ben loved to read. After reading a book that recommended not eating meat, he sometimes ate a vegetarian diet.



Printing & Publishing

Ben came to Philadelphia to be a printer, and as a printer, he accomplished a lot. He made the first copperplate printing press in America. As owner and printer of the *Pennsylvania Gazette*, he printed news about people living in Pennsylvania. Local news was uncommon at that time. When



his *Gazette* became the most important newspaper in the colonies, he used the postal service to deliver the paper quickly.

Franklin also turned out dozens of essays, articles, and pamphlets. He wrote thousands of letters (to more than 4,000 people!). He also wrote a four-part autobiography and *Poor Richard's Almanack*, which was published once a year. It was very popular, and people still treasure copies of it today.

Poor Richard says:

“Make haste slowly.”*

*From *Poor Richard's Almanac* by Benjamin Franklin. The U.S.C. Publishing Co., 1914.

PRINTING TOOK PATIENCE AND strength in the 18th century. Ben set type for the *New England Courant* and the *Pennsylvania Gazette*, and he also helped print them. Pieces of type were set by hand, locked into metal frames, and laid on the “bed” of a handpress. A leather ball stuffed with hair was used to apply ink to the type. Then a sheet of damp paper was laid over the type and covered. Next, the flat upper plate of the press, called the platen, was screwed down onto the bed. It pressed the paper against the type. It took two workers to run the press. Printing was a long, hard process.

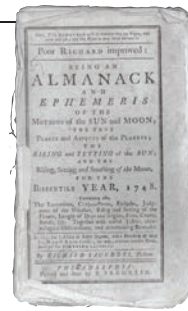




▲ **IT WASN'T EASY** for most people to get books, so Ben set up a club in which people shared their books. Each club member

— and anyone else who wished — put in money to buy more books. Fifty people joined. Anyone could read the books in the

club room, but only members could take them home. The club started in 1731. It was the first circulating library in America.



▲ **ALMOST EVERY** colonial home had an almanac, which is a calendar book filled with advice for farmers. It includes weather



predictions, general information, and witty sayings. Franklin's *Poor Richard's Almanack* was the most popular.

▲ **FRANKLIN** published the first novel printed in America, *Pamela*, by Samuel Richardson.



Scientist and Inventor

What made Ben Franklin, who had only two years of schooling, a leading scientist of the 18th century? The answer is that he was curious. Ben couldn't help wondering why things did what they did or how things worked.

Gypsum is a chalklike substance found naturally in rocks. Ben saw that spreading gypsum on a field made grass grow greener. He suggested farmers put it on their crops. That's why he gets credit for the idea of using artificial fertilizer – a substance added to soil to

make plants grow better. He also was one of the first to figure out why so many printers, painters, and plumbers were getting sick. Because

of the tools of their trades, they were suffering from lead poisoning.

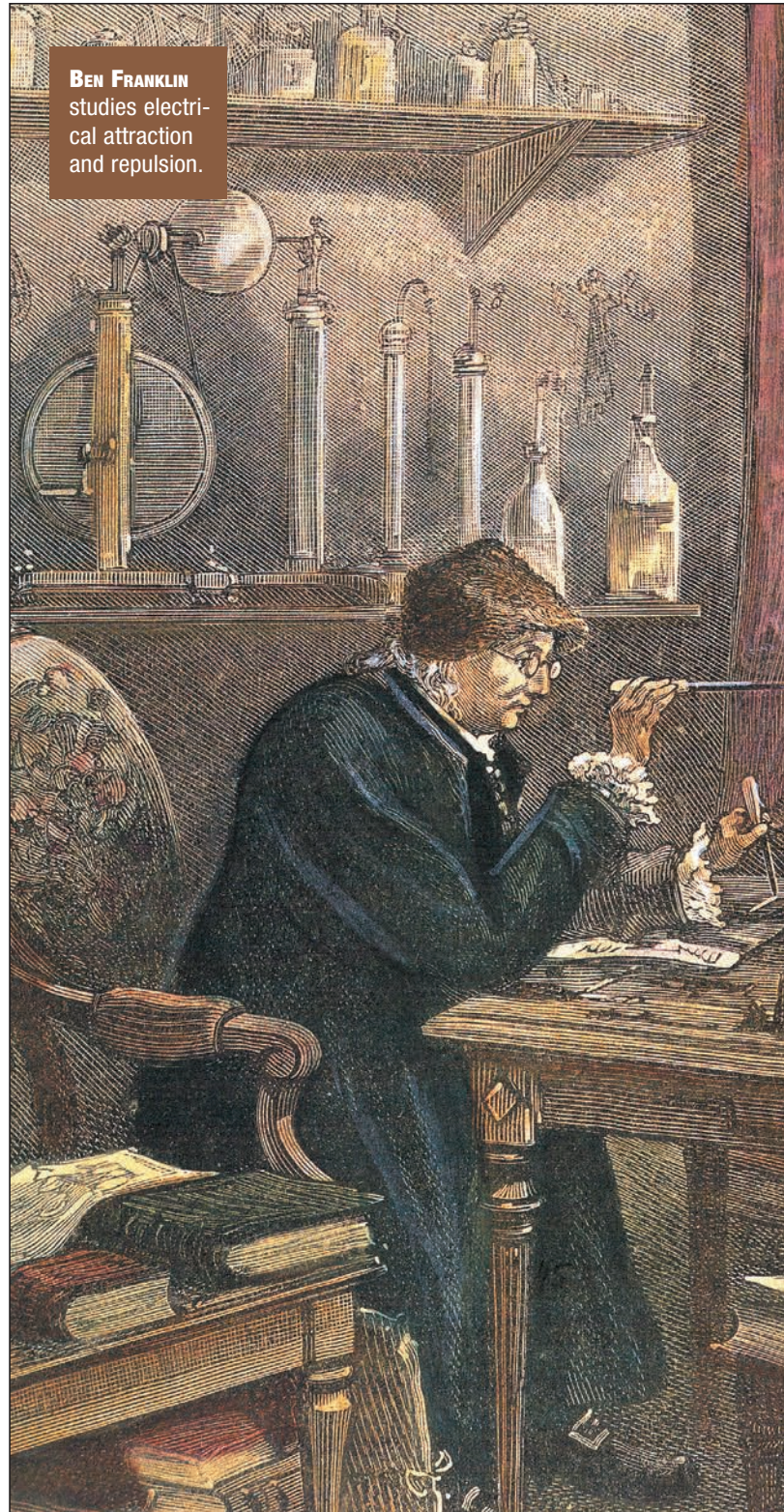
Ben wanted to know why it took so much longer to sail from Britain to America than the other way around. So he talked to whaling captains from Nantucket, an island off Massachusetts. They told him about a rapid current that runs through the Atlantic Ocean. We now call it the Gulf Stream. Franklin decided to chart this current. On his many transatlantic crossings, he recorded the water temperature several times a day. He discovered that “a stranger may know when he is in the Gulf Stream by the warmth of the water, which is much greater than that of the water on each side of it.”*

*From *The Works of Benjamin Franklin* by Jared Sparks. Childs and Peterson, 1840.

Poor Richard says:

“No gains without pains.”*

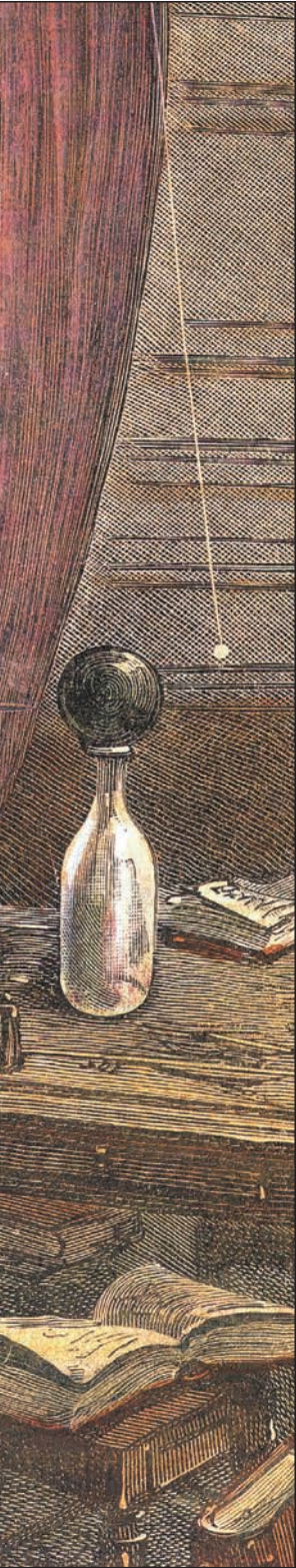
*From *Poor Richard's Almanac* by Benjamin Franklin. The U.S.C. Publishing Co., 1914.



BEN FRANKLIN studies electrical attraction and repulsion.



◀ **FRANKLIN** is credited with inventing this odometer. When attached to his carriage, it showed how many miles he had traveled.



➤ **FRANKLIN CLAIMED** to have developed a smokeless candle. He also invented a candle made from whale oil. It burned brighter and lasted



THE ORIGINAL FRANKLIN

▲ **BEN REALIZED** that warming an entire room with a fireplace was “next to impossible.” His solution: The box fit into

the Pennsylvania fireplace. It was an open iron box with air chambers on each side.

A scientist friend of Franklin’s created a fireplace and allowed heat to spread into a room more efficiently.



THE COPYCAT FRANKLIN

A modified version called the Franklin stove. Versions of that stove can still be found in many homes today.



▲ **BEN DESIGNED** this generator (above), which produced static electricity. It was manufactured according to his instructions.

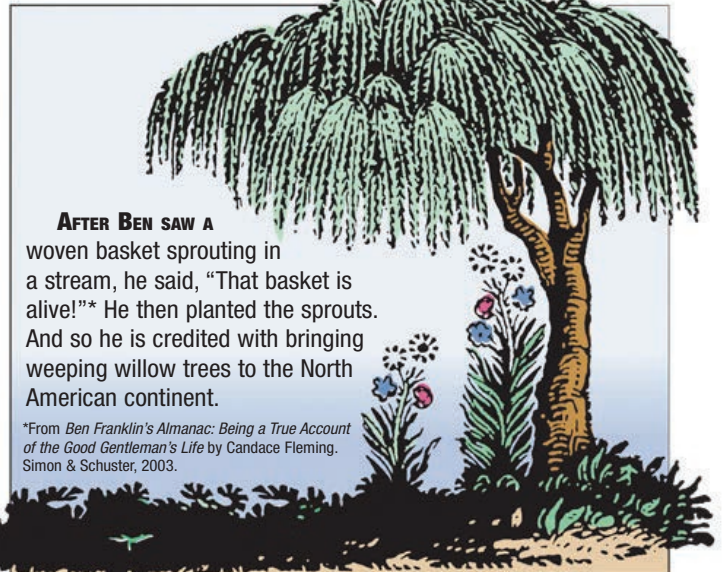


CHECK IT OUT!

Franklin proved that darker cloth absorbed more heat than lighter cloth by performing a clever experiment on a sunny winter day. How do you think he did it?



longer than ordinary candles. He also said this candle left no grease spots when it dripped.



AFTER BEN SAW A woven basket sprouting in a stream, he said, “That basket is alive!”* He then planted the sprouts. And so he is credited with bringing weeping willow trees to the North American continent.

*From *Ben Franklin’s Almanac: Being a True Account of the Good Gentleman’s Life* by Candace Fleming. Simon & Schuster, 2003.

Franklin's Kite Experiment

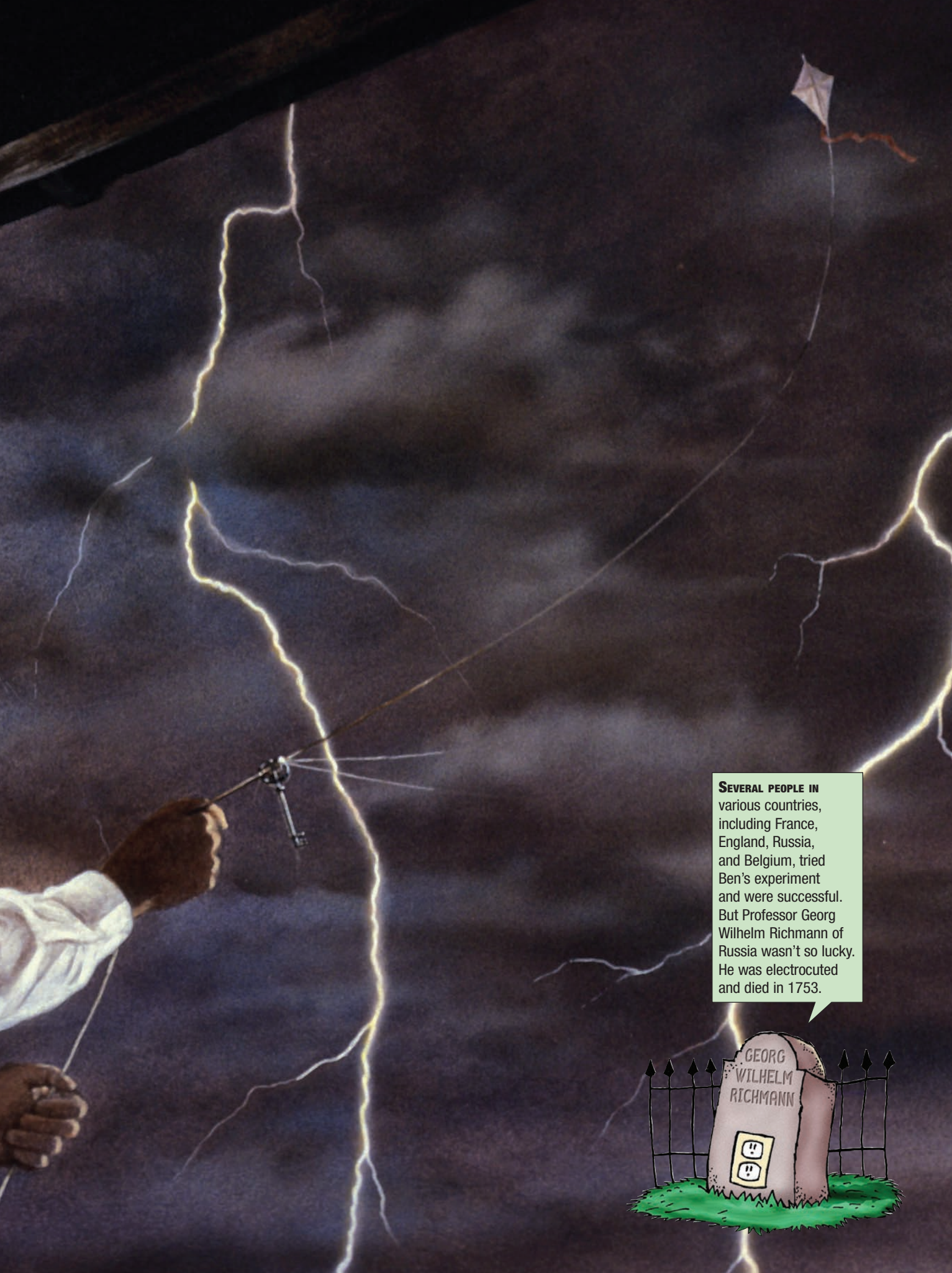
Franklin is probably most famous for his kite experiment. As the story goes, he and his son flew a silk kite on a long cord when the sky was full of black clouds. A metal rod was tied to the kite. An iron key was attached to the end of the cord. Franklin and his son tied a silk string to the end of the cord, where the key was. They kept the silk dry and hung onto it.

As storm clouds approached, the metal rod drew electricity, which Franklin called "electric fire," from them. When rain got the kite and the cord wet, that electricity was conducted (traveled) from the rod to the key. That's because water is a good conductor of electricity. Franklin touched the key with his knuck-

le and felt an electrical shock. This proved his theory that lightning was a form of electricity.

Franklin was willing to risk a shock to test for electricity. But he also knew enough to end the experiment before lightning struck. Franklin warned anyone who tried his experiment to stand at a window or in a doorway. He also told them to keep the silk cord dry and away from the door or window frame. If the silk got wet, a lightning strike could be deadly.





SEVERAL PEOPLE IN various countries, including France, England, Russia, and Belgium, tried Ben's experiment and were successful. But Professor Georg Wilhelm Richmann of Russia wasn't so lucky. He was electrocuted and died in 1753.



The Lightning Rod and Other Practical Inventions

Ben Franklin made many discoveries about electricity. He is best known for demonstrating the electrical nature of lightning. Franklin did not seek knowledge for its own sake. He thought it should serve a useful purpose. The practical product of his kite-and-key experiment was the lightning rod – a pointed iron rod that is raised above a rooftop. During storms, the rod attracts lightning. A

wire attached to the rod leads the lightning harmlessly into the ground. In the 1750s, lightning rods went up everywhere, increasing Franklin's reputation. But Franklin made little money from his inventions. He didn't patent them. A patent registers an invention with the government and gives the inventor the right to earn money on it. Franklin let anyone copy his inventions.



▲ **FRANKLIN** invented a musical instrument called the armonica. It was made of 37 glass bowls, which rotated in a case filled with water.

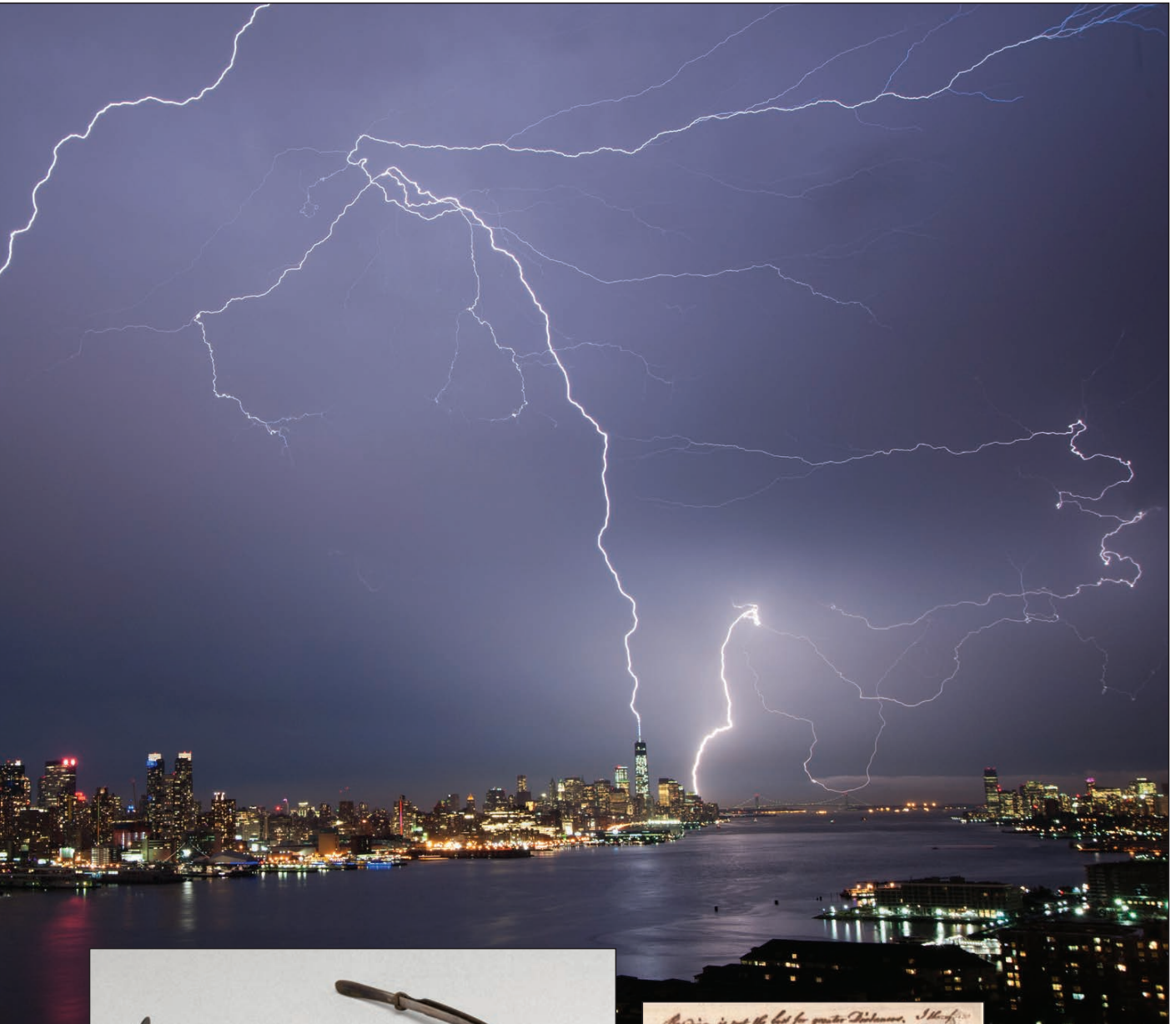
When touched, the wet rims produced soft, warbling sounds. Both Mozart and Beethoven wrote music for it.



► **BEN INVENTED** this chair in which the seat can be turned into a step-ladder. It made it easier for him to reach the top shelves in his library.

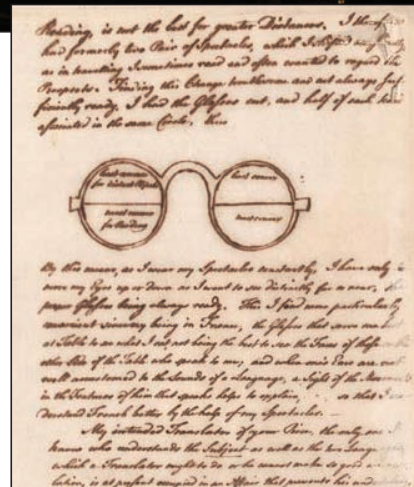
◀ **BEN DESIGNED** this chair-desk combination. It features a "tabletop" arm that can be swung back out of the way when it isn't being used as a desk.





▲► **BEN FOUND THAT** glasses. So he needed his reading glasses to see his dinner plate. But he also found that he couldn't see his dinner guests well without his regular

These were spectacles with half a reading-glass lens mounted below half a lens for distance vision.



▲ **NOT EVERYONE** approved of lightning rods. Many people believed that lightning was a sign of God's anger. They felt it was wrong to interfere with this expression of his will. Others worried that directing so much electricity into the ground would cause earthquakes. Some Bostonians blamed lightning rods for the earthquake that struck their city in 1755.

Poor Richard says:
“Well done is better than well said.”*

*From *Poor Richard's Almanac* by Benjamin Franklin. The U.S.C. Publishing Co., 1914.

Patriot and Statesman

Franklin wasn't only a printer, a publisher, a writer, an inventor, and a scientist. He was also one of this country's greatest leaders. In 1736, Franklin was made clerk of the Pennsylvania Assembly, the colony's governing body. He was elected to Philadelphia's City Council in 1748.

► **FOR MOST OF HIS** life, Franklin's America was 13 colonies ruled by Britain. In 1764, when he was a representative of Pennsylvania, Franklin went to England. He argued the Pennsylvania Assembly's cause before the king. The assembly felt that the king's representatives were causing the people of Pennsylvania great hardships. In 1774, Ben was criticized before the Privy Council (advisers to the king). He was fired from his job as deputy postmaster. During these years, he fought to keep peace, both in Britain and at home.

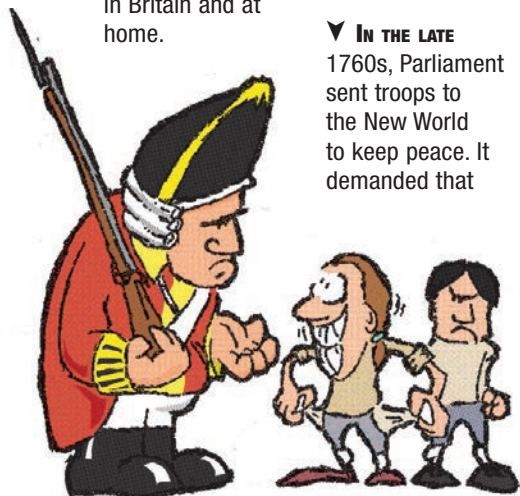


▼ **IN THE LATE** 1760s, Parliament sent troops to the New World to keep peace. It demanded that

the colonists pay British taxes for this. But the colonists had no say in Parliament, which led to the outcry, "No taxation without representation."

In 1751, he joined the Pennsylvania Assembly as one of the city's representatives. There, he negotiated a major treaty (formal agreement) with Native Americans. Later, he organized the defense of the Pennsylvania frontier. He also was chosen to be colonel of Philadelphia's militia regiment. In 1754, Ben drew up the first plan to unite the colonies under one government. Although his plan was re-

► **ON APRIL 18,** 1775, British troops left Boston to seize weapons stored in Concord, Massachusetts. Paul Revere and others spread the word: "The British are coming." The next day, in nearby Lexington, the American Revolution began, with "the shot heard 'round the world."



jected by the colonial assemblies and by the British Crown, it laid the foundation for what was to become the United States of America.

Poor Richard says:
“Early to bed and early to rise makes a man healthy, wealthy, and wise.”*
 *From *Poor Richard's Almanac* by Benjamin Franklin. The U.S.C. Publishing Co., 1914.

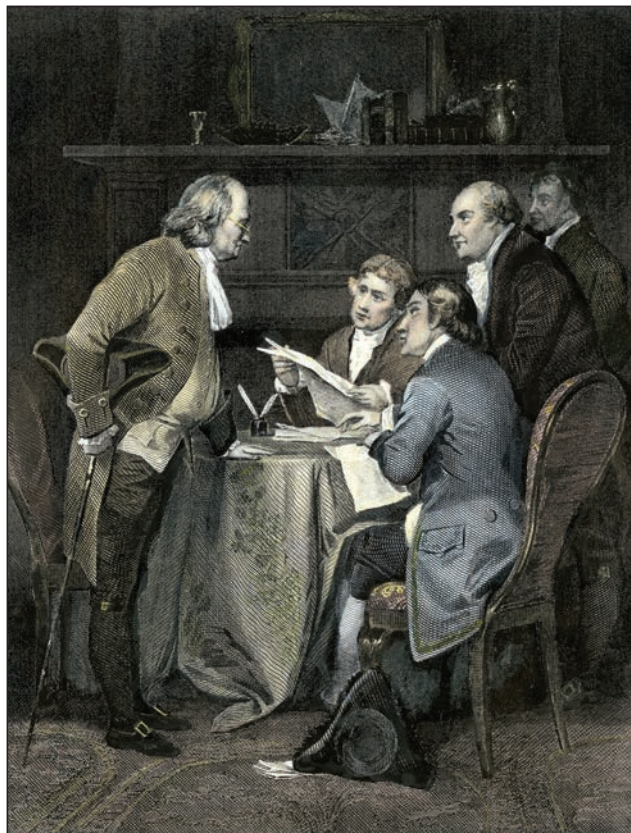


▲ In 1765, Britain passed the Stamp Act. It forced colonists to buy stamps to put on newspapers, magazines,

and even almanacs. The colonists felt this was unfair, especially since they had no representative in the British Parliament, where the laws were made. While in England, Franklin fought hard against the Stamp Act. He helped get it repealed (ended).



▲ In December 1773, Patriots – colonists who supported American independence – dumped boatloads of tea into Boston Harbor. They were protesting Britain’s tax on tea and other goods. This uprising was called the Boston Tea Party. Britain’s response was so harsh that the Patriots began to arm themselves.



◀ FRANKLIN PLAYED a big part in the Second Continental Congress. He served on many committees during the war. They included the committee that wrote the Declaration of Independence, the document that explained why America could no longer be tied to Britain. John Hancock was the first person to sign the Declaration. Before Hancock signed the document, Ben said: “Gentlemen, we must all hang together, or else, most assuredly, we shall all hang separately.”*

*From *Machinery Index*, vol. XXVII, by Lester Gray French. Machinery Publications Corporation, 1921.



AMERICA'S FRENCH allies played a big part in the Siege of Yorktown, the last major battle of the Revolutionary War.

The French fleet cut off British general Charles Cornwallis's army in Virginia from other British forces in the North.

Next, a French army marched south with Washington's troops to trap the British. Cornwallis soon surrendered.

The Revolutionary War and Beyond

After his return from England, Franklin was appointed a Pennsylvania delegate – or representative – to the Second Continental Congress. This group had a huge job. They had to hold the colonies together. They also had to challenge the military power of Britain. Ben knew the only way the colonists could win freedom from Britain was if they got some help, and the only nation likely to help them was France, Britain's enemy. Congress

urged Franklin to represent them in Paris. Although he was past 70 years old and a widower, Ben sailed to France.

The American cause was popular in Paris. Volunteers crossed the Atlantic to fight for the colonists. The French government also gave the colonists secret loans to buy guns. That was even before Franklin was able to work out a formal agreement with the French, which was signed in 1778.



▼ IN PARIS,

Franklin put aside the fine clothes he had worn in London. He dressed simply and carried a cane. Instead of a wig, he wore a fur cap (to cover a rash on his scalp). To the French, he was the perfect representative of simple frontier people. They called him *Le bon Quaker* (the good Quaker), although Ben was no Quaker and barely religious. Meanwhile, fur hats, *à la Franklin*, became all the rage.

Benjamin Franklin

When Franklin finally returned to Philadelphia, he was almost 80. Yet he still had work to do. He chaired the Supreme Executive Council of Pennsylvania. He was a member of the Constitutional Convention, where he devised the Great Compromise, which established two houses of Congress (the Senate to represent the

states, and the House to represent the people). He also served as president of the Pennsylvania Society for Promoting the Abolition of Slavery. Some of his last writings attacked the “detestable traffic in the bodies and the souls of men.”* Ben died in 1790 at the age of 84.

*From *Benjamin Franklin* by Edwin S. Gaustad. Oxford University Press, 2006.

Ben Franklin was quite a person.

Ben at a Glance

◀ **FRENCH SUPPORTERS** gave the Americans a fighting ship. To honor Franklin, they named it the *Bonhomme Richard*, which is how “Poor Richard” was known in France.

1706 Ben Franklin is born.

1730 Ben marries Deborah Read

1718 Ben is apprenticed to his brother James.

1732 Ben publishes the first edition of *Poor Richard's Almanack*.

1741 Ben invents the “Franklin stove.”

1752 Ben performs his now-famous kite experiment.

1753 Ben invents the lightning rod.

1757 Ben sails for England to state the complaints of many of the colonies.

The Revolutionary War begins.

1775 Ben is appointed postmaster general.

1776 Ben is part of the committee that writes the Declaration of Independence.

Ben is selected to go to France to get French support for the Revolution.

1784 Ben invents bifocals.



► **BEN FRANKLIN WAS BORN IN THIS LITTLE HOUSE ON MILK STREET IN BOSTON. HIS LIFE'S JOURNEY TOOK HIM A LONG, LONG WAY FROM THERE.**



Activities

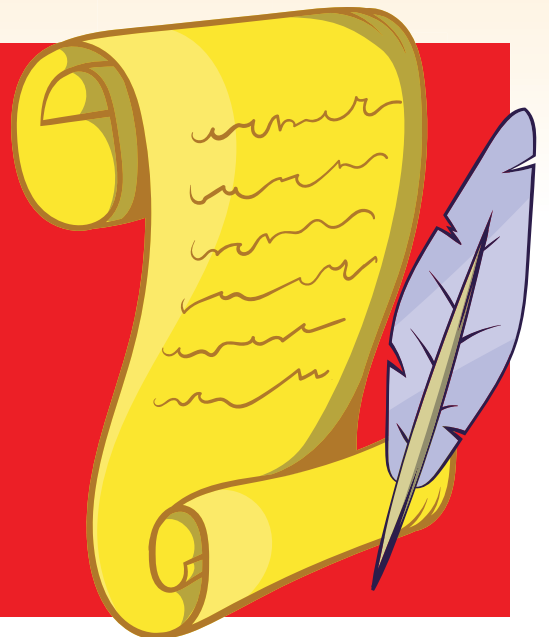
CONDUCT AN INTERVIEW

Imagine you've been granted an interview with Benjamin Franklin on his 80th birthday. To prepare for the interview, you'll want to do some background reading about Franklin. Review the information about him in this magazine. Then work with a partner. Write five interview questions you would like to ask. Make notes about what his answers might be. Then, take turns asking and answering the questions with your partner.

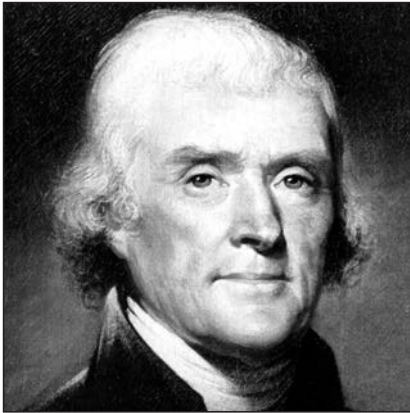


WRITE A SPEECH

Suppose you are Benjamin Franklin. You've just been sent to try to persuade the French to enter into an alliance against the British. What will you say? What arguments will you put forward? How will you deliver them in a persuasive manner? Think about these questions as you review the information in this magazine. Then, write the speech you would give to the French. List the reasons you think they should enter into the American Revolution on the Patriots' side. Be persuasive. The future may be at stake!



MAKE CONNECTIONS WITH THESE RELATED TITLES



Thomas Jefferson

Nicknamed the “Sage of Monticello,” Thomas Jefferson was not only a wise and successful leader, he was also a man of numerous talents, a lawyer, farmer, architect, inventor, musician – and most notably, writer of the Declaration of Independence. Uncover Jefferson’s many achievements and take a look at some of the contributions he made to early America.



George Washington

A humble, modest, and kind man, George Washington probably didn’t strike many as a great military hero. But his successes on the battlefield were just as pivotal to the birth of our nation as the years he served as our first president. Learn about the heroic and patriotic man who was America’s first commander in chief.



Declaration of Independence

It’s hard to believe that just over a thousand words could change world history, but one document – only 1,337 words long – did just that. This document’s ideas shook up the mighty British Empire. It launched a new nation. And it is still greatly admired today. What is this document? It’s the Declaration of Independence.



CALIFORNIA STANDARDS

HSS 5.5 Students explain the causes of the American Revolution.

5.5.1 Understand how political, religious, and economic ideas and interests brought about the Revolution (e.g., resistance to imperial policy, the Stamp Act, the Townshend Acts, taxes on tea, Coercive Acts).

5.5.3 Understand the people and events associated with the drafting and signing of the Declaration of Independence and the document’s significance, including the key political concepts it embodies, the origins of those concepts, and its role in severing ties with Great Britain.

5.5.4 Describe the views, lives, and impact of key individuals during this period (e.g., King George III, Patrick Henry, Thomas Jefferson, George Washington, Benjamin Franklin, John Adams).

HSS 5.6 Students understand the course and consequences of the American Revolution.

5.6.2 Describe the contributions of France and other nations and of individuals to the outcome of the Revolution (e.g., Benjamin Franklin’s negotiations with the French, the French navy, the Treaty of Paris, The Netherlands, Russia, the Marquis Marie Joseph de Lafayette, Tadeusz Kościuszko, Baron Friedrich Wilhelm von Steuben).

Historical and Social Sciences Analysis Skills:

Chronological and Spatial Thinking

1. Students place key events and people of the historical era they are studying in a chronological sequence and within a spatial context; they interpret time lines.

4. Students use map and globe skills to determine the *absolute locations of places* and interpret information available through a map’s or globe’s *legend, scale, and symbolic representations*.



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GRADE 5 TITLES

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Plains Indians	Benjamin Franklin
Southwest Peoples	The Constitution
Northwest Coast Peoples	The New Nation
America 1492	Lewis and Clark
Exploring the Americas	Westward Expansion
Early Settlements	Pioneers
13 Colonies	Immigration
Declaration of Independence	Industrial Revolution in America
American Revolution	Civil Rights
Revolutionary Women	

ON THE COVER: *Portrait of Benjamin Franklin*, by Joseph Wright, 1782. **Granger Collection.**

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