

Asymptote[®] REVIEW **AR**

2004, Vol. 12

An Entertaining Excursion Into Intellectual Property

No. 1

Benjamin Franklin, Inventor

By *W. Thad Adams III*

So who was this guy, Benjamin Franklin, anyway? He discovered electricity, right? He flew a kite in a thunderstorm and lived to tell about it. Well, he didn't "discover" electricity, or invent it, either. He did discover and explain many of its characteristics. It would take this entire newsletter many times over just to summarize Ben's contribution to the understanding of electricity.

And he was so much more!

Ben Franklin was a printer, writer, wag, public citizen, scientist, inventor, politician, agent provocateur, rebel, courtier, bon vivant, peacemaker, framer of the Constitution, and sage. Massive volumes have been written about him. Here we can only suggest



the contributions he made in science and invention, and hope that you are interested enough to read more. We've included a short bibliography on The Back Page.

Some inventors invent for the pure intellectual challenge of solving a problem. To them, the inventive process is a puzzle to be put together. Others invent out of necessity. Franklin invented out of curiosity and the thrill of discovery, although he always tried to find a practical application for what he invented or discovered — using electric jolts to cook turkeys, for example.

Franklin had little formal education, but his scientific work was recognized during his life to the point that he was celebrated as the most famous scientist then alive. The following pages can only provide the barest hints of his greatness.

To Franklin, ocean was a deep lab

Ben Franklin did not discover the Gulf Stream. Whalers knew of it and its effect on the nearby fisheries for many years.

Franklin was the first, however, to study the Gulf Stream in a scientific manner. He studied it repeatedly during his life — seizing his various ocean voyages between America and Europe as opportunities to conduct Gulf Stream experiments.

Franklin viewed the Gulf Stream as a "river" within the ocean. In his studies, Franklin at one point wanted to see what the temperature



was below the Gulf Stream's surface.

How did he do it? He put a cork in the mouth of a heavy bottle and dropped it over the side of the ship on the end of a cord.

As the bottle submerged deeper and deeper, the in-

creasing pressure from surrounding water eventually forced the cork into the bottle, thereby opening the neck. This allowed "deep" water to fill the bottle, which could then be retrieved to measure its temperature.

The Wise & Quotable Franklin



Early to bed, early to rise, makes a man healthy, wealthy and wise.

Diligence is the mother of good luck.

Who is wise? He that learns from every one.
Who is powerful? He that governs his passions.
Who is rich? He that is content.
Who is that? Nobody.

A publication of
Adams Evans P.A.
Intellectual Property Attorneys

Patents, Trademarks &
Copyrights

To request a free subscription to
Asymptote Review, contact us at:

2180 Two Wachovia Center
301 South Tryon Street
Charlotte, N.C. 28282

Tel. (704) 375-9249
Fax (704) 375-0729

www.adamspar.com

In this issue

Benjamin Franklin, Inventor	1
Ben's Discoveries	
Gulf Stream a deep, ocean lab ..	1
Urinary catheter	1
Electricity	2
Daylight Savings Time	2
Weather prediction	2
Franklin stove	3
Odometer	3
Bifocal glasses	3
Swimming paddles	3
Patent generosity	The Back Page
Franklin resources	The Back Page

Brother in need gets urinary catheter

When Ben Franklin's brother, John, became gravely ill, he wrote Franklin about the need of a urinary catheter to help him urinate. So, Franklin devised the first such device made in America — a thin silver tube that had a wire inside to stiffen it during insertion, but that could be withdrawn where it needed to bend.

Franklin elevates electricity from 'curiosity' to 'science'

Ben Franklin first learned of electricity from a traveling scientific showman who performed "electricity tricks", such as creating static

electricity by rubbing a glass tube and generating sparks from the feet of a boy hanging by silk cords.

His interest piqued, Franklin began by collecting electric charges and studying their properties.

In so doing he coined terms that are still used today, for example, positive and negative charges, battery, neutral, condenser and conductor.

Franklin performed many experiments with crude capacitors, called Leyden jars, that he would connect in series to increase the electricity stored. Since they were in a group, he used the term "battery" to describe the assembly.

He discovered that electricity is best discharged through points, and eventually devised "lightening rods" that were quickly adopted for use in preventing damage from lightning strikes on church steeples, ship's masts,

The Wise & Quotable Franklin



When the well is dry, we know the worth of water.

He that lies down with dogs shall rise up with fleas.

Genius without education is like silver in the mine.

and the like.

He did, in fact, fly silk kites as a means of proving that lightning was a form of electricity.

He was awarded honorary degrees from Yale and Harvard in 1753, and was the first person living outside Britain to be awarded the prestigious gold Copley Medal.

As one of his biographers noted, "Ben Franklin found electricity a curiosity and left it a science."



Ben's battery of Leyden jars.

The Wise & Quotable Franklin



Poverty wants some things, luxury many things, avarice all things.

Hunger never saw bad bread.

Eat to live, and not live to eat.

Three may keep a secret if two of them are dead.



To err is human, to repent divine, to persist devilish.

Today is yesterday's pupil.

Insights on storm-wind rotations make weather forecasting feasible

Franklin discovered that big East Coast storms, whose winds come from the northeast, actually move in the opposite direction, traveling up the coast from the southwest. In 1743 Franklin knew of a lunar eclipse that was to occur at 8:30 pm in Philadelphia. A huge storm, however, prevented anyone in Philadelphia from seeing the eclipse.



Lightning rod

Later, though, Franklin read accounts in other locations from Virginia to Boston where the eclipse had been seen, and that in Boston the storm had not hit until an hour after the eclipse. From this he concluded that the storm was moving from the southwest to the northeast, even though the wind was from the northeast.

Low pressure weather systems rotate clockwise, Franklin observed, meaning winds along the leading side of a storm moving to the north actually blow south! With this analysis, Franklin was credited with the beginning of the science of weather prediction.

Candlelight conservation harvests idea for Daylight Savings Time

While living in France in 1779, Franklin was so absorbed in a game of chess that he played through the night, and when the candles burned down, he sent his opponent to find more. The man returned with the surprising news that it

was daylight already. Franklin, who by this age had long ago given up on the idea of "early to bed and early to rise" proposed that, if during the summer months the Parisians would shift their sleeping time seven hours earlier, an

immense sum would be saved by using sunshine for light instead of candles.

Franklin is thus credited with the idea for Daylight Saving Time.

'Franklin stove' captures convection, heat transfer

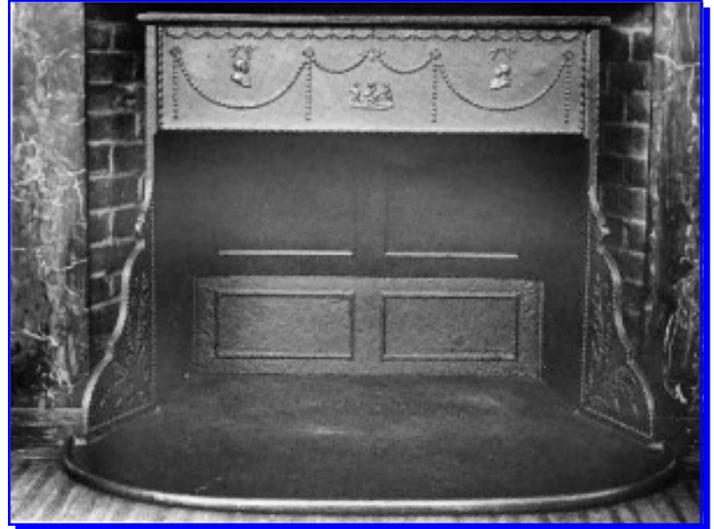
Considerable time studying fire and heat led Franklin to develop a stove that efficiently harnessed the powerful effects of heat transfer and convection.

Convection carried smoke from the stove under a wall in the hearth and then up the chimney. Along the way, Franklin's stove introduced a ventilation system that, drawing cool air from the basement, channeled the warmed air past an iron chamber while exiting the room.

This original application of heat convection and transfer provided ongoing heat for a long period of time, even after the stove's fire had been exhausted.

The heating system didn't work quite like he expected, and Franklin spent the rest of his life tinkering with the design before a truly workable design was developed.

Yet the same line of thinking led Franklin to improve on the English type of street lamp by providing vents in the bottom – which allowed smoke to vent out the top, thus reducing the accumulation of smoke on the glass plates of the lamp.



The Wise & Quotable Franklin



Little strokes fell great oaks.

In this world nothing can be said to be certain, except death and taxes.

There are three faithful friends, An old wife, an old dog, and ready money.

To lengthen thy life, lessen thy meals.



A full belly makes a dull brain

Dine with little, sup with less, Do better still – sleep supperless.

Odometer reshapes U.S. postal paradigm

Ben Franklin revamped and revitalized the American postal system with his invention of an odometer to measure distances between post offices.

The world's first odometer, shown here, attached to the wheel of a horse-drawn wagon.



Bifocal Glasses

Franklin explained the reasoning in his invention of bifocal glasses in a letter:

"The same convexity of glass through which a man sees clearest and best at the distance proper for reading is not the best for greater distances. I therefore had formerly two pair of spectacles, which I shifted occasionally, as in traveling I sometimes read, and often wanted to regard the prospects. [In other words, "take in the view."]



"Finding this change troublesome, and not always sufficiently ready, I had the glasses cut and half of each kind associated in the same circle. By this means, as I wear my spectacles constantly, I have only to move my eyes up or down, as I want to see distinctly far or near, the proper glasses being always ready."

Copy Machine

Franklin improved upon a primitive copy machine he obtained from James Watt, the famous British steam engine maker. Documents were written onto paper with a slow-drying ink made from gum arabic. The paper was then pressed onto sheets of moist tissue paper. Copies could be made as long as the ink was still wet, sometimes as long as a day.

Swimming Paddles

As a child Franklin learned to swim, and recognizing that the size of the hands and feet limited a person's swimming speed, devised "palettes" with thumb holes for his hands, and sandals with enlarged soles for his feet. With these, he could speed through the water.

Ben Franklin's contributions

are recognized on six different U.S. postage stamps.





Zero Franklin patents a sign of times



Franklin founded The American Philosophical Society in 1743.

Ben Franklin's contributions to society included many inventions and discoveries, though he never sought to patent them. Franklin was already a wealthy man, and publicized his inventions as an expression of gratitude for his good fortune, and as a way of benefitting mankind.

Franklin, in fact, approved of the patent system as a means of rewarding those willing to risk failure to promote the process of science. If he had sought patents on his inventions, there might have been as many as a hundred.



The Franklin Institute in Philadelphia

Who We Are

Adams Evans P.A., specializes solely in patent, trademark and copyright law, and the related areas of unfair competition and trade secret law. The firm's practice within this specialty is diverse, including prosecution of patent and trademark applications in the United States Patent and Trademark Office, litigation in Federal and State Courts, and domestic and international patent, trademark and copyright licensing.

Many of the firm's clients file corresponding patent applications in Europe and Asia. The firm has reciprocal relationships with intellectual property firms in many foreign countries, and is United States patent counsel for a number of foreign corporations

The firm also assists both foreign and domestic companies and individuals in planning and executing overall patent, trademark and copyright strategy.

The firm's clients include companies involved in the design and manufacturing of aircraft passenger seats, flooring products, child safety products, textile machinery and products, filtration equipment, medical products, power transmission equipment, hydraulic pumps, turbine engines, electronic controls, and microprocessor-controlled audio and video tape winding and loading equipment. Other clients include advertising agencies, record producers, computer programming specialists, medical research facilities, photographic film processors, and professional sports teams.

Asymptote Review is published by Adams Evans P.A. to inform and entertain our clients and friends in the general areas of patent, trademark and copyright law. It is not intended to provide legal advice, which can be given only after consideration of the facts of a specific situation.

© 2004, Adams Evans P.A.

Ben Franklin Resources

Books

Autobiography of Benjamin Franklin. MacMillan Publishing (1997).

Benjamin Franklin Wit and Wisdom. Peter Pauper Press, (1998).

Benjamin Franklin's Adventures with Electricity. Beverly Birch, Barrons Juveniles (1996).

Benjamin Franklin's Science. I. Bernard Choen, Harvard Univ. Press (1990).

Benjamin Franklin. Carl Van Doren, The Macmillan Company of Canada (1938).

Benjamin Franklin: An American Life. Walter Isaacson, Simon & Schuster, (2003).

Websites

The World of Benjamin Franklin. The Franklin Institute Science Museum. sln.fi.edu/franklin/roten.html

Benjamin Franklin: A Documentary History. J.A. Leo Lemay. www.english.udel.edu/lemay/franklin

The Benjamin Franklin Tercentenary (300th anniversary). Federally-commissioned project. www.benfranklin300.com

Benjamin Franklin - The Publishing Years; The Science Years; The Statesman Years. School for Champions. www.school%2Dfor%2Dchampions.com/biographies/franklin2.htm

The Wise & Quotable Franklin



Love your neighbor, but don't pull down your hedge.

Teach your child to hold his tongue, He'll learn fast enough to speak.

Let thy child's first lesson be obedience, And the second may be what thou wilt.

Adams Evans P.A.

**2180 Two Wachovia Center
Charlotte, N.C. 28282**

STD PRSRT
US POSTAGE PAID
PERMIT #26
ROCK HILL SC