Franklin Gazette

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"Patience in Market, is worth Pounds in a Year." Poor Richard, September 1753.

President's Message

By Roy E. Goodman

Following our trip to the Lancaster area I offer a fitting maxim from *Poor Richard*: *Different sects like different clocks, may be all near the matter, though they don't quite agree.*

When Franklin was elected clerk of the Colonial Assembly in 1738, Lancaster was one of only four counties in Pennsylvania. Franklin disseminated news and commentary on developments of interest to Lancaster through his newspaper, the *Pennsylvania Gazette*. He enhanced his business through the printing of books in German, many of which undoubtedly made their way to Lancaster County homes. His 1751 publication of Johann Arndt's *Des Hocherleuchteten Theologi ... Sechs Geistreiche Bücher vom Wahren Christenthum* is one of the monumental examples of the Colonial American German press. Franklin and printer Johann Böhm collaborated on a number of books and pamphlets in German which must also have found an audience in Lancaster.

Beniamino Francklin by G.B. Bosio; engraved by G.A. Sosso. Courtesy of the American Philosophical Society.

Conferences held with Indians in Lancaster resulted in treaties in 1744, 1748, 1757 and 1762. These were printed by Franklin's press. Franklin's involvement with a number of Lancaster printers helped expand his business and assist these artisans. In fact, Franklin set up the first printing press in Lancaster in 1751. James Chattin, sent to town by Franklin, was the first editor of the short-lived *Lancaster Gazette*.

Franklin's *Autobiography* provides a narrative of his journey to Lancaster in the spring of 1755 to procure wagons and horses for General Braddock's expedition. The urgent need for these items was announced in a broadside printed by Franklin and widely distributed in the area.

Franklin's contacts in Lancaster County were undoubtedly more extensive than we know of from the records, but they included Susanna Wright, writer and frontierswoman, who corresponded frequently with both Franklin and his wife Deborah on literary, agricultural, scientific and civic topics. Susanna's brother James, was also a Franklin correspondent.

The American Philosophical Society, founded in 1743 by Franklin among others, counted a number of Lancaster-area members. One was William Henry, a master rifle maker, whose work on steam navigation was published in the *Transactions* of the Society.

Peter Miller, perhaps one of *the* most pious members of the APS, was a welcome guest in Franklin's house. The Prior of the Brotherhood of Zion of the Seventh Day Baptists at Ephrata, he was interested in music, history, farming methods, and printing. An extract of Miller's letter *'on the time of sowing Pease, so as to preserve the crop from being worm-eaten,'* was published in the *American Magazine*, a forerunner of the APS *Transactions*.

Botanist and Lutheran minister, Gotthilf Henry Ernest Mühlenberg, was another member of Franklin's APS scientific circle. His listing of 1,100 botanical species identified within a three-mile radius of Lancaster was produced in 1791. In 1787, he became the first president of Franklin College (now Franklin & Marshall). Franklin generously contributed 200 pounds "cash paper" towards the college's establishment.

These ties with area residents reflect a little known facet of Benjamin Franklin's influence in Lancaster, Pennsylvania's largest inland city in the eighteenth century. His correspondence and publications open a window to an era that established Pennsylvania's "common wealth."

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New FOF Board Member: A Message from Eleanor Gesensway

Franklin has been my hero — and in an odd way, my companion — since childhood. Throughout the years, a surprising number of endeavors have connected me with him.

My master's thesis at the University of Pennsylvania investigated *Franklin and Music (1958).* After teaching social studies in Philadelphia's public high schools, I worked as an 18th-century printer/park ranger in the Franklin Court Printing Office in Independence National Historical Park. What great fun it was to learn Ben and Benny's trade, to interpret 18th-century life for 20th-century visitors, and to discuss the power of the press. For the next 17 years, I managed bookstores in Pennsylvania's national parks, including the store that specializes in publications about Benjamin Franklin.

My op-ed article, "Ben wouldn't like High St. now" (*Philadelphia Inquirer*, May 21,1990), sparked the founding of Historic East Market Street, of which I was a founding director, and the revitalization of lower Market Street (formerly High Street), Franklin's street. As a historic preservation activist, I led the successful efforts to save the block-long Victorian Lit Brothers' building from demolition and worked to win passage of a historic preservation ordinance in Philadelphia. I received the Preservationist of the Year Award in Philadelphia in 1985.

For Franklin's 300th birthday, I organized a panel presentation for nearly 200 seniors at Temple University's lifelong learning institute. Friends of Franklin members Ralph Archbold, Roy Goodman and Coxe Toogood graciously participated. All joined in singing a rousing Happy Birthday as "Ben" entered the room.

Two years ago, I came across a poem by Annis Boudinot Stockton and was curious to discover, in her case, first-hand connections with Franklin. "Lines on hearing of the Death of Doctor Franklin" was published in the *Franklin Gazette* (Spring 2007).

It is an honor to be invited to serve on the board of the Friends of Franklin.

Letters to the Editor

Would you please pass along my congratulations to Stuart A. Green for his *wonderful* article about Franklin, Lincoln and slavery.

Part of our interpretation program at Christ Church is telling stories about slavery in Philadelphia in the 1750s and 1760s. Dr. Green's insights into Franklin's thinking and writing – and their affect across the subsequent 100 years – is very helpful to our understanding. As we expand our interpretation to get us all thinking about how people could have justified to themselves owning other people, his piece will be very supportive.

Also, his description of Franklin's sequence of steps to achieve an end, was great. I have put it into effect on a project that I hope to move forward. Thanks.

Donald U. Smith
Executive Director, Christ Church
Preservation Trust

* * *

Thanks for the article in the recent *Franklin Gazette* about Franklin's wealth. The calculation of true exchange rates and purchasing power parities is a constant vexation for any traveler through history. I found Professor Rosenbloom's two approaches very interesting and informative and I certainly agree with him that there is no one correct answer in the sense that the goods and services we can purchase today don't match up with what Franklin would have faced. In the research for my own biography of him I resorted to a House of Commons Research Office estimate of the purchasing power difference between a penny in 1750 and a current pound sterling. In those days there were 240 pennies to a pound and the parliamentary economists reckon that a 1750 penny would be worth one pound fifty pence today. That would bring Franklin's 2,000 old style-pound sterling income to roughly 820,000 pounds sterling today. This morning's exchange rate between the pound and the dollar is 1.95, so in dollar terms

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In His Own Words:

"But of This You Can Judge Infinitely Better Than me"

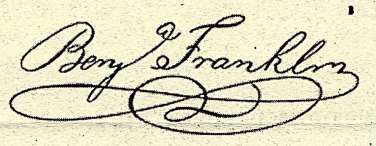
For years, Franklin had been asking Congress to send an American consul to France. In March, 1780 he pleaded for "some Person of Skill" to help with the demands that arose from the management of war ships, and a few months later he told the President of Congress, Samuel Huntington, "The Trouble & Vexation these Maritime Affairs give me is inconceivable. I have often express'd to Congress my Wish to be relieved from them."

Finally, Congress nominated and dispatched a consul, but he was lost at sea. His replacement, Thomas Barclay, arrived with his family in November, 1781 (see the related article on Barclay and Franklin in this issue). Barclay was a patriot, but more important to Franklin, he was level-headed, steady, competent, and reliable. The sigh of relief that must have issued from Franklin's lips once he had sized up the man must have been loud enough to resonate for miles. But even two such able men struggled to do the necessary for American interests.

Below is Franklin's January 18, 1782 letter to Barclay. The original manuscript is at the Library of Congress. It was written while Barclay was in Holland trying to ship much-needed military stores to America. It gives some sense of the two men rolling up their sleeves and dealing with a tedious level of detail, finance of the necessary outlays on a shoe string, baffling trade regulations and duties, and the involvement of a large number of different persons, American and foreign, who all played a part in securing the stores and getting them safely to American shores.

Sir,

I duly received the Letters you did me the honour of writing to me the 24th. of last Month, and the 6th. of this. I send you in a separate Pacquet the Account render'd me by Messrs. Neufville of the Purchase in Holland; and I enclose the Invoices said to have been ordered by Col. [John] Laurens, which was shown me by Capt. [William] Jackson to justify the Purchase; and also the Invoice of what was purchas'd of Capt. [Alexander] Gillon. I am glad you have got the Goods in Possession. On my Part I have not stopt Payment of any of the Bills. I make no Doubt of the Prudence of your whole Operation, and therefore cannot but approve of it. I would only just mention for your Consideration, that a Passage thro' France from Metz of a Cargo of Linnens for Mr. R. Morris which I solicited was lately refus'd but upon Condition of Paying 5. per Cent Duty, and that was stated as a great Abatement made in our Favour, tho' Metz is a Province belonging to France; And as the Purchase made in Holland was disrelish'd here, I doubt you will meet with the same Demand: If therefore it were practicable to forward them to America without landing them here in the same neutral Bottoms that bring them to France, perhaps that may be most convenient. But of this you can judge infinitely better than me. I have the honour to be, Sir, &c.



Letters

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Franklin's income, it could be argued, would have been equal to $1,599,000 today. Whichever method one chooses, Professor Rosenbloom was spot on with his conclusion, "Franklin was quite fabulously well-off." His enemies certainly pointed that out at the time.

All best to you and the Friends,

Jim Srodes

Note from the editor:

Thanks to Richard Margolis who sent a correction, below, on our caption on p. 1 of the last issue. He has nearly completed his definitive study, *Benjamin Franklin in terra cotta: portrait medallions by Jean-Baptiste Nini and Jean Martin Renaud*. We look forward to bringing you more news of this in the near future.

"It purports to be a Wedgwood ceramic portrait of Franklin in the APS collection. Actually, it is an example of the Gosset wax in the APS collection, which served as the prototype for this particular Wedgwood portrait medallion."

Featured Book from Diane Publishing

The Glass Harmonica: A Novel, by Louise Marley — 334pp, paperback, 2000. Originally $14.00, reduced to $10.00

This novel takes us into the lives of 2 young women of 2 different times — bound by a passion for the music of the glass harmonica. Eilish Eam is an orphan living in London, 1761. She stands on an icy corner and plays her instrument: water-filled glasses. Her only comfort is the place her music takes her . . . to visions of a young girl, much her own age, but with odd short hair. One night Benjamin Franklin stops to listen, awestruck by her gift — and with plans for her future . . . . Erin Rushton is a musical prodigy living in Seattle, 2018. She stands in the orchestra, consumed by the music of her instrument: the glass harmonica. And the only thing that alters the rhythm are the visions that haunt her . . . of an odd, old-fashioned girl, much her own age, who needs her help.

Annual Appeal

The Friends' Annual Appeal is underway.

Your contribution helps with the Friends' general operating support and as always is tax-deductible.

What was it like working for/with Benjamin Franklin?

By Priscilla H. and Richard S. Roberts

Consul Thomas Barclay found out in 1782.

When Congress named Franklin minister plenipotentiary in France in September 1778 it made him a one-man consular and diplomatic service. He was "oblig'd to perform all the Functions of Consul, Judge of Admiralty, Merchant, Banker, &c. &c. besides that of Minister." It was more than was reasonable to ask of one man, especially one Franklin's age (72). John Adams was very blunt on the subject, perhaps exaggerating a bit to make the point: "He is too old, too infirm too indolent and dissipated, to be sufficient for the Discharge of all the important Duties of Ambassador, Secretary, Admiral, Commercial Agent, Board of War, Board of Treasury, Commissary of Prisoners, &c. &c. as he is at present in that Department, besides an immense Correspondence, and Acquaintance, each of which would be enough for the whole Time of the most active Man in the Vigour of Youth."

Franklin himself wrote to agents on the French coast: "At this Distance from the Ports, and unacquainted as I am with such Affairs, I know not what to advise about getting either that Cloathing, or the small Arms and Powder at L'Orient… transported to America; and yet everybody writes to me for Orders, or Advice, or Opinion, or Approbation, which is like calling upon a blind Man to judge of Colours."

And to Congress: "With regard to the fitting out of Ships, receiving and disposing of Cargoes and purchasing of Supplies, I beg leave to mention, that besides my being wholly unacquainted with such Business, the Distance I am at from the Ports renders my having any thing to do with it extreamly inconvenient. Commercial Agents… and the Captains are continually writing for my Opinion or Orders, or Leave to do this and that, by which much time is lost to them, and much of mine taken up, to little Purpose from my Ignorance." Franklin continued with an appeal he and John Adams had made previously, and would make again and again, "I wish therefore the Congress would appoint the Consuls they have a Right to appoint by the Treaty, and put into their Hands all that sort of Employment."

The pleas were eventually answered with the arrival of Thomas Barclay in November 1781. A fifty-three-year-old Irish-born Philadelphia merchant who was politically active in the years leading up to independence, Barclay had been named American consul in France by the Continental Congress.

Franklin received him in Paris with a small dinner party to which he invited several people who could be helpful to the new consul, introduced him informally to the French foreign minister, and discussed with him immediate needs for his services.

The timing was fortuitous. From Holland, John Adams had been pressing Franklin about several hundred bales of Continental Army supplies stuck in Amsterdam. South Carolina's Alexander Gillon had promised to carry them on a frigate he had leased for his state. But Gillon had sailed off, leaving the goods and unpaid bills for them. When the minister and the new consul met and considered existing challenges they decided the most useful thing Barclay could do was find a way to get those goods and ship them to America.

Thus, three weeks after arriving in Europe, America's consul to France was off to Holland. There, with the support of John Adams, he very quickly assembled the supplies. Reporting this to Franklin, he also explained that in the absence of good alternatives he was looking into shipping to America via France. A pleased Franklin assured Barclay of his support, but advised against using French ports; the French would impose duties. At this point, he expected the consul back "in a few days," apparently on the assumption that getting the goods from the merchants was the principle challenge in the matter.

During Thomas Barclay's week in Paris the two men had not really come to know each other very well. Nor do they seem to have discussed in any depth the origins of the problem in Holland, the consul's authority, or how they would work together.

In mid-February a Franklin letter would inform Barclay of his hope that the work in Holland was almost finished so that he could return to deal with needs that had arisen in France. Franklin had just learned that, contrary to expectations, the French would not be able to transport 1000 tons of blankets and clothing for America sitting in the port of Brest. Moreover, from Philadelphia had come instructions to involve Barclay in the purchase of still more clothing.

While the recall by Franklin was on its way to Amsterdam, a Barclay report on shipping prospects was en route to Paris. He was trying to book some of the supplies on "the only Vessell in this harbour fit to trust a Bale of Goods to America in." A couple of other ships were expected but their arrival was uncertain at best, and they all preferred high value (high paying) freight, which the public goods were not. (Although Cornwallis had surrendered at Yorktown, the war was still on and shipping to America was risky business.) Barclay had concluded that shipping via France would not be cost-effective and that he was unlikely to get the goods off in the foreseeable future by waiting for ships willing to take them directly to America. More positively, he had learned that in nearby Ostend he might be able to buy a vessel for little more than freight charges on a shipload of the public goods. That meant the cost would be about the same if the ship and cargo were lost, but after a successful voyage revenue from the sale of the ship would offset most or all transport costs. He asked

the minister to set aside funds for him so they would be available when needed.

The funds Franklin controlled were over-committed and almost exhausted, and France—America's financier—had told him to expect no new commitments. No way could he put money in an account for Barclay to buy a ship. Still hoping for the consul's rapid return, and having no funds to spend on the goods in Holland, Franklin responded by questioning the urgency of the need for the supplies and suggesting they ask Congress to send ships for their transport. He would help him to the extent possible, he told Barclay, but "I could wish you not to engage in the Purchase of those Ships."

Barclay had to make decisions in Amsterdam that would commit funds Franklin managed in Paris. This inevitably required collaboration and communication. But events in both cities often moved faster than the mail between them. Two to three weeks would pass from the asking of a question or dispatch of an instruction to the receipt of a response. Franklin, Barclay, and people whose actions impacted them did not sit idle during those weeks.

As the gently-phrased order not to purchase ships left Paris Barclay was drafting a tactful, reasoned reply to Franklin's request of ten days before that he return to deal with matters in France. If, after considering his current situation in Holland, Franklin still wanted him to drop everything and return he would do so. His latest news was that he had made an offer on a ship in Ostend, and that the supplies included a quantity of English clothing he would have to exchange or otherwise dispose of because Congress (he had just learned) had recently banned all importation of English goods. He estimated he needed another six weeks.

Before that letter arrived the need had eased in France. "Your Return …seems now not so immediately necessary," Franklin wrote February 22. The French, he explained, will try to arrange shipping of the supplies at a reasonable rate, and for the further clothing purchase mentioned earlier he did not expect to have adequate funds. "You may in my Opinion continue your Operations in Holland some time longer without Inconvenience to the Public Interests here. Tho' I shall be glad of your Return and Establishment here as soon as conveniently may be."

When consul Barclay received Franklin's "wish" that he not "engage in the Purchase of those Ships," he immediately wrote to Ostend. He was able to withdraw an offer on one ship, but it was too late to stop the purchase of the 250-ton *General Sullivan*. He explained this in a February 25 letter, adding, "If your Excellency shou'd continue to think it improper to Interest Congress in such a purchase, I shall pay the Bills when Due and take the transaction to my own account." (Not salaried by Congress, Barclay was in business with an American merchant in Lorient.) He assured the minister that he would try to arrange freight payment in Philadelphia for any shipments he sent, rather than on the Paris account.

Again, circumstances changed while letters traveled. A few days before he learned of Barclay's purchase, Franklin had been told that France would grant America an unexpected new loan of six million *livres tournois*. This was important; economic pressure had certainly influenced his growing reluctance to pursue shipment of the supplies in Holland. With that constraint relaxed, Franklin never answered the February 25 letter, never responded to Barclay's offer to take up Congress's share of the ship. He had agreed that the consul could carry on in Holland, and he may well have accepted the economic logic behind the ship purchase. The consul was on his own.

Barclay took the silence as assent, arranged for the *General Sullivan*—the future *Heer Adams*—to come to Amsterdam (he had purchased half of it for Congress, half on his personal account), and worked on exchanging the English clothing. This last took him to Ghent, where he learned that clothing was being sold at bargain prices from the large French transport ship *Marquis de Lafayette* which the English had captured the previous year carrying supplies to America. In one of his progress reports he proposed buying a quantity and billing Franklin "unless You absolutely forbid me — I think such an Opportunity of a supply ought not to be miss'd." Not being forbidden, he made the purchase and then wrote proposing another, adding "it wou'd gratify me much to have your Excellencys sentiments of this Engagement."

Franklin had heard that goods from the *Marquis de Lafayette* were also being offered for sale in Philadelphia, though he never told Barclay. He could have said "don't buy them on my account and then have to ship them, leave it to officials in Philadelphia if that would meet a need." For whatever reason, he did not forbid the purchases when he could have, but did protest them in a letter to Robert Morris.

From March on Franklin was increasingly busy with peace negotiations with England, though he also made time for some of the intellectual pursuits he so enjoyed. He presumably read the eight Barclay progress reports from February into June, though he didn't acknowledge any (only two asked for answers). The work in Holland was taking much longer than expected and the consul was totally on his own from February into July. Then, July 5, Franklin wrote Barclay (in a letter not extant) that he would accept no more charges from him. Barclay put off his reply for several days "to examine my situation and to endeavour to fill in some method of getting away the remainder of the goods without being further troubling to Your Excellency." *(to be continued in the next issue)*

The authors' biography of this first American consul to serve abroad – *Thomas Barclay (1728-1793): Consul in France, Diplomat in Barbary* – will be published in November 2008 by Lehigh University Press.

American Women and Enlightenment Science

By Susan Branson, Syracuse University

During his first sojourn in England while on business for the Pennsylvania Assembly, Benjamin Franklin was asked by a young person of his acquaintance, who sought a scientific education, to enter into a correspondence. Franklin replied with the following letter:

I embrace, most gladly, my dear friend's proposal of a subject for our future correspondence… Our easiest method of proceeding I think will be, for you to read some books that I may recommend to you; and, in the course of your reading, whatever occurs, that you do not thoroughly apprehend, or that you clearly conceive and find pleasure in, may occasion either some questions for further information, or some observations that show how far you are satisfy'd and pleased with your author. These will furnish matter for your letters to me, and, in consequence of mine also to you.[i]

The epistolary education, though sporadic, continued for nearly ten years. Franklin suggested topics and readings. He took the time to answer questions in detail – sometimes filling several pages with his ideas on the nature of fire, electricity, tides, and other natural phenomena. Franklin, the first scientific American, had a wide correspondence with British, French and American scholars. But this particular correspondent was a twenty-two-year-old woman. Margaret Stevenson was the daughter of Franklin's landlady on Craven Street in London. Benjamin Franklin took on the role, as he termed it, of "preceptor" to Stevenson during the 1760s.[ii]

Through his letters, Franklin gave Stevenson an education in natural philosophy (as science was termed in the early modern world). Franklin encouraged Polly, as he called her, to read widely (including Franklin's own writings). He took his task seriously. His letters to Polly were not simplified descriptions of his observations and theories; they were just as detailed as letters he wrote to his male peers. For example, when the fourth London edition of Franklin's *Experiments and Observations on Electricity* was published in 1769, it included eight of Franklin's letters to Stevenson.[iii] Why did it suit this inventor and Fellow of the Royal Society to discuss natural philosophy with - to devote time and attention to - a young woman?

Historians of science and those who study the history of early American women are generally thought to have little in common. With few exceptions, the scientific Enlightenment in America has been approached from the perspective of white, educated (or self-educated) males, such as Franklin, who had both the time and the opportunity for scientific pursuits. Scholars have chronicled the establishment of early (and exclusively male) sites for scientific inquiry, such as colleges and institutions. A handful of women, outsiders to these networks of knowledge, such as Jane Colden and Martha Logan, are known for their botanical investigations and expertise. But there were no female Franklins in America. Would we expect to find any Polly Stevensons? Were American women engaged in the project of Enlightenment? With a nod to Joan Kelly, we might ask, did American women have an Enlightenment?[iv]

To look for women directly connected with science in early America is not a fruitful endeavor. But what if we approach the problem from the other way round: rather than searching for women who generated scientific inquiry, we instead identify the ways that women were consumers of scientific information? Not only might we uncover a variety of activities, we might come to understand why Franklin was so at ease with, and accustomed to, the notion of female scientific learning.

Many British scientific texts that specifically included female readers were available in eighteenth-century America. American women, especially those with leisure time and an adequate education, could read natural philosophy works such as Jean Antoine Nollet's *Lessons of Physical Experiments*, which was addressed to boys *and* girls. His illustrations of scientific experiments include women as well as men. Fontenelle's best seller *Conversations on the Plurality of Worlds* was another instructional text directed at young women. Fontenelle's lessons are couched within a fictional framework: a young marquise spends her summer evenings walking in her garden talking of astronomy and other topics with her preceptor. One of the texts that Franklin gave to Polly Stevenson was Pluche's *Spectacle de la nature, or Nature display'd,* in which a rural count *and countess* instruct a young nobleman. Readers with no knowledge of the French language could read Aphra Behn's translation of Pluche, or Benjamin Martin's, *The Young Gentleman and Lady's Philosophy,* James Ferguson's, *An Easy Introduction to Astronomy for Gentlemen and Ladies*, (John Newberry) Tom Telescope's, *Newtonian System of Philosophy, Adapted to the Capacities of Young Gentlemen and Ladies* or Elizabeth Carter's translation of Francesco Algorotti's *Sir Isaac Newton's Philosophy Explain'd. For the Use of the Ladies.*

With these British and French texts available in all the major seaport cities, American women were both consumers of, and audiences for this information. Physiology and Medicine were areas of natural philosophy of practical interest to women: as the providers of minor domestic medical treatment to spouses, children and servants, some women sought out knowledge of basic anatomy and chemistry. Educator Almira Phelps recalled her mother's practical interest in anatomy:

She early acquired a habit of examining the anatomy of such animals as are used for food; joints of meat, fowls, &c. She dissected with particular attention to the form and position of the different bones. Thus she soon became an adept at carving, (an art which every mistress of a family ought to understand,) and, reasoning from analogy, formed a tolerably correct idea of the human anatomy. In rearing a large family, she often found this knowledge of great use. In more than one case, where accidents in her own family, or immediate neighborhood, had caused dislocation of joints, and immediate surgical aid could

not be obtained, she replaced bones, and secured them by proper ligatures. [v]

Women purchased or borrowed books containing medical recipes. And they found medical information in publications specifically addressed to them. For example, the *Virginia Almanac and Ladies Diary* for 1769 included an "infallible Cure for the Bite of a mad Dog," a "recipe for Leprosy," and a recipe for relieving "distress from consuming mushrooms." Women sometimes advertised their own cures. In the *Virginia Gazette,* Joanna Stephens offered readers a cure for stones [in 1739], and an anonymous "Lady" described a cure for breast cancer. (This required the healer to place eight toads in a muslin bag and apply them to the cancerous area). Culinary texts often included medical recipes. *The Compleate Housewife or Accomplish'd Gentlewoman's Companion* published in Williamsburg in 1742, for example, included "a Collection of near Two Hundred Family receipts of Medicines."[vi]

This active search for information and cures is amply documented in the diary of Elizabeth Drinker, who recorded her family's various illnesses as well as the cures administered either by herself or local physicians. She also kept a record of her reading. Among the medical books and pamphlets she digested was physician Benjamin Rush's *Experiments and Observations on the Mineral Waters of Philadelphia, Abington, and Bristol, in the Province of Pennsylvania.* Rush had noted the particularly healthful water in John Lawrence's well in Sixth-street, near the corner of Chestnut. Drinker, her children, and several friends paid a number of visits to drink Lawrence's water between May and July 1773. Drinker later noted that Lawrence's well was so popular that Philadelphians drank it dry. At which point the source of this water, which Rush had described as having a sulfurous taste and effervescent quality, was discovered. The well connected directly with a shallower privy pit.[vii]

Americans were also curious about scientific instruments. In August 1744, the *Pennsylvania Gazette* announced that "The Solar or Camera Obscura MICROSCOPE,...Just arrived from LONDON, could be viewed for eighteen pence by Gentlemen and Ladies." Some wealthy colonists bought microscopes and other equipment. One purchaser was Philadelphian James Bringhurst. Young Elizabeth Sandwith, the year prior to her marriage to Henry Drinker, recorded that she and a friend "were entertain'd with divers objects in a Micrescope [sic]; and with several experiments in Electricity" during a visit to the Bringhurst home. Thirteen years later, Elizabeth had not lost her interest in science. She once more recorded a visit to the Bringhursts, this time with her husband and three of their young children who were all entertained with "sundry Electrical experiments."[viii]

Electricity fascinated people in the 18th century. Numerous itinerant lecturers, such as Adam Spencer, William Johnson, Isaac Greenwood, and David Mason, traveled the colonies demonstrating the latest instruments and principles. Some lecturers explicitly invited women to attend. A Mr. Baron advertised in the *Pennsylvania Gazette* in 1751 that gentlemen who subscribed to his Course of EXPERIMENTAL PHILOSOPHY would receive a free Ticket for a Lady to attend.

One of the earliest lecturers, Isaac Greenwood, advertised in his 1735 broadside that he presented his compliments to the public, "particularly to the Ladies, and Youth, of both Sexes, and assures them that no *Shocks* (as they are called) will be given on any Account." Nevertheless, spectators were treated to a great deal of showmanship mixed with their instruction. Many demonstrations included "Electrified Money, which scarce any Body will take when offer'd to them," " An artificial Spider, animated by the electric Fire, so as to act like a live one," "Eight musical Bells rung by an electrified Phial of Water." And perhaps the most interesting of all, "The Salute repulsed by the Ladies Fire; or Fire darting from a Ladies Lips, so that she may defy any Person to salute her." [Greenwood also announced that "The 5th Night he proposes to give the Black People an Opportunity of being somewhat enlightened in that pleasing noble Branch of Philosophy; which will close his Performance."]

Itinerant lecturers and demonstrators continued to thrill and educate Americans in the post-Revolutionary era. New institutions, especially museums, afforded another venue for the consumption of science. Among the first was Pierre Eugène Du Simitière's American Museum in Philadelphia in 1784. The Tammany Society in New York established their own American Museum four years later.[ix] In 1786 Charles Willson Peale opened a museum in part of his Philadelphia house at Third and Lombard. Peale advertised his museum as "an instrument of rational pleasure and the instruction of the public," where his exhibits of birds, mammals and insects (mounted by Peale himself), and rocks and minerals were displayed like an "open book of nature."[x] Peale used this conceit of Nature's book on the museum tickets.

Peale's museum gained renewed popularity (and attendance) in 1801 when he displayed the fully articulated skeleton of a mastodon excavated in New York. An entire room in the Museum was devoted to the creature. Word of this discovery fired American imaginations. The word "mammoth" entered common speech. Suddenly the papers were full of wonders: mammoth fruit and vegetables, a mammoth pie, a mammoth steer and a mammoth calf. A group of women in Cheshire, Massachusetts sent President Jefferson a "mammoth" cheese thirteen feet in circumference. The cheese was reported in newspapers up and down the eastern seaboard. Its progress in aging was noted and its journey from Massachusetts to Washington followed closely.[xi] The cheese arrived in Washington on December 29, 1801. Accompanied by fanfare (and speeches) it was formally delivered to the President. Not to be outdone, another group planned to bake a mammoth loaf of bread to accompany the cheese. A mammoth bottle of ale and giant cigars were also envisioned for the President's enjoyment.[xii]

Philadelphia Deborah Logan went to see Peale's mammoth. Afterwards she wrote to her son,

"I looked on its enormous remains with astonishment, the bones of the Head were not compleat and are supplied with wood of such a configuration as naturalists think appertains to the rest of its figure, by means of a wire the jaw opens, and displays such an extent that it frightens the Ladies, Mrs. Smyth told me of one that went to Bed after she returned home from seeing it with the terror it inspired."

Six years later Peale painted an interior view of the museum, complete with the Mastodon and a female observer apparently as terrorized by it as Mrs. Smyth's companion had been."[xiii]

By the late eighteenth century, new formal education for young women offered another opportunity to acquire scientific

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American Women

continued from page 7

knowledge. In 1787 Benjamin Rush was the first to teach chemistry at the Young Ladies Academy of Philadelphia. His *Syllabus of Lectures Containing the Application of the Principles of Natural Philosophy, and Chemistry, to Domestic and Culinary Purposes* is remarkably similar in content to his lectures to male students at the College of Pennsylvania. Rush's introductory remarks explained why chemistry was an appropriate subject for young women. If Rush is to be believed, chemical knowledge could perform wonders. It would, he explained to the young women, "excite a taste for such books as treat more fully upon these subjects, & raise you above the necessity of stooping to novels & romances for entertainment." It would also furnish them with "subjects for rational and improving conversation, and thereby preserve conversations from dress, fashions or scandal." It would, he told them, "cause your society to be sought for & courted by sensible men, & be the means of banishing fools & coxcombs from your company, afford you pleasure in solitude, and render you independent of public amusements for your happiness." And finally, chemical knowledge qualified them "to shine as wives & mothers & mistresses of families when it shall please god to call you to fill those important female stations."[xiv]

Twenty years after Rush introduced chemistry into the curriculum, faculty member Benjamin Tucker instructed Academy pupils and offered public lectures. Tucker argued that chemistry lay within the female sphere, unlike other "walks of science" which "must be trod by men alone." But chemistry was appropriate because it "increases our knowledge of nature, but [also] gives us a noble display of the wisdom and goodness of its Author."[xv]

Tucker's course apparently had great appeal – possible because he, like lecturers on electricity, included "appropriate and brilliant experiments" with his talks. Tucker repeated his lecture series at least once, and then edited a pocket-sized (5.5 x 3.5 inches) text, *Grammar of Chemistry,* based on his lectures. His book included the subjects of his lectures as well as explanations of the apparatus he used. There were one hundred experiments for students to perform at home, along with follow-up questions, and a glossary of chemical terms. Some of these experiments may have been rather hazardous. A chapter titled "Amusing Experiments" in *A Chemical Catechism for the Use of Young People* (London 1806) included the following: "Take ten grains of oxygenized muriate of potass[ium?] and one grain of phosphorus...[Rub them together in a mortar}... and very VIOLENT DETONATIONS will be produced. *In this experiment it would be dangerous to employ a larger quantity of phosphorus than that prescribed."* [xvi]

Did women read these books? Was chemistry of interest to American women? The Library Company of Philadelphia's copy of Tucker's book has the signature of "Martha Newbold, Philadelphia" inside the front cover. Newbold may well have had the book with her as she sat and listened to Tucker's instruction and viewed the "brilliant experiments." Or she may, like at least two other women, have preferred to read at home and perform her own experiments. In 1802 Elizabeth Drinker, in her late sixties, read Adam Walker's *A System of Familiar Philosophy*. On June 21st she wrote in her diary: "I tried the experiment, this evening, of rubbing two peices [sic] of loaf sugar together in the dark, and plainly saw a luminous appearance on rubbing." On December 3rd that same year she recorded: "made this forenoon a Chymical preperation[sic]: in a six ounce vial I put sugar of lead, fill'd it up with spring water, and suspended there in a piece of Zink, in order to produce a leaden-tree."[xvii] Neither sugar of lead nor zinc were common household items. Drinker must have deliberately visited the local apothecary to obtain the material she used in her experiments.

Rachel Van Dyke was seventeen and living at home with her parents in New Brunswick, New Jersey when, in 1810, she began to read Jane Marcet's *Conversations on Chemistry.* She recorded her progress through the text and the experiments she performed with her older brother Augustus' assistance. On June 14th she wrote,

Besides my Latin I spent nearly two hours at my Chemistry – one hour with Augustus. I think I shall like it more and more. I never expect to be a complete Chemist, but if I understand and remember what is in my book which is of the most simple sort, I shall be satisfied.[xviii]

Two weeks later Van Dyke was already half-way through Marcet's text. She wrote of the enjoyment and excitement she experienced: "Oh! I expect I shall be a rare Chemist in time. It is not improbable that I may make some grand discovery. The philosopher's stone for instance – Ah – If I possessed the art of making gold – how amiable – how sensible – how all-accomplished I would be."[xix] When Van Dyke completed *Conversations on Chemistry* a month later she was sorry to have finished it so soon.[xx] Six months later she borrowed the book again and read it through a second time before going on to study botany.

Do these examples prove that American women were as engaged in the Project of Enlightenment as their British and European sisters? The experiences (and experiments) of Van Dyke, a young woman born in the last decade of the eighteenth century, and Drinker, born in 1735, span the hundred years during which science entered the realm of the popular. Historians of science tend to read back from the culture of Science (with a capital S) in the nineteenth century to the origins of scientific inquiry in the seventeenth and eighteenth century. Like many other disciplines in the nineteenth century, science became professionalized, institutionalized and, as a result, largely a male-defined field of study. But it did not begin that way.

In the eighteenth century there was a great deal of overlap between science and popular culture; average people were curious about, and exposed to, scientific knowledge and discoveries. Science was serious, but it was also entertainment and spectacle. Science was part and parcel of a fascination with natural phenomena, and a surprising number of venues – lecture halls, museums, taverns, and private parlors — made science accessible to the curious of every age and sex of white, middling Americans. Science was an intellectual pursuit, but it could also be a pleasant pastime, or an illustration and confirmation of religious belief. Science held the promise of economic development through innovation and technology. And science did, on occasion, have a political and national dimension as well. In other words, the scientific enlightenment influenced how Americans – men and women - thought about their world

i Benjamin Franklin to Margaret Stevenson, May 1 1760.

ii Joyce E. Chaplin, *The First Scientific American: Benjamin Franklin and the Pursuit of Genius* (New York: Basic, 2006).

iii *Experiments and Observations on Electricity, Made at Philadelphia in America, by Benjamin Franklin, L.L.D. and F.R.S. to which are added, Letters and Papers on Philosophical Subjects.*

continued from page 8

The Whole corrected, methodized, improved, and now first collected into one Volume, and Illustrated with Copper Plates (London: David Henry, 1769). J.L. Heilbron points out that although Stevenson began her science instruction with Franklin in very deferential way, she ended with the courage to challenge Franklin at the very foundation of this theory of electricity. J.L. Heilbron, "Franklin as an Enlightened Natural Philosopher," in J.A. Leo Lemay, ed., *Reappraising Benjamin Franklin: A Bicentennial Perspective* (Newark, Del.: University of Delaware Press, 1993), 215. Why Franklin devoted time to Stevenson while he neglected his own daughter is another subject altogether. See Sheila Skemp, "Family Partnerships: The Working Wife, Honoring Deborah Franklin," in Larry E. Tise, ed., *Benjamin Franklin and Women* (University Park, Pa: Pennsylvania State University Press, 2000), 19-36.

iv Joan Kelly, "Did Women Have a Renaissance?" *Women, History, and Theory.* Ed. Joan Kelly (Chicago & London: The University of Chicago Press, 1984), 19-50.

v Almira Phelps, *The Female Student; Or, Lectures to Young Ladies on Female Education. For the Use of Mothers, Teachers, and Pupils* (New York: Leavitt, Lord & Co, 1836).

vi E. Smith, *The Compleate Housewife or Accomplish'd Gentlewoman's Companion* (William Parks: Williamsburg 1742). This was a reprint of the 5th London edition.

vii Benjamin Rush, *Experiments and Observations on the Mineral Waters of Philadelphia, Abington, and Bristol, in the Province of Pennsylvania* (Philadelphia: Printed by James Humphreys, junior, 1773).

viii February 8, 1760; March 24, 1773. Elaine Forman Crane, ed., *The Diary of Elizabeth Drinker* (Boston: Northeastern University Press, 1991). "Widow Bringhurst" was Mary Claypoole Bringhurst. Her son James (1730–1810?) was a contemporary of Elizabeth Sandwith.

ix Charles Coleman Sellers, *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of National Science and Art* (NY: W.W. Norton, 1980), 12; 52.

x Edgar P. Richardson, Brooke Hindle and Lillian B. Miller, *Charles Willson Peale and His World* (New York: Abrams, 1983), 87; 123.

xi *Gazette of the United States* (Philadelphia) August 8 1801; *The New-York Gazette and General Advertiser* (New York), December 7, 1801; "The Mammoth Cheese Afloat!" *The Independent Gazetteer* (Worcester, Massachusetts) 12-15-1801. *Poulson's American Daily Advertiser* (Philadelphia) reported the cheese arrived in Washington in a wagon drawn by six horses. (January 4, 1802).

xii *The Republican or, Anti-Democrat* (Baltimore, Maryland) January 5, 1802. The authors of the bread, ale and cigar idea clearly designed it as a sarcastic attack on the Democrats. Jeffrey L. Pasley, "The Cheese and the Words: Popular Political Culture and Participatory Democracy in the Early American Republic," in Jeffrey L. Pasley, Andrew W. Robertson, and David Waldstreicher, eds., *Beyond the Founders: New Approaches to the Political History of the Early American Republic* (Chapel Hill: University of North Carolina Press, 2004), 31-56.

xiii Deborah Norris Logan to Albanus Logan, January 10, 1802. Robt R. Logan Collection, Historical Society of Pennsylvania. Quoted in David R. Brigham, *Public Culture in the Early Republic: Peale's Museum and Its Audience* (London and Washington: Smithsonian Institution Press, 1995), 65; Elizabeth Drinker, *Diary* December 30, 1801. Vol 3, 1475-76. The advertisement she read was in *Poulson's American Daily Advertiser* December 30, 1801.

xiv Rush, Benjamin. 1787. *Syllabus of lectures containing the application of the principles of natural philosophy, and chemistry, to domestic and culinary purposes. : Composed for the use of the Young Ladies' Academy, in Philadelphia* (Philadelphia: Printed for Andrew Brown, principal of the said academy, 1787). Rush also believed that women should have "a general acquaintance with the first principles of astronomy, and natural philosophy." "Thoughts upon Female Education, accomodated to the Present State of Society, manners, and Government, in the United States of America. Addressed to the Visitors of the Young Ladies' Academy in Philadelphia, 28 July 1787, at the close of the quarterly examination..." (1791).

xv Tucker's lectures were advertised in the *Aurora* October 24, 1811. The following year a Dr. Jones advertised chemical lectures. The price of a ticket was "for a gentleman $12, For a lady $6." *Aurora* November 12, 1812.

xvi *A Grammar of Chemistry Wherein the Principles of the Science are Familiarized by a Variety of Easy and Entertaining Experiments with Questions for Exercise, and a Glossary of Terms in Common Use by D. Blair corrected and revised by Benjamin Tucker.* (Philadelphia. Published and sold by David Hogan, 1810). Samuel Parkes, *A Chemical Catechism for the Use of Young People* (London 1806), 542.

xvii Elizabeth Drinker, *Diary*, Vol. 3, 1526; 1595.

xviii Rachel Van Dyke, *To Read My Heart: The Journal of Rachel Van Dyke, 1810-1811,* ed. Lucia McMahon and Deborah Schriver (University of Pennsylvania Press, 2000), 47. Augustus Van Dyke was practicing medicine in Philadelphia. He had studied under Benjamin Rush. Jane Marcet. *Conversations on Chymistry: In Which the Elements of That Science Are Familiarly Explained and Illustrated by Experiments and Plates* (Philadelphia: Printed and sold by James Humphreys, 1806).

xix June 29, 1810. *To Read My Heart,* 63.

xx July 25, 1810. *To Read My Heart,* 88.

READING FRANKLIN

Edward Cahill, "Benjamin Franklin's Interiors," *Early American Studies*, vi (2008), no. 1, 27-58.

Robert Edward Smith, *Ben Franklin's Web Site: Privacy and Curiosity from Plymouth Rock to the Internet* (Privacy Journal, 2004). Thanks to John Ohno, who met the author at a conference this summer and brought this intriguing projection of Franklin's ideas in the electronic age to our attention.

R. William Weisberger, Dennis Hupchick, and David L. Anderson, eds., *Profiles of Revolutionaries in Atlantic History, 1700-1850* (Boulder Col.: Social Science Monographs, 2007) includes William Pencak's interesting short profile of Franklin as well as Friend Roy Goodman's essay on that heir to Franklin's journalistic mantle, Hezekiah Niles.

Forthcoming

Alan Houston, *Benjamin Franklin and the Politics of Improvement* (Yale University Press, November, 2008). Friend Leo Lemay calls it "an important, well-written, and consistently interesting interpretation of Franklin."

J.A. Leo Lemay, *The Life of Benjamin Franklin: Soldier, Scientist, and Politician (1748-1757),* (Penn Press, October, 2008). Friend Leo Lemay's third installment of his multi-volume biography opens with Franklin's service as clerk of the Pennsylvania Assembly and continues to trace his career in journalism through his work as publisher of the *Pennsylvania Gazette* and *Poor Richard's Almanac*. Franklin the soldier-citizen as defender of the frontier and his plan for uniting the colonies in a pre-Revolutionary defense network shows a side of his career that is often overlooked. http://www.upenn.edu/pennpress/book/14523.html

Priscilla H. and Richard S. Roberts, *Thomas Barclay (1729-1793): Consul in France, Diplomat in Barbary* (Lehigh University Press, November, 2008). Priscilla Roberts began her work on Barclay 18 years ago, and since the death of James Tull in 2005, she has been ably assisted by her husband, Dick. For insights into Barclay's relationship with Franklin, see their essay in this issue, "What was it like working for/with Benjamin Franklin?".

CALENDAR OF EVENTS

Friday, October 17. Paul Pasles - *Benjamin Franklin's Numbers: An Unsung Mathematical Odyssey.* Lecture, reception, and book signing. Benjamin Franklin Hall, 427 Chestnut Street, Philadelphia, 5:30 p.m. Sponsored by Friends of the Library of the American Philosophical Society and PACHS. Call 215-440-3400 for more information.

October 17-18, 2008. Benjamin Franklin and the Invention of America. Two day symposium by Humanities West at the Herbst Theatre, San Francisco, featuring lectures by Gary Nash, (professor emeritus, UCLA), **Jessica Riskin-***(Associate Professor, History, Stanford),* **Jack N. Rakove-***(Professor of History, Stanford University and Pulitzer Prize Winner),* ***The Invention of Ben Franklin;*** **Dee Andrews-***(Professor and Chair, History, CSU East Bay),* ***GLASS-ICAL MUSICK;*** **Dennis James,—***Musica Curiosa and performance by the London Quartet. See* http://www.humanitieswest.org/currentBen.html *for more information.*

November 18 Priscilla and Richard Roberts—The United States Encounters the Muslim World: Thomas Barclay's 1786 Morocco Mission. 7:30 PM at the David Library, 1201 River Rd., Washington Crossing, Pa. Reservations necessary: (215) 493-2233 x100.

November 27- December 14, 2008. 42nd Street Moon presents "**Ben Franklin in Paris"**, a forgotten gem of a musical from the richly prolific 1965-66 Broadway season. The show chronicles Franklin's efforts to get King Louis of France to recognize the United States as a sovereign nation. **Eureka Theatre**, 215 Jackson St., San Francisco. For more information call **415/255-8207** or visit ***www.42ndstmoon.org.***

December 4, 2008. 6:30 p.m. "Franklin and Espionage," a Craven Street Lecture by Lady Joan Reid. During the politically turbulent later years of the 18th century, tales of espionage were common, with countless important figures accused at one time or another of being a spy. Benjamin Franklin House, London. Email: info@benjaminfranklinhouse.org for more information.

January 16, 2009. Celebration! of Benjamin Franklin, Founder. Annual event commemorating Franklin's birthday with a seminar, procession to his grave at the Christ Church Burial Ground, and luncheon at the Down Town Club in Philadelphia. For more information contact Carol Smith, 856-429-8331 or see: www.ushistory.org/Celebration.

Ongoing:

The traveling exhibit, *Benjamin Franklin in Search of a Better World,* may be coming to a location near you. For future locations see: www.benfranklin300.org/traveling_library_exhibit.html.

FRANKLIN TIDBITS

Accounting for Franklin: There seems to be a fair amount of interest among the Friends about Franklin's wealth and its value in present day terms (see the Dr. Joshua L. Rosenbloom's "Poor Richard's Wealth" in the Summer 2008 issue and Letters to the Editor in the current one). But did you know that Friend Leo Lemay has transcribed many of Franklin's accounts, and made them available on the internet? Go to the University of Delaware's Library Institutional Repository and type "Benjamin Franklin" in the search box. http://dspace.udel.edu:8080/dspace

Friend Charles Hargis tells us that Bauman Rare Books is offering the 1769 edition of Franklin's *Experiments and Observations* for the tidy sum of $22,000.

Franklin and celebrations:
Friend Ralph Archbold has tied the knot. Philadelphia's best known Franklin interpreter has married "Betsy Ross". Congratulations, Ralph and Linda! *The Daily Kos* reported on the happy event on July 6 and the story includes photographs of the ceremony, showing the bride and groom in character. The Philly Pops played and Independence Hall was the backdrop. http://www.dailykos.com/story/2008/7/6/8363 9/08302/883/544223

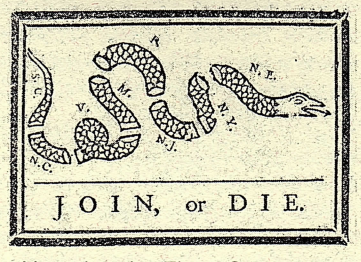
Franklin was also part of the Independence Day celebrations in New York City, but in another guise. In Times Square he was among those depicted in a sculpture based on John Trumbull's famous painting of the signing of the Declaration of Independence. Artist Troy Landwehr was hired by the company that makes Cheez-It crackers to produce the work from a one-ton block of Wisconsin cheddar. It was the result of a week's worth of work in the cooler. After being displayed both in New York and Philadelphia it was destined to return to Wisconsin where it was donated to food pantries. Toasted Independence sandwich, anyone?

Help celebrate Halloween the Franklin way: Zoogster Costumes is marketing a Franklin costume for children. It includes a jacket with attached vest and white cuffs, matching knickers, jabot with lace, shoe covers, and a black tricorn hat. An adult costume is available through Party Life 365; "sword and wig sold separately".

Franklin On the Campaign Trail: During the Democratic National Convention, the Downtown Denver Partnership sponsored a Democracy Read Out on August 27. Students, residents, and workers were invited to sign up to bring to life a little-known document, instrumental to our country's existence, Franklin's 1787 address to the Constitutional Convention.

The power and eloquence of Franklin's words were also invoked by British Conservative M.P. David Davis, who won reelection by touting American values on individual freedom. "I'm with Benjamin Franklin" said Davis, "He said those who would trade fundamental liberties for a little temporary security deserve neither liberty nor security."

Plugging Franklin: The Philadelphia Linux Users Group (PLUG) has a new mascot—a Franklinified Tux the Penguin (Tux is the Linux logo). Proposed name: Phil E. Tux. These advocates of open source software (freely available and adaptable to all users), feeling a kinship with Franklin's pioneering proclamations on sharing technology, has adopted Stephanie Fox's design. See it at http://www.phillylinux.org/



Humphrey's Flag Company, purveyors of flags in Philadelphia since 1784, was seen to be flying a flag modeled after Franklin's "Join or Die" cartoon.

Christopher Gergen and Gregg Vanourck, authors of *Life Entrepreneurs: Ordinary People Creating Extraordinary Lives* have included Franklin among the coterie of "life entrepreneurs," which they define as a person who creates a life of significance through opportunity recognition, innovation and action.

Special Thanks to Our Life Members!

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Wichita, KS

Ralph Archbold
Philadelphia, PA

Genya Asama
Chino, Nagano-Ken, Japan

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Franklin

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Sterling VA

Mark W. Pruett
Boone, NC

Alexander Snow
Seattle, WA

Franklin Math Puzzlers

Compiled by Aziz S. Inan

Editor's Note: Here is another Franklin themed math puzzle presented by Aziz Inan (ainan@up.edu) and the solution to the problem posed in the Summer issue of the Gazette.

Problem # 8. Ben's 8×8 magic square. The largest entry number in an 8×8 magic square constructed by Ben Franklin is 64. The eight numbers in each row, each column, and each bend row or column in the square add up to the number x. If numbers $y = x + 64$ and $z = x - 64$ are both square numbers, what is x?

Solution to Problem # 7. Independence Day-4th of July. Consider 4th of July Independence Day to be an eight-digit number given by 07041776. Split this number in the middle into two four-digit numbers and write each number using four 4's and arithmetic operations.

(Answer: $704 = 4 \times 4 \times 44$ and $1776 = 4 \times 444$.)

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