

INTELLIGENCE INVESTIGATION

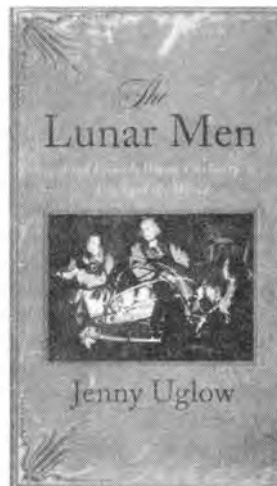
Leibniz and the American Revolution

Franklin's 'Lunar Society' And the Industrial Revolution

by Marcia Merry Baker

A new book is welcome about the "Lunar Society"—the circle of great figures (Boulton, Watt, Wedgwood, Priestley, *et al.*) and great works (steam power, canals, factories), centered in the British Midlands during the decades from the 1760's through 1800 (the exact period of the successful American Revolution), whose names are associated with the advent of the Industrial Revolution. *The Lunar Men* gives extensive biographies, detailed histories by topic (e.g., chapter headings—"Steam," "They Build Canals," "Ingenious Philosophers," etc.) and even a five-page chronology of the Eighteenth century, 50 pages of notes and sources, a detailed index, and 144 illustrations.

But, what the new book leaves out—although it is still enjoyable to "read into"—is the crucial history and strategic context of the "Lunatics," as Erasmus Darwin fondly self-described them. Namely, that the Lunar circle of creative personalities, centered in Birmingham, was interconnected with international networks led by Benjamin



**The Lunar Men:
Five Friends Whose Curiosity
Changed the World**
by Jenny Uglow
New York, Farrar, Straus and
Giroux, 2002
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Franklin, and going back to Gottfried Leibniz, which were *deliberately and consciously committed to scientific and technological advance to promote the development of nations, on behalf of the common good*. This was an explicit goal, involving international collaboration of all kinds, through visits, letters, publishing, political battles, espionage, and so forth.

In other words, the "Lunar Men" were not just a bunch of gifted, curious, lucky locals. They were nation-builders by vocation, and highly successful in their work at advancing science and economic progress, and backing and befriending the American Revolution on behalf of all peoples.

In turn, what is underscored by appreciating this interconnected history of the Lunar Society and the extended Franklin/Leibniz networks is, that the conventional explanations for the

origins of the Industrial Revolution, are myths and falsehoods. The usual idea is that "capitalists"—defined as those with funds (often, with a so-called "Calvinist ethic"), apply technology, centralize production into factory

systems, and increase output. The uncontrolled outcome is guided by the Invisible Hand of free-trade imperialists of the Adam Smith variety. In the course of it all, terrible social ills inevitably result.

Karl Marx presents the famous version of this imputed process in his 1848 *Communist Manifesto*. Then there is the more academic version by Oxford professor Arnold Toynbee (uncle of the well-known historian Arnold J. Toynbee), who is credited with popularizing the concept in his *Lectures on the Industrial Revolution*, 1884.¹

These two dismal constructs are thoroughly debunked in a 1988 monograph by historian Anton Chaitkin, titled, “The Secret History of the Industrial Revolution.”² Chaitkin prefaces his review of Franklin, the Lunar Society, and related networks, with the essential point: “The secret to modern history is, that all the great breakthroughs in technology and living standards were deliberate projects for the improvement of humanity, guided by the principles of the American Declaration of Independence.” His specific reference is to the Leibnizian concept of, “Happiness,” used in the Declaration’s phrase, “life, liberty, and the pursuit of happiness”—namely, pleasure in providing for the common good.

The Lunar Society’s Leibnizian Provenance

The achievements of the Lunar Society, as individuals and collaboratively, are spectacular in terms of providing for the public good. They conspired to do so.

First, some formalities.

The “Lunar” name itself, was said to be chosen simply because of the group’s intent to meet regularly—at least monthly, and preferably on a Monday or Sunday nearest the full moon, when going home late at night would be easier. The Lunar Men, numbering some six to 13 or so, plus frequent guests, would gather at one of their homes, in Birmingham, Lichfield, or nearby in the Midlands region. They tried to begin at 2 p.m. and work until late, even staying through the next day on occasion, in order to confer, conduct demonstration experiments, and review projects and correspondence together. Their topics ranged widely, on chosen matters of science, technology, infrastructure, policy, medicine, and so forth. Author Uglow provides us with the household accounts of the good eating involved, and what family members did during Lunar sessions.

The grouping took form in the 1760’s; made a resolution as of New Year’s Day 1775, to keep as “regular” as possible in their meeting schedule; and persisted in some

form through the early 1790’s, by which time heavy political harassment and age had taken their toll. In 1813, the books jointly owned by the Lunar Society were auctioned off.

This description of the formal side of the Lunar Society in no way tells the tale, however. The most efficient way to understand who they were, and what they were about, is to go back to the intellectual author of such an effort as theirs, namely, Gottfried Wilhelm Leibniz (1646-1716), who wrote a series of documents from 1671 to 1716, amounting to blueprints for national economic development, and specifying the role of “Societies” and “Academies” to forge this process.

In his memorandum of 1671, “Economy and Society,” Leibniz wrote, “Thanks to these academies (or societies), which are institutions of research and development, with their own manufactures and commercial companies directly attached, the monopolies will be eliminated, because the academy will always offer a just, low price for merchandise; and quite often, in fact, these will become even less expensive, as new manufacturing activities are set up, where they do not presently exist. Notably, the trading monopolies will be eliminated . . . because the wealth of the traders is much too great, and the misery of the workers far too profound—a situation seen particularly in Holland, where the method of the merchants is to maintain the workers in a state of poverty and menial labor. . . . Trade cannot transfer anything which has not before been produced by manufacturing. And why must so many people be reduced to such poverty, for the sake of so few? The Society will therefore have as its goal to liberate the worker from his misery.”³

Thus did the Lunar Society function, in direct opposition to the spirit and practice of the imperial British East India and Dutch East India Companies of the day.

The ‘Lunar Men’

There are over a dozen “Lunar Men” who came to live, work, and collaborate directly in the greater Birmingham area; Jenny Uglow singles out five principals, which is fair enough. She traces their lives in great detail. A brief look at just a few of the individual activities and achievements of these five, and at the great successes of their collaboration in terms of promoting economic advance, gives the sense of the scope of the Society.⁴ They are all typical of the energetic, voluntarist *men of ideas*, who peopled Franklin’s networks of “American” conspirators in Europe.

Matthew Boulton (1728-1809). The son of a Birm-

ingham maker of buttons and small fixtures, Boulton came to build a vast manufacturing establishment in Soho, Birmingham. Through his firm of Small, Boulton & Watt, the steam engine was vastly improved, and came into general installation not only for pumping in mines, but for manufacturing, milling, and general use.

Josiah Wedgwood (1730-1795). Born into the trade of the Staffordshire potteries, Wedgwood made, and/or applied, a series of significant discoveries in heat, clays, minerals, etc., and using constantly improved organizations of production, established a vast pottery manufacturing operation which exists to this day. He made significant contributions to geology, mineralogy, and chemistry.

James Watt (1736-1819). Born and raised in Greenock, Scotland, among marine-serving instrument and rigging makers, Watt became a master at mechanical design, with wide experience among scientific circles at Glasgow and Edinburgh Universities. Giving great attention to heat, phase-changes of water, and other fundamentals, his work was critical to the Boulton partnership, in making improvements to harness steam power. Watt devised the separate condenser in 1765; and in 1781 received the patent for the rotary motion steam engine mechanism. The term “horsepower” as a measure of engine power was originated in 1783 by Watt, who had to work out a way to calculate royalties when he installed two Boulton & Watt engines at London breweries, to replace the horses they had employed.

Erasmus Darwin (1731-1802). After studying at the Universities of Edinburgh and Cambridge, he became a medical doctor at age 25, settling in Lichfield, the “mother of the Midlands,” where he practiced medicine for the rest of his long life, all the while doing research and writing on botany, geology, chemistry, medicine, poetry, and numerous other areas. He was most prominent in advancing the scientific classification of plant-life. Among his many published works, was a translation of Carl Lineaus’s *The Families of Plants*, published in 1787.

Joseph Priestley (1733-1804). An activist clergyman (Dissenter, i.e., non-conformist with the Church of England), Priestley did groundbreaking scientific work, besides maintaining schools for children (including the teaching of science) and other public services. He discovered 10 new gases (“airs”). In August 1774, he identified oxygen (co-discovered by Carl Wilhelm Scheele), and in a trip to Paris in October, he demonstrated his laboratory work of heating red mercuric oxide to release what he called this “new species of air,” to French chemist Antoine Lavoisier. Between 1772 and 1790, he published

six volumes on *Experiments and Observations on Different Kinds of Air*. He did similarly significant work on electricity, and at the request of Franklin, wrote a *History and Present State of Electricity*. Politically targetted for mob violence, he fled Birmingham in 1794 for Pennsylvania, where he continued laboratory work in Northumberland County, until his death in 1804.

Around this core in Birmingham, numbers of others collaborated in the Lunar Society. Uglow lists and describes, John Whitehurst (1713-1788); James Keir (1735-1820); William Withering (1741-1799); Richard Lovell Edgworth (1744-1817); Thomas Day (1748-1789); and Samuel Galton (1753-1832). Another noted figure was John Baskerville (1706-1775), the famous printer.

Special mention—it is covered in detail in Uglow’s book—goes to Dr. William Small. A Scottish doctor who taught at William and Mary College in Virginia (with Thomas Jefferson as a pupil), Small returned to Britain, and in May 1765, aged 30, arrived on Boulton’s doorstep in Soho, with a letter of introduction from Franklin, which described him as, “both an ingenious Philosopher, and a most worthy, honest man.” Small became a linchpin in the Lunar Society, and was also critical in furthering the steam engine and other projects, as a partner in the manufacturing firm of Small, Boulton & Watt.

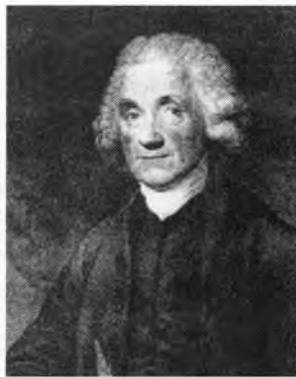
The impact of these persons and the Lunar Society was vast, both in Britain and the new United States, as well as internationally. In terms of the critical measure of modern power supply, by 1800, Boulton & Watt had installed over 500 modern steam engines throughout Britain—from the old copper and tin mines of Cornwall (to pump out water), to the newly organized textile mills. In London, the Albion Mill, a demonstration steam-powered gristmill, caught the world’s attention.⁵

The Birmingham-Manchester-Lichfield area was transformed into a powerhouse for advanced manufacturing. The Lunar Society was directly involved in forging a canal-building program, which not only provided vastly improved inland navigation, but made coal available at half the pre-canal price, for steam power, and general use. A former apprentice in the shop of Matthew Boulton, John Gilbert launched the canal campaign, by working for the young Third Duke of Bridgewater, Francis Egerton, to cut a canal over his property, from the regional coal mines eastward to Manchester. This was done in 1761.

Lunar Society members spearheaded many other improvements. Dr. Small, his colleague John Ash, and others, saw through the creation of the New Hospital in Birmingham. Small, Baskerville, and others, saw that



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Franklin's Lunar Society collaborators launched the Industrial Revolution in England. Above (left to right): Erasmus Darwin, Joseph Priestley, James Watt. Below: Matthew Boulton's Soho Manufactory in Birmingham.



Newton/Locke frauds in science and government, and to restore Leibniz and his thinking.⁶ A short timeline of relevant facts, and connections between two major “outside” figures involved in the Lunar Society, makes the point—Benjamin Franklin (1706-90) and Rudolph Eric Raspe (1737-1794).

Franklin, born in Boston in 1706, was a direct heir to the Tudor Renaissance and Leibniz tradition, thanks most directly to the influence of Boston's Cotton Mather (1663-1728). Franklin himself ranked Mather's *Essays To Do Good* as seminal in shaping his own outlook. During his first foray to England, from 1724 to 1726, Franklin had a chance to meet first-hand many of the anti-Leibniz agents, for example, Bernard Mandeville, and Dr. Henry Pemberton, who was

streets were widened and improved. The Lunar Men conducted agriculture-betterment studies, reported on new, advanced medical treatments such as digitalis (fox-glove), and, as political allies of the Franklin tradition, played leading roles in the movement to end slavery.

The Leibniz Continuity: Franklin and Raspe

Earlier in the 1700's, the writings of Leibniz, the chief advocate of this economic development approach, had been suppressed, not only in England, but in Germany and throughout the Continent. The fraud, Sir Isaac Newton, was fabricated as the official “authority” in science, as opposed to Leibniz; in philosophy and government, John Locke was offered as the “authority.” But the dramatic success of the Lunar Society, attests to the efforts of Franklin and collaborators to defeat the

preparing the third edition of Newton's *Principia*.

In the following two decades back in the American colonies, Franklin's many activities included founding societies for scientific investigation, public works (hospitals, defense, fire safety, etc.), and conducting his own research into electricity, heat, weather patterns, and other phenomena. He cultivated a wide international correspondence, and his works were published in many translations. In 1751, his, *Experiments and Observations on Electricity, Made at Philadelphia in America*, was published in London, and in 1752, in France. He summarized his outlook on the relationship between the expansion of knowledge and economic growth, in another work written the same year, *Observations Concerning the Increase of Mankind, Peopling of Countries, Etc.*

When, in 1757, he was back in London, this time it was as a world-renowned *philosophe*, and the official rep-

representative of the Assembly of Pennsylvania, probably the fastest-growing colony in the Americas. Right away, he was on the move to mobilize economic development circles in Britain.

In 1758, he went to Birmingham, on a tour he said aimed to “make the Acquaintance of those of Influence.” Whitehurst he already knew, from collaboration on clock-making. Matthew Boulton he met, with a glowing introduction about Franklin from John Michell, Professor of Greek and Hebrew at Cambridge University, who shared interests with Franklin on magnetic energy, earthquakes, astronomy, and other matters.

Franklin toured the Birmingham manufactories, met Baskerville, and went from home to home, taken by Boulton to visit his many friends. Franklin’s tour then continued on to Scotland and elsewhere, but in subsequent tours, in London meetings, and in correspondence, Franklin exerted a direct and major influence on the Midlands circle for years to come. For example, Uglow recounts Franklin’s 1771 visit to Birmingham in May, where he spent time with Erasmus Darwin, discussing phonetics, chemistry, and making pond-life excursions. Franklin encouraged and directed Joseph Priestley at every turn. And, he sent the young Robert Fulton to the Midlands, with a letter of introduction, to learn mechanics, canal-building, and steam-propulsion for potential naval use. Franklin and Boulton, beginning with their 1758 meeting on electricity and steam power, collaborated closely for the next three decades, until Franklin’s death in 1790.

In 1764, Franklin met in London with Dr. William Small, the Scots physician, whom Franklin had known in America. It was Franklin who “deployed” Small to go to Birmingham, which he did in 1765, becoming physician, confidant, and unofficial secretary to Matthew Boulton. In an indication that she has an inkling of the Society’s real history, Uglow says of this in her notes: “Sending envoys and setting up cells was an acknowledged aspect of Franklin’s proselytizing technique.”

Franklin’s introduction of the Leibniz advocate, the German, Rudolph Eric Raspe, into the Lunar Society circle, most dramatically shows the deliberate “proselytizing” involved. In 1766, while on tour on the Continent, Franklin made very important contact with those directly involved in restoring Leibniz. In Hanover, he met Raspe, whose own specialty was mineralogy, and who in 1765 had just edited and published the first edition of Leibniz’s suppressed *New Essays on Human Understanding*, a direct refutation of John Locke’s *Essay Concerning Human Understanding*. He also met Raspe’s friend and collaborator, Baron Gerlach Adolph von Münchhausen, whose name later gained notoriety because of Raspe’s

1785 book, *The Adventures of Baron von Münchhausen*, which recounted the fantastical exploits of the Baron’s nephew Hieronymus.

Then Franklin went on to Göttingen, there to meet Abraham Kästner in person, a leading student and defender of Leibniz and his methods.

Much more can be said about this trip of Franklin’s, and his network-building [SEE “Leibniz to Franklin on ‘Happiness,’” page 44, this issue], but regarding the focus on Franklin’s leadership of the Lunar Society, some simple facts of Raspe’s subsequent career make the point.

Raspe was soon to come under increasing political attack for his activities, and Franklin intervened in various ways, ending up with Raspe going into exile in England—arriving sometime in 1775, and eventually working for Boulton and Watt. Franklin accomplished this, even as he himself came under increasing fire. In January 1774, Franklin had been called before the Privy Council, and in May 1775, he returned to America.

In a mention of the Philosophical Club, founded in London by Benjamin Franklin and friends, Uglow lists members in 1775 as including Lunar Men John Whitehurst (now resident in London), Thomas Day, and others, and also, “their colourful new friend Raspe, geologist, gem expert, probable spy and anonymous author of *The Adventures of Baron Münchhausen*.” Uglow has only one other, perfunctory mention of Raspe in her book. But, in fact, Raspe worked with Boulton for the last dozen years of his life, beginning no later than November 1782.

As for Leibniz himself, Uglow makes only a single mention in her entire 588 pages. Nonetheless, for those committed to understanding and continuing the grand, strategic conspiracy of Leibniz and Franklin, you will find in this book many valuable leads to follow up the true story of how the modern world was brought into being.

1. See “industrial revolution” entry in *The New Palgrave: A Dictionary of Economics* (London, New York: MacMillan, 1987; first published 1894).
2. Anton Chaitkin, “The Secret History of the Industrial Revolution,” published in 3 parts, *The New Federalist*, March 3, May 12, and May 26, 1989 (Vol. III, Nos. 10, 20, and 22).
3. G.W. Leibniz, “Economy and Society,” *Fidelio*, Fall 1992 (Vol. I, No. 3).
4. For a review of the Lunar Society in strategic context, see Anton Chaitkin, “Leibniz, Gauss Shaped America’s Science Successes,” *Executive Intelligence Review*, Feb. 9, 1996 (Vol. 23, No. 7).
5. Philip Valenti, “Leibniz, Papin, and the Steam Engine,” *21st Century Science & Technology*, Summer 1997 (Vol. 10, No. 2).
6. See, Philip Valenti, “The Anti-Newtonian Roots of the American Revolution,” *Executive Intelligence Review*, Dec. 1, 1995 (Vol. 22, No. 48); and also David Shavin, “Leibniz to Franklin on ‘Happiness,’” p. 44, this issue.