

around 1671, Leibniz lays down the economic policies of the "Society" as follows:

### **From 'ideas,' to national industry**

"To Expand and Improve the Arts and Sciences.

"To preserve useful ideas, inventions and experiments . . . and to verify them with the help of models and tests; or if verified, to exploit them on a larger scale, than a private person could do.

"To combine Theories and Experiments, to remedy the defects of the one with the other.

"By putting together various experiments and inventions, to render useful that which is isolated and incomplete. . . .

"To provide poor students the possibility to support themselves in order to continue their studies, and to earn their bread, for their own advantage and for the benefit of the Society. . . .

"To improve the Schools. Therein to introduce curricula, correctness and standards. To educate the youth not only in Poetry, Logic and Scholastic Philosophy, but also in Realia: History, Mathematics, Geography, Physics, Morals and Civil Affairs.

"To set up Museums of Arts and Rarities, of Weaponry and Anatomy, unknown Medicines, Animals, and a Theater of Nature and the Arts, in order to provide lively Impressions and Knowledge of all things. . . .

"To Improve Manufactures

"With advantages and instruments to make work easier. To have constant fire and motion [the steam engine!—JBT] as the foundation of all mechanical action, Making use of all new ideas and concepts, Testing our own and those of others, And therefore not to drag behind.

"To bring into the country, and develop the existing stock of: mills, lathes, glass grinding and polishing, all kinds of machines and clockworks, water works, shipping, painting and all figurative arts, textile mills, glass-blowing and forming, dyeing factories, medicinal arts, steel and other metallurgical production, chemistry. . . ; to make better use of the mines, and in general to help the laboring people with many other useful inventions: those already existing, those we can obtain, and those we may hope to obtain. . . .

"To Improve Trade

"To bring food into the country, To keep people in the country, To bring more people in, To create manufactures here, And draw in commerce, To gradually eliminate undesirable foreign manufactures, without banning them. . . . To never let raw materials leave our country unprocessed, To process foreign raw materials in our country. . . .

"To set up warehouses and shops, supplying ourselves in good time with all kinds of articles, never to be lacking in necessary things nor to wait for an emergency, and thereby to prevent famine and increases in price. . . .

"To set up a secure bank for investors to invest their monies. According to opportunities, to form new companies, and

to acquire stocks in existing ones. . . .

"To obtain more from lended monnies, than the rate of interest. . . .

"To grant Priviledges inside the country for everything, that excludes foreign priviledges, and this without making anything more expensive.

"To obtain Priviledges outside the country for all activities and manufactures that are new, and have not yet been realized or produced.

"It is therefore to be achieved, that we be able to produce everything better here, than elsewhere, in such a way that we can exclude them [foreign manufactures] without Priviledges, but by the favorable cost of all manufactures, provided only that the effort be undertaken, to produce them more economically, than [abroad].

"To conserve and expand the Fund by a continuous Circulation, and to undertake all enterprises that are pleasing to God, useful to the Fatherland, and bringing honor to the Founders, to ever greater and higher ends."

In these brief lines we can already see the kernel of the monetary and credit policies developed by Franklin, Hamilton and others, which had as their goal and criterion the expansion of the real wealth of society through scientific and technological progress.

## **2. The Franklin circle starts modern England**

by Anton Chaitkin

*Editor's note: All the remaining sections of this Feature are also by Anton Chaitkin.*

Benjamin Franklin sailed to England in the spring of 1757, the official political representative of the British colony of Pennsylvania. It was 19 years before America would declare its independence from the British Crown.

When Franklin took up residence there in July 1757, Great Britain was very backward. There were virtually no roads between cities, no canals, and no railroads. Iron, cloth, or grain could only be shipped overland in the saddlebags of a packhorse, and this only when there was relatively little mud. All manufacturing took place on a small scale by local operatives or in rural homes. London was wealthy from world trade and finance, but it was the capital of an undeveloped country.

The project to industrialize Britain, begun shortly after Dr. Franklin's arrival, was initiated by a small circle of his collaborators, and was carried to fruition under his leadership.

It was then the last few years of the reign of King George II. The king's grandmother, Electress Sophie of the German



*Detail of a portrait of Benjamin Franklin in the U.S. Capitol. Britain's "industrial revolution" began in 1758-75, with England's first canal-building, the invention of steam power, and modern chemistry and steel making. All this was organized by Benjamin Franklin and his close circle of friends.*

state of Hanover, had been the protector of the philosopher Gottfried Leibniz. Her succession to the English throne was arranged by Leibniz and his allies, the pro-American republican circles of Irish statesman and author Jonathan Swift. But Sophie had died too soon, and her intended English crown was taken by her boorish son George I, a tool of the British Empire "Venetian party," the oligarchy that ran the slave and opium trades. George I died in 1727; his son George II, who died 1760, was succeeded by the infamous George III.

The Leibniz-Swift faction had crumbled in England; the imperial cabinet was run by Nero-like members of the openly Satanic "Hell-Fire Club." This government was now forbidding the American colonies to develop manufacturing, or to expand to the west. Franklin was determined to create a thriving agro-industrial America, as the necessary basis for eventually securing independence. If some kind of manufacturing could be started here in the center of the British Empire, it would be that much harder for the ruling clique to snuff it out generally.

Franklin was already famous in England, and feared by the government, as a scientist and political leader of the colonists. His published experiments had clarified the nature of electricity. He had created the American Philosophical Society, the first organization uniting the colonies in any fashion; its subcommittees were now at work planning the creation of

(illegal) native industries.

Corresponding with a worldwide circle of sympathetic leaders in science, art, religion, politics, and the military, Franklin was chief of intelligence for the American nation, then in the process of its creation.

Though its results were to be of spectacular benefit to the general population, the project we report on here, was at times subject to extreme harassment, and had to be carried out with great caution, even secrecy. We report what is known of Franklin's movements and contacts in the opening phase of the project.

Franklin obtained an introductory letter from Cambridge University Greek and Hebrew professor John Michell, a pioneer seismologist, astronomer, and magnetic scientist. Michell's letter addressed to Matthew Boulton, Jr., son of a buckle manufacturer: "to introduce . . . the best Philosopher of America, whom you are already very well acquainted with though you don't know him personally."

No later than the summer of 1758, Benjamin Franklin and Matthew Boulton, Jr., began joint work on electricity, metallurgy, and the harnessing of steam power. Their collaboration, at times surreptitious and subject to police surveillance, continued until Franklin's death in 1790. Franklin became the inspiration, tutor, science adviser, and political counselor to a select group of Boulton's friends in Birmingham, including potter Josiah Wedgwood, and Boulton's physician, Erasmus Darwin.

## **The industrialization of Manchester**

The first task of the Franklin circle was to create an industrial city, with access to cheap fuel. In the process of building Manchester, England's first industrial center, the Franklin associates would initiate low-cost transportation for all goods, the *sine qua non* for an industrial nation. For these purposes, they would use a young, sympathetic, but not very wealthy duke of Bridgewater, whose estate came to be managed by the Franklin circle.

John Gilbert, a former apprentice in the shop of Matthew Boulton, Sr., and a lifelong intimate of his son, was hired in 1757 as the manager of the duke of Bridgewater's lands and coal mines at Worsley. Gilbert's brother, Thomas Gilbert, was already estate manager for the allied Bridgewater and Gower families.

In that year of 1757, the 21-year-old Francis Egerton, Third Duke of Bridgewater, came into possession of his inheritance, which included lands in London, and the Worsley estate located in an agricultural area some ten miles west of the market town of Manchester. John Gilbert convinced the new owner to cut a canal from the coal mines eastward to Manchester. Studying the layout of the mines and the land to the east, Gilbert turned the perennial problem of mine flooding into a technologically unprecedented aid to navigation. He proposed that canal digging should commence underground, in the mine itself, and proceed out through the side

of a hill. Newly mined coal could thus be loaded directly onto barges, while the mine's drainage would help maintain water levels in the overland canal.

Manchester then had only about 6,000 houses, and no factories requiring coal for steam power, which did not yet exist. Wood was used for hearth fires throughout England. There was no "market" whose logic Bridgewater was obeying when he decided to pursue such a construction project; and there were no other canals in England. But the duke's imagination had been well prepared for this adventure. He had gone to Europe as a pupil and ward of Robert Wood, a passionate devotee of Homer and Classical Greek civilization. Wood tamed the teenaged duke's carousing, and immersed him in the works of the Renaissance Christian humanism. He learned engineering and science at the Lyons academy and studied Florentine painting in Rome. The young duke viewed the canals of Holland, and closely inspected the great Languedoc Canal across France. The Languedoc had been surveyed by Leonardo da Vinci (who died in 1519), but it was built by Colbert in the late 1600s, using locks designed by Leonardo.

Excitedly agreeing to John Gilbert's proposal, the Duke Francis devoted his life to the construction of canals. Preparations began secretly, with initial purchases of land into Manchester. An act was put through Parliament, for the right to compel landowners along the canal route to sell Duke Francis their property. The price of coal from the Worsley mines was fixed by law at no more than four shillings per hundredweight, compared to the pre-canal average price of seven or eight shillings. Freight tolls were also set by law, and manure was to be toll free on the canal.

The duke was not a "capitalist," but a heavily encumbered landowner: He exhausted his personal funds early in the construction effort. In order to raise funds, the Gilbert brothers sold very small denomination bonds to local merchants, while the duke borrowed from his tenants. No backing came from London banks. Indeed, there was no net profit in the enterprise for some 15 years, though Bridgewater eventually made a large profit on the canal system, after decades of labor. Duke Francis routinely paid fair prices to landowners displaced for the canal. He hired many coal miners, paid them good wages, and got decent living conditions for his workers in new cottages.

The canal was begun in 1759 and completed into Manchester in 1761. Thousands of people began moving into the city and starting families there, with a secure supply of cheap Worsley coal for warm houses. And there were well-paying jobs: with a new labor supply and cheap fuel, a great number of profitable new manufacturing shops were set up. A greatly expanded canal system, and steam-powered machinery, would before long complete the amazing, virtually overnight creation of an industrial center.

By 1790, workmen from the new textile mills could be seen walking Manchester's streets, five-pound notes protruding ostentatiously from their hats. Yet 50 years later, that very

city was famed for the horrible poverty and cruelty in its mills, and for the so-called Manchester School of economic thought—the radical free-trade doctrine which claimed that the unrestricted freedom to do ill to one's neighbor was the *cause* of England's technical development, that poverty and misery resulted from new technology, not from the crime of those who had taken over in place of the inventors.

### More canals, and nation-building power

After the success of the Bridgewater canal was demonstrated, the entire Boulton-Franklin group swung into action. A partnership of the duke, the Gilbert brothers, Josiah Wedgwood, Erasmus Darwin, and Matthew Boulton, was eventually formed to extend the canal from Manchester to the port of Liverpool, and then to push on to connect Hull, Bristol, and London.

Wedgwood's partner, Thomas Bentley, and Erasmus Darwin wrote pamphlets in an effort to expand the British people's aspirations towards economic progress. Josiah Wedgwood placed the following newspaper notice:

"That great genius and Father of his Country, the Czar Peter, being well informed of the extensive Utility of Inland Navigation to the Growth of Commerce, completed a Canal between Petersbourg and the Wolga, at an incredible Expence, thro' an uncouth and arduous Country. The States of Holland owe their very Existence, as well as their opulence and power, to their numerous Canals.

"And the French Nation, our Rival in Arts and Arms, have already much availed themselves by navigable Cuts of vast Extent, and of amazing Advantage to their Commerce . . . that of Languedoc is a most stupendous Work" (*St. James's Chronicle*, May 16-18, 1765 (transcription courtesy of the Trustees of the Wedgwood Museum, Barlaston, Staffordshire).

After feverish negotiations, planning and lobbying, a bill authorizing the cutting of the partners' canal to Liverpool was steered through the Parliament, ending in a Commons committee whose chairman was Thomas Gilbert.

Meanwhile, Benjamin Franklin had started the group on a new project—to coordinate the development of a practical steam engine: From London, Franklin wrote to Boulton (May 22, 1765) "to introduce my Friend" Dr. William Small, "to your Acquaintance . . . an ingenious Philosopher, & a most worthy honest Man" and to ask "if any thing new in Magnetism or Electricity or any other Branch of natural Knowledge has occurred to your fruitful Genius since I last had the Pleasure of seeing you, you will by communicating it, greatly oblige."

Small, a native Scot, had emigrated to Virginia in 1758 to take a science and mathematics teaching assignment at William and Mary College. There Dr. Small, the Platonist law professor George Wythe, their student Thomas Jefferson, and Gov. Francis Fauquier, formed a regular string quartet. Franklin's friendship with Dr. Small probably began in 1763

when Franklin visited Williamsburg, during his brief return to America. A hostile administration at the college soon afterwards forced Small to leave his post; Small and Franklin went to England in 1764. The following year, Small accepted Dr. Franklin's momentous assignment.

On Franklin's recommendation, Matthew Boulton instantly accepted William Small as his personal physician and overall industrial manager. Boulton had inherited a buckle-making shop upon his father's death in 1759. He then built what was to become England's first great manufacturing plant, the Soho works outside Birmingham, with power supplied—temporarily—by a water wheel. Now that Small had come from America, the pace of activity at the Soho plant increased dramatically.

In February 1766, Dr. Franklin gave his blunt testimony in Parliament against the notorious anti-American tax known as the Stamp Act. He warned that the British Empire would be destroyed if it persisted in looting the colonies. Parliament repealed the Stamp Act on Feb. 22, 1766, to the delight and applause of the world's republicans. On that same historic day, Matthew Boulton wrote to Franklin from Birmingham, asking for his comments on the steam engine which Boulton and Small had built and had sent to Franklin in London:

"The addition you have made to my happiness in being the cause of my acquaintance with the amiable and ingenious Dr. Small deserves more than thanks. . . . I [introduce] to you my good friend Mr. Samuel Garbett . . . a Zealous Advocate for Truth & for the rights of your oppress'd Countrymen. . . .

"My engagements since Christmas have not permitted me to make any further progress with my fire-engines but, as the thirsty season [i.e., the dry season when the water levels were too low to provide power to the factory] is approaching apace, necessity will oblige me to set about it in good earnest. Query,—which of the steam valves do you like best? Is it better to introduce the jet of cold water at the bottom of the receiver . . . or at the top? Each has its advantages and disadvantages. My thoughts about the secondary or mechanical contrivances of the engine are too numerous to trouble you with in this letter, and yet I have not been lucky enough to hit upon any that are objectionless . . . if any thought occurs to your fertile genius which you think may be useful, or preserve me from error in the execution of this engine, you'll be so kind as to communicate it to me. . . ."

Erasmus Darwin wrote to Boulton on March 11, 1766, inquiring what Franklin had thought of the model steam engine and what he had suggested to improve it.

Franklin replied to Boulton on March 19, "excuse my so long omitting to answer your kind Letter . . . consider the excessive Hurry & Anxiety I have been engaged in with our American Affairs. . . .

"I know not which of the Valves to give the preference to, nor whether it is best to introduce your Jet of Cold water above or below. Experiments will best decide in such Cases. I would only repeat to you the Hint I gave, of fixing your Grate in such

a Manner as to burn all your Smoke. I think a great deal of Fuel will then be saved, for two Reasons.

"One, that Smoke is Fuel, and is wasted when it escapes uninflamed. The other, that it forms a sooty Crust on the Bottom of the Boiler, which Crust not being a good Conductor of Heat, and preventing Flame and hot Air coming into immediate contact with the Vessel, lessen their Effect in giving Heat to the Water. All that is necessary is, to make the Smoke of fresh Coals pass descending through those that are already thoroughly ignited. I sent the model last week, with your papers in it, which I hope got safe to hand."

Franklin here was addressing a central question in steam engineering. Certain primitive devices were already in use, involving hot water vapor, such as the Newcomen engine. But only a tiny proportion of the energy in the fuel was translated into delivered power. This problem was to be solved definitively at Soho.

The canal partners meanwhile pushed ahead. They at length prevailed in Parliament and were allowed eminent domain to build south, completing the link from Manchester to Liverpool. The new law required toll-free shipment of road-building materials, so that all the national transport facilities could grow simultaneously.

Boulton, the Gilberts, and Bridgewater now initiated canal projects all over England, and "canal mania" changed the face of the island. Britain converted at once to the use of coal from distant mines for fuel, instead of burning local stands of timber. The mass manufacture of iron and steel was now practicable.

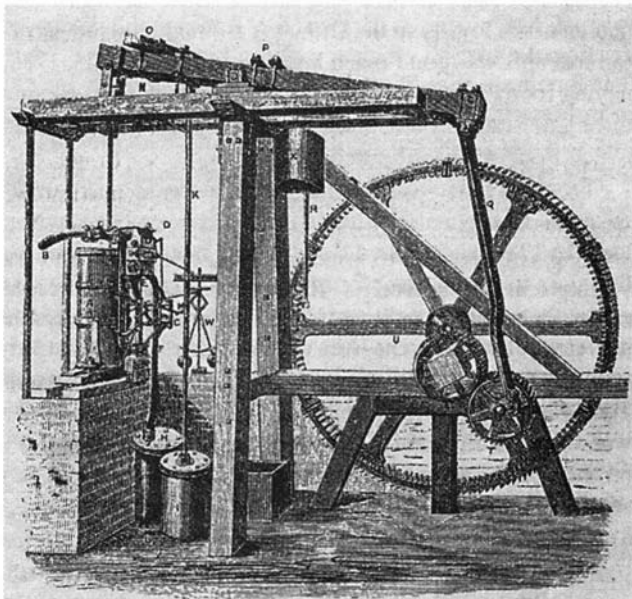
### **The world's first steam engine business**

The Scottish mechanic-engineer James Watt was employed in 1767 to survey for the Forth and Clyde Canal. He went to visit the Soho works and met there with the manager, Dr. William Small. They talked of Watt's own recent experiments with steam power in Scotland. Dr. Small wrote to Watt, Jan. 7, 1768, proposing the creation of a new firm: "you should settle here, and Boulton and I assist you as much as we could. . . . I have no . . . doubt of your success, nor of your acquiring fortune, if you proceed upon a proper plan as to the manner of doing business. . . . I should not hesitate to employ any sum of money I can command on your scheme. . . ."

While working as scientific instrument-maker for the faculty at Glasgow University, Watt had studied French, German, and Italian, and had applied himself zealously to the study of music. He learned to repair violins, guitars, and flutes. He studied harmonic theory, and, in building first a model, and then a full-scale organ, he devised new means of regulating its stops, tuning, and air pressure.

Watt then studied the available French and Italian literature on steam research; he conducted rigorous experiments on gas dynamics.

While repairing a broken Newcomen engine, he conceived the separate condenser, the eventual basis of a practical



*The Boulton-Watt rotative engine. Benjamin Franklin brought in Dr. William Small from Virginia to manage Matthew Boulton's Soho plant; Small hired James Watt, and Small oversaw construction of the first serious steam engine. The Boulton-Watt engine powered new industries designed by Franklin's circle.*

steam engine. He led the steam away from the main cylinder, liquefied it with a cold jet, reheated and brought it back into action, while the cylinder could remain hot and do more work with less fuel.

As part of the negotiations to set up the world's first steam engine business, William Small prepared a patent for Watt, which was tentatively approved on Jan. 6, 1769. With constant encouragement by Dr. Small, Watt finally moved to Birmingham in 1774; the partnership of Small, Boulton, and Watt, under Small's patient and scientific management, pressed on and completed their first successful machine late that year. Watt was frequently depressed and despondent. Over the years, his return to an active working role was several times revived by the pleas, threats, and rewards of Small and Boulton. The Soho group invested perhaps £50,000 in the development, with no real profits until the 1780s.

The Soho steam engine became the driving force for the English industrial revolution only after a last, crucial improvement was made. At first, the piston was packed with stuffing material, to close the gap with the cylinder wall and prevent the loss of steam pressure and force. The cast iron cylinder could never be shaped evenly for a tight fit around the piston. Boulton proposed to ironmaster John Wilkinson that his cannon-boring machine tool be modified to produce an engine cylinder.

Wilkinson's boring mill succeeded brilliantly, and Soho now made powerful, efficient steam engines, which Wilkinson used to run his furnace bellows, and to turn his machines. Here was the birth of many industries at once. Wilkinson

produced all the tools and machine parts for Soho, and Wilkinson and Boulton jointly launched modern English copper mining. Ironically, English high-efficiency steelmaking, its origin closely identified with Wilkinson, Watt, and the Franklin republican circle, was later used by the British Empire as an instrument of nineteenth-century trade war against the American republic.

### **A great stride in chemistry**

Ironmaster John Wilkinson's involvement with the Birmingham group arose on the basis of political and personal ties. His sister Mary and brother William were both pupils of the dissenting clergyman and schoolmaster, Joseph Priestley, who had married Mary Wilkinson in 1762. Priestley was to become celebrated as the discoverer of oxygen, after Benjamin Franklin made him a scientist.

The Wilkinson family, Thomas Bentley, and Josiah Wedgwood had patronized Priestley's early teaching career. The latter's devotion to reason and humanity led him to attack the government's church, and its modes of worship. He became a Unitarian and was perhaps theologically confused, but he remained a Christian, though he was to suffer greatly for it.

In December 1765, Priestley was introduced to Franklin in London. The American took the 32-year-old schoolteacher under his wing, and worked Priestley's nascent research interests into a passion for natural science as the most effective means for mankind's advancement.

On Franklin's request, Priestley wrote *The History and Present State of Electricity*, setting forth Franklin's discoveries in the field as the basis of further scientific work. The book lauded the genius of Italian physicist Giambattista Beccaria, whose precise experimentation and calculations had proven Franklin's theory of single-fluid, positive and negative electricity: "All that was done by the French and English electricians, with respect to lightning and electricity, fell far short of what was done by Signior Beccaria at Turin." Beccaria's follower Alessandro Volta later invented the electric battery after much collaboration with Priestley.

His book a success, Priestley was elected to the British Royal Society, on Franklin's nomination. Papers that the Englishman Priestley afterward wrote for that society were submitted for him by the American, Franklin, his political and scientific guide.

Priestley's work had immense global implications. He isolated the element in the air which supports life through respiration. He discovered how plants use the products of respiration; that plants renew the breathable element; and how light causes the growth of plants' green substance.

The Anglophile establishment has falsely identified Joseph Priestley with the methodology and general outlook of nineteenth-century radicals such as the degenerate Jeremy Bentham. In 1775, when war was breaking out with the American colonies, Priestley was subjected to a campaign of slander as a purported plagiarist. Bentham joined that attack with

his own criticisms of Priestley.

The scientist replied to a Bentham proposition that the friction of clouds causes lightning. Priestley said, "He will excuse me if I observe, that I find no sufficient *friction* to produce electricity in the manner that he supposes. The motion that is perceived in small clouds during a thunderstorm seems to me to be the *effect* of preceding electricity."

In 1780, he became in effect a paid staff member of the Boulton group, collaborating with Watt, Wedgwood, and others on diverse technical projects.

During a 1774 tour of continental Europe, Priestley met Antoine Lavoisier, and told the great French chemist of his discoveries regarding life processes. Lavoisier later gave the name "oxygen" to Priestley's breathable element, and developed the chemical science of combustion.

Franklin depended heavily on Lavoisier to help swing the French decision to arm and ally with the Americans, in their War of Independence. Lavoisier's chemistry was essential for the successful manufacture of the gunpowder behind the American bullets. Lavoisier was beheaded during the French Revolution Reign of Terror.

### **The end of the republican enterprise**

The firm of Small, Boulton, and Watt was incorporated in 1774, as the American Continental Congress was first meeting. War approached, and the climate chilled for republican activities in England. "Treason!" was cried against open friends of the colonies; mob violence and prosecution threatened them. Benjamin Franklin was himself repeatedly insulted and menaced in public gatherings; his Birmingham junto came under minute surveillance.

William Small died suddenly on Feb. 25, 1775, at the age of 41. No one has bothered to assign a cause to his death. Under circumstances of terror, Small's body was thrown into an unmarked grave. Franklin left England forever, a few days later.

Matthew Boulton wrote to James Watt about Small: "The . . . curtain has fallen and I have this evening bid adieu to our once good and virtuous friend for ever and ever. If there were not a few other objects yet remaining for me to settle my affections upon, I should wish also to take up my abode in the mansions of the dead."

After Small's death, the Birmingham group was secretly organized as the Lunar Society; only Priestley would ever speak openly about it, many years later.

Canal partner Josiah Wedgwood was publicly identified with the American cause, though he had to be very cautious. His pottery plant struck two heroic portrait medallions in 1777: the American commander, George Washington, and the Revolution's global coordinator, Benjamin Franklin. After the war, Wedgwood produced medallions depicting a Negro slave with his chains broken, and sent several to Franklin for his use as America's anti-slavery leader.

Matthew Boulton, under close scrutiny, made a proper

parade of his loyalty to the Crown. Yet Franklin wrote Boulton from his wartime French headquarters on July 25, 1780, paying for the fine paper Boulton had sent him, and ordering three letter-copying machines invented by James Watt, about which Boulton had informed him.

Franklin's networks made other technological breakthroughs. Clergyman Edmund Cartwright invented the power loom in 1784, and applied Boulton and Watt engines for the first time to textile manufacturing. Cartwright's motive was explicitly that of a republican Christian: Increased productive power would dignify the lives of the workers. Edmund Cartwright later invented a wool-combing machine. His inventions were to be of great manufacturing importance, but he was ousted from productive business by creditors. Edmund's brother, Maj. John Cartwright, founded The Society for Constitutional Information in 1780. Major Cartwright had refused a commission to fight the Americans, declaring that as human rights come from God, they cannot be taken away by any man.

Boulton and Watt toured France in 1787 as guests of the French government. English ironmaster John Wilkinson now taught the French the art of cannon-boring, supplied them with artillery and other vital military equipment, and helped build the Paris waterworks.

By 1791, the British oligarchy had mounted a broad counter-campaign against the republican movement. Their improvised mob terror was devastating France; U.S. President George Washington's administration was barraged with slander against the nationalist chief, Alexander Hamilton. With Britain poised for another war with America's ally, France, the Birmingham junto came under the long-expected attack.

The slogan was, "Down with the French Revolutionists," on July 14, 1791, as an officially sanctioned "rioting mob" sacked and burned Joseph Priestley's Birmingham house and laboratory, and two churches where he preached. Troops led by Lord Shelburne's Scottish lieutenant Henry Dundas then invaded Birmingham to "restore order." King George III said he was sorry for the disturbance, but was glad it had happened to Priestley. The Priestley family was forced to emigrate to America.

After the Birmingham riot, James Watt attended the next Lunar Society meeting wearing a pistol for protection. But the society was crushed, ceased functioning, and soon disbanded. Cartwright's Society for Constitutional Information came under police attack and infiltration. Society member Tom Paine, the Englishman whom Franklin had recruited to the American cause, escaped to France.

The open-ended project for science and industry, which could easily have been extended to develop the entire world in short order, was aborted in England. The enterprises begun in the 1760s and 1770s had created such immense public wealth that they could only be controlled, not cancelled. Britain would not again introduce strategically important technology to the world.