
MAGICAL
PICTURES

Michael Gaudio

Magical Pictures; *or, Observations on Lightning and Thunder, Occasion'd by a Portrait of Dr. Franklin*

On a stormy afternoon in 1745, Gilbert Tennent (1703–1764), a leading preacher of the Great Awakening, was at home preparing the evening exercise for his Philadelphia congregation when a flash of lightning struck his chimney and then headed straight for the upstairs study, where it knocked Tennent to the floor, tore his shoes—melting a buckle on one of them—and scorched his feet.[1] For Tennent, the lightning strike was a sign from an angry God. Such episodes had long sparked fear in the hearts of the devout, spawning numerous pamphlets and sermons in the seventeenth and eighteenth centuries, on both sides of the Atlantic, that carried ominous titles like *The Sinner's Thundering Warning-Piece* (London, 1703), *Farther, and more terrible Warnings from God* (London, 1708), and *God's Terrible Doings are to be Observed* (Boston, 1746). After recovering from his own harrowing encounter with the lightning, Tennent saw fit to preach yet another sermon on the topic, not least of all to dispel rumors—circulated by his Moravian enemies—that the lightning strike was an expression of God's particular dissatisfaction with his ministry.[2] Tennent titled the published sermon *All Things Come Alike to All: A Sermon, On Eccles. IX . . . Occasioned by a Person's Being Struck by the Lightning and Thunder*, and in it he stressed that God's thunderous voice of warning could be visited upon anyone, good or wicked. It was the duty of Tennent, as one who had experienced God's anger and lived, to carry this warning to his congregation: "It is but reasonable my Brethren, that we should

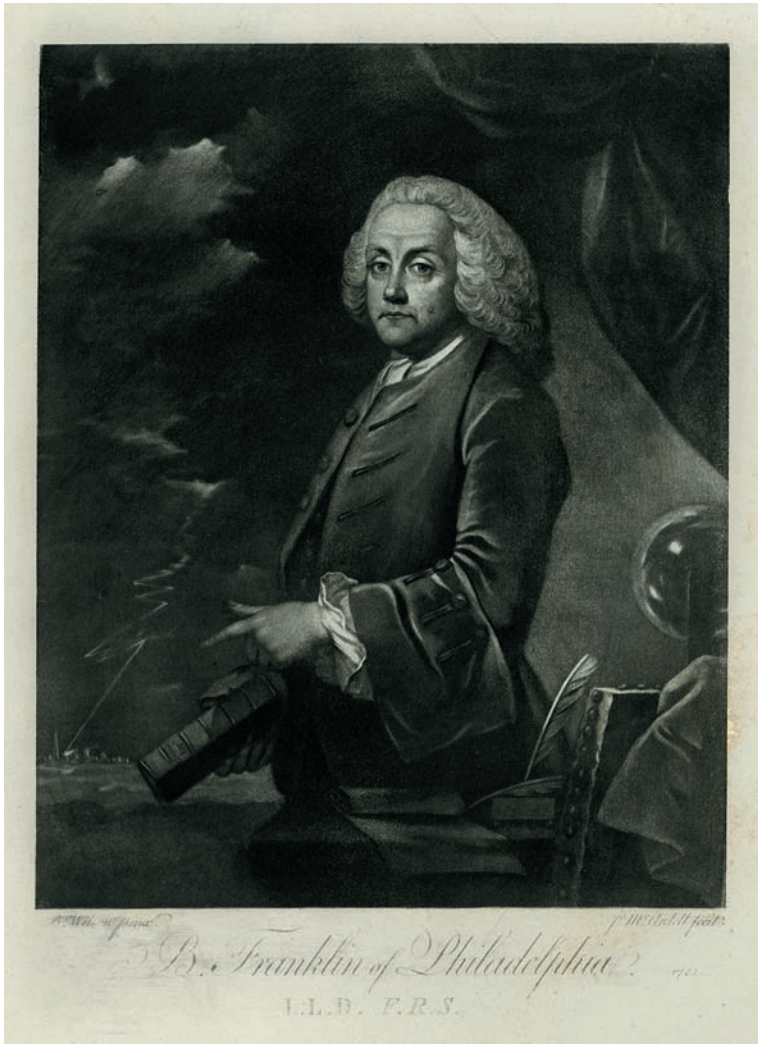
2
Mason Chamberlin, *Benjamin Franklin* (detail, see fig. 1).

1
Mason Chamberlin,
Benjamin Franklin, 1762.
Oil on canvas, 50 ⅜ ×
40 ¾ in. (128 × 103.5 cm).
Philadelphia Museum
of Art, 1956-88-1.

offer Homage to that great God, who is All-sufficient in himself, and whose Majestick Voice in the Thunder, produces such sudden and amazing Effects and Alterations in the Kingdoms of Nature and Providence. . . . Who can stand before this Holy Lord God, when once his Anger begins to burn?"[3]

If only Tennent had been protected by a lightning rod, like the one installed on a chimney outside the window of his friend Benjamin Franklin (1706–1790), as portrayed in 1762 by the London artist Mason Chamberlin (1722–1787) (figs. 1 and 2). A nearly life-sized Franklin sits in the upstairs study of his Philadelphia residence while outside his window we witness a storm like the one Tennent had experienced seventeen years earlier. One can almost hear the cracks of thunder as the roof of a nearby house and the steeple of a church, struck by a zigzagging bolt of lightning, explode in a violent burst of electrical energy. Two pieces of the destroyed structures—both of a brick-colored hue and perhaps intended to represent fragments of a chimney—are launched into the air by the blast. Yet Franklin, appearing calm and collected, does not seem to fear having his buckles melted, for his own invention protects him from God's burning anger. Franklin first introduced the idea of electrical conductors to the public in 1751 in his *Experiments and Observations on Electricity*. A few years later, in the second edition, he described the experiment in which we find him engaged in Chamberlin's portrait, where he turns his attention away from the storm and toward two small brass bells: "I erected an Iron Rod to draw Lightning down into my House, in order to make some Experiments on it, with two Bells to give notice when the rod should be electrified."[4] Paper in hand and quill at the ready, and with the volumes of his impressive library within reach just behind his chair, Benjamin Franklin, fellow of the Royal Society, employs the tools of experimental science to domesticate the lightning. He sits before us as the "Prometheus of modern times," a title Immanuel Kant conferred on him in 1756.[5] Having stolen fire from the heavens, Franklin reduces the thunderous voice of God to a gentle ring in the scholar's study, disenchanting the heavens for the sake of Enlightenment.

This was neither the first nor the last time Franklin was represented as a master of the lightning during his lifetime. In a mezzotint published the previous year, Franklin holds a volume entitled "Electrical Experiments" and stands before a desk on which sit quills, paper, and an electrostatic generator (fig. 3). The print is based on a portrait by Benjamin Wilson (1721–1788), who was not only a sought-after painter in London but, like his friend Franklin, an "electrician" and



3
James McArdell after Benjamin Wilson, *Benjamin Franklin*, 1761. Mezzotint, 13 ⅞ × 10 in. (35.3 × 25.2 cm). The New York Public Library, Astor, Lenox and Tilden Foundations. Miriam and Ira D. Wallach Division of Art, Prints and Photographs, Print Collection, 1239999.

fellow of the Royal Society. Wilson portrays Franklin standing before a massive bolt of lightning that lays waste to a distant urban skyline. Franklin's own vertical form reflects but also dwarfs the natural phenomenon; his left hand brushes against his volume as he points toward the bolt in the distance, suggesting that the great experimentalist has tamed the lightning by gathering its energies between the covers of a book. The Wilson portrait, like Chamberlin's, foregrounds Franklin's stature within London's scientific community at midcentury, a moment of intense experimental fervor around electricity. By the 1770s, well after Franklin's commitments as a public servant had taken him away from active experimentation, artists continued to associate him with

the electrical fire as it developed into a powerful political rhetoric. Turgot's celebrated Latin epigram "Eripuit coelo fulmen sceptrumque tyrannis" (He snatched lightning from heaven, and the scepter from tyrants) received its visual interpretation in an etching of 1779, designed by Jean-Honoré Fragonard (1732–1806) and dedicated "To the Genius of Franklin" (fig. 4). An Olympian Franklin, more Zeus than Prometheus, dominates the composition. As the allegorical figure of America rests at his leg, Franklin directs the shield of France against the lightning with one hand and with the other commands a warrior to drive out Tyranny and Avarice.[6]

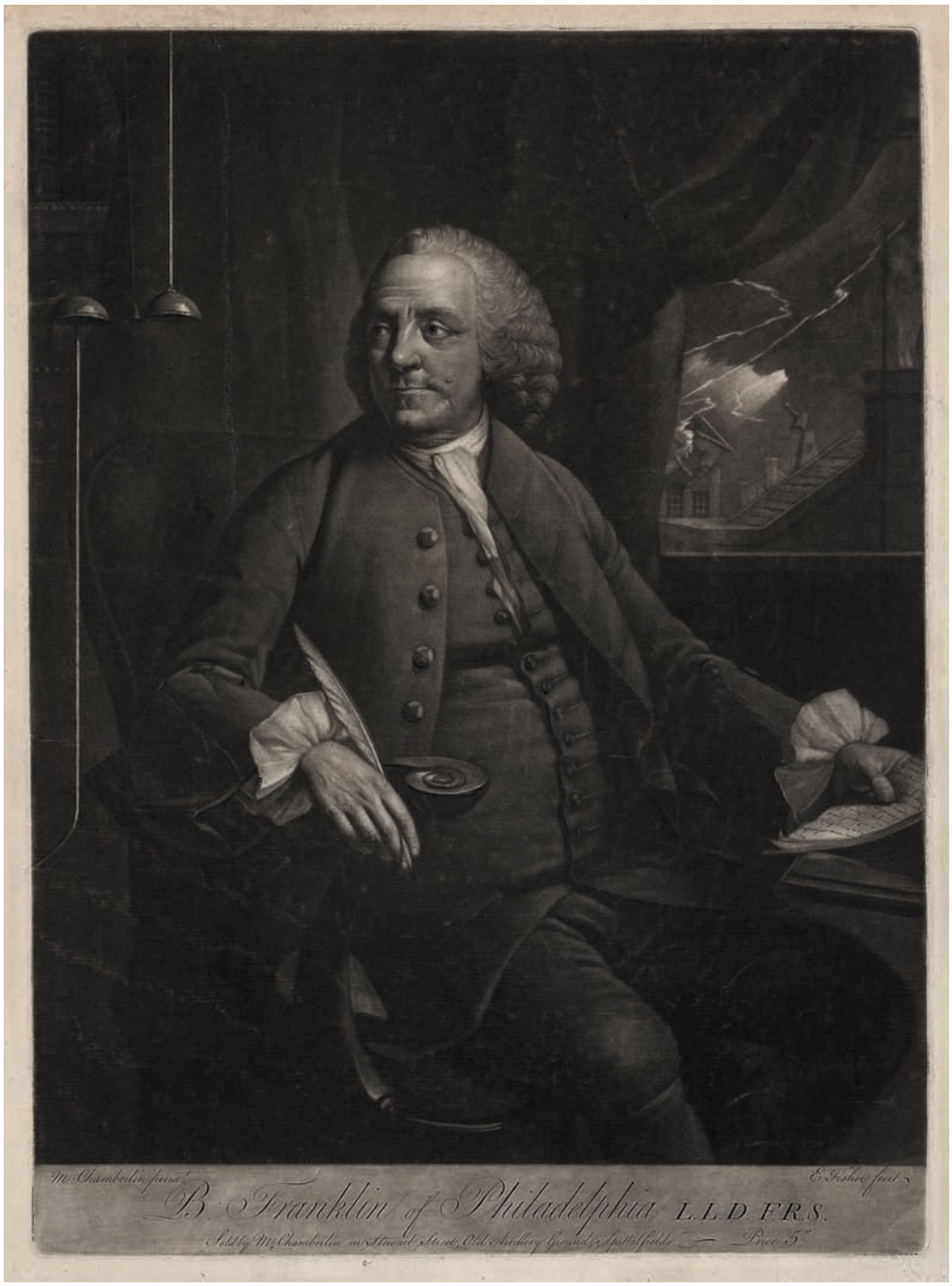
These are heroic portrayals, but of all the portraits made of him, Franklin seems to have been fondest of Chamberlin's. It was painted

4
Marguerite Gérard after Jean-Honoré Fragonard, *Au Génie de Franklin* (To the genius of Franklin), 1779. Etching, 20 ¼ × 15 ⅛ in. (51.6 × 38.4 cm). Davison Art Center, Wesleyan University, Middletown, Connecticut. Friends of the Davison Art Center funds, 1996, 1996.24.1.

at the end of his five-year stay in London from 1757 to 1762, a period during which Franklin played an official role as diplomat while reserving ample time to pursue his scientific interests. Commissioned by a Virginian who was then resident in the city, Colonel Philip Ludwell III, the painting went on display to the public at the Society of Artists in 1763; it now resides at the Philadelphia Museum of Art. We know little of the artist himself. An original member of the Royal Academy of Arts, Chamberlin was a devout Presbyterian who, unlike the fashionable artists of the West End, resided in the more commercial parish of Spitalfields where he specialized in painting likenesses of London tradesmen. He was a respected painter, although his unassuming portraits did occasionally receive criticism for a monotony of tone and expression. As a critic for the *Morning Post* wrote in 1784, after seeing the artist's portraits of his own family at the Society of Artists exhibition: "Mr. Chamberlin, his wife and son, are all frightfully alike, God bless 'em." [7] But Chamberlin's portrait of Franklin, while it may show a preference for muted tones and generally lacks Reynoldsian flair, undeniably captures a compelling likeness of the famous American. Franklin was pleased enough with the painting that he had a replica made for his son and ordered over one hundred mezzotint copies by the engraver Edward Fisher (1722–ca. 1782) (fig. 5).[8] The print became a kind of circum-atlantic calling card as Franklin circulated it through the colonial Atlantic Republic of Letters. He asked his cousin, for example, to distribute a dozen of the prints around Boston. "It being the only way in which I am now likely ever to visit my friends there," writes Franklin, "I hope a long Visit in this Shape will not be disagreable to them." [9] Indeed, here we encounter a Franklin not to be found in any other of the numerous portraits made of him: a gentleman-scientist who, despite the storm, has become absorbed in a moment of experimentation within the very domestic setting that served as his primary laboratory in his electrical pursuits. The portrait's modesty in presentation seems suited to the quiet gravity of its protagonist and setting.

5
Edward Fisher after Mason Chamberlin, *Benjamin Franklin*, 1763. Mezzotint, 15 × 10 ⅞ in. (38 × 27.7 cm). Library of Congress, Washington, DC. Prints and Photographs Division, LC-DIG-ppmsca-10083.

Surely the portrait's appeal for Franklin lay in this calm intellectual heroism. But is the voice of God, which was so clearly heard by Tennent when he was struck by lightning in his study, so fully silenced within Franklin's? We should not be too quick to dismiss Tennent's awe before the lightning and thunder, for undoubtedly Franklin, too, would have thrilled to the violent destructiveness of the scene outside his window, a violence that exceeds the merely human proportions of the scholar's cozy study. His own scientific interests, after all, were


Mr. Chamberlin junr.
E. Fisher feat.
B. Franklin of Philadelphia L.L.D. F.R.S.
Sold by Mr. Chamberlin in Stewart Street, Old Artillery Ground, Spitalfields. — Price 5

by no means limited to a quiet rationality. As James Delbourgo has shown, eighteenth-century electricity was both a science and a marvel, and the "tension between experimental claims to rational knowledge and the persistence of wonder at the surprising powers of the electric fire" is evident throughout Franklin's own writings.[10] Franklin and others cultivated a popular fascination with the wonders of electricity in which the public came to know this mysterious force by feeling its effects in their bodies. Franklin's colleague Ebenezer Kinnersley (1711–1778), for example, traveled widely in the 1750s lecturing on the electrical fire and demonstrating its powers in performances that included such attractions as "Fire darting from a Ladies Lips" and "a Battery of eleven Guns discharged by Fire issuing out of a Person's Finger."[11] Such demonstrations have become increasingly visible amid recent efforts, like Delbourgo's, to re-enchant the transatlantic Enlightenment by addressing its irrational, excessive, wondrous, and emotional qualities, qualities that entertained the audiences of electrical demonstrations, but which also led the God-fearing Gilbert Tennent to marvel at his melted buckle.

To what, then, should we attribute the lightning outside Franklin's study? Was it a natural phenomenon that could be known and contained by human art, or was it the mysterious workings of the divine? Chamberlin's picture offers no answer to this question; rather, its particular interest *as a picture* lies in the way it stages the question itself. Franklin's window, separating the storm outside from the calm within the study, forms a threshold between rationality and mystery, between the electrician's pen and God's thunderous voice. It is a threshold that invites reflection on the relationship between the lightning that descends from the sky and the "electrical fluid" manipulated by electricians in their experiments and performances, a hotly debated issue in the eighteenth century. But more than this, it invites reflection on the nature of representation itself, which for Franklin, as we will see, was a means of navigating the not always self-evident boundaries between enlightenment and enchantment. One might even say that Chamberlin's portrait poses an *electrical* model of representation in which meaning is understood to travel along alternating currents, one that moves from the chaotic and stormy world beyond the window to the calm that reigns inside the scholar's study, and another that takes us in the opposite direction. Finding the words to articulate this model won't be a matter of choosing which circuit to follow but of attempting to think them simultaneously.

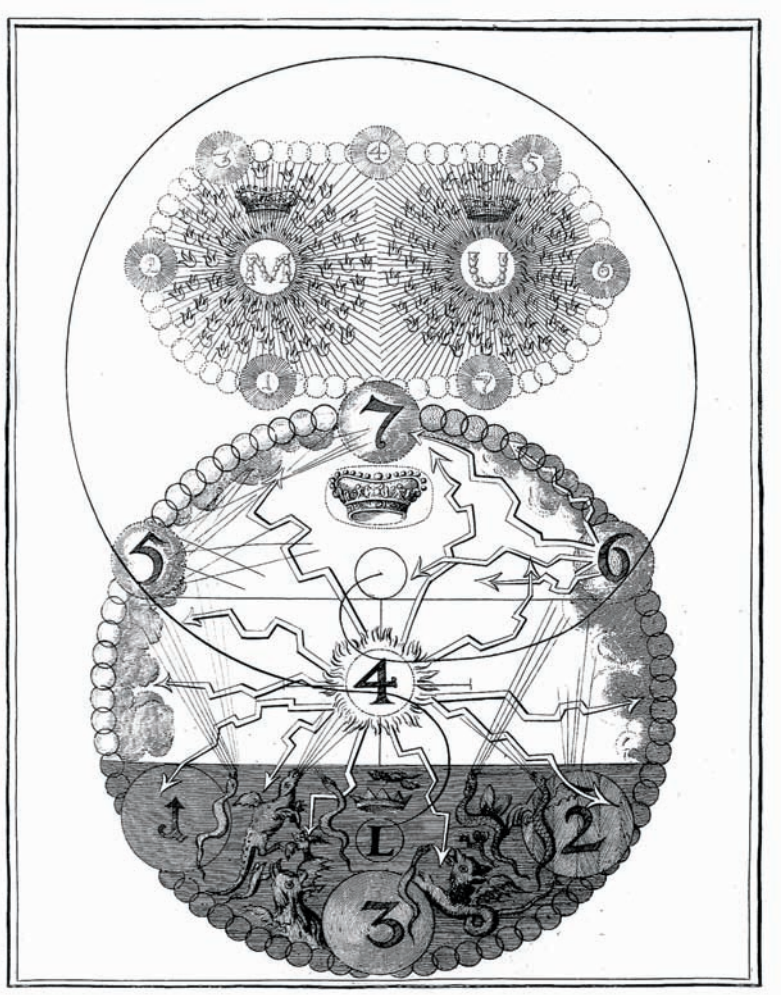
6
"Omnium Metu," from Julius Wilhelm Zincgref, *Emblematum ethico-politicorum centuria*, [1619] 1666. Engraving, 3 ⅜ × 3 ⅜ in. (8.5 × 8.5 cm). O. Meredith Wilson Library Rare Books Collection, University of Minnesota, Minneapolis.

The window, with its curtain drawn back, and looking almost as if it were a picture hanging on Franklin's wall, is a good place to begin. Through it we behold a meteorological spectacle of the kind that had long been interpreted as a sign of divine wrath and punishment. According to Mircea Eliade, across cultures there is an almost universal belief in divine beings who inhabit the skies, who make a brief visit to earth to establish moral laws, and who watch to see that those laws are obeyed, "and lightning strikes all who infringe them."[12] If at times certain free thinkers had protested against the prevailing beliefs about lightning and thunder, like Lucretius who insists in *De rerum natura* (first century BCE) that they are simply elements set into motion by an indifferent nature, such views did little to alter popular opinion. As Lucretius himself asks:

. . . whose mind does not cringe
with superstitious fright,
And whose flesh does not creep with awe,
when the burnt earth shakes
Struck by hair-raising bolts of lightning,
and the vast sky quakes
With rumbling thunder? [13]

In Christian visual representations, lightning often assumes the form of an arrow, which is indicative of the divine intention behind it as well as a reference to the book of Psalms: "The clouds poured out water: the skies sent out a sound: thine arrows also went abroad." [14] One of the most popular emblem books in seventeenth-century Europe, Julius Wilhelm Zincgref's *Emblematum ethico-politicorum centuria* (1619), includes a device entitled "Omnium Metu" ("a terror to all") in which a city receives God's punishment in the form of a massive bolt that forks into four arrow-like prongs (fig. 6).[15] Lightning was the agent of divine Providence, a belief firmly held by Puritans who regularly witnessed the striking of houses and churches by lightning in New England.[16] Cotton Mather may have been a member of the Royal Society, but he too interpreted thunderstorms in these enchanted terms: "The *Thunder* has in it *the Voice of God*. . . . There is nothing able to stand before those *Lightnings*, which are stiled the *Arrows of God*." [17] Franklin's introduction of protective conductors during the 1750s, like the one that protects the nearby house in Chamberlin's painting, did show that one could at least redirect those arrows; but Franklin's innovation hardly brought an end to well-established beliefs about lightning and thunder. As the young John Adams complained: "I have heard some Persons of the highest Rank among us, say, that they really thought the Erection of Iron Points, was an impious attempt to robb the almighty of his Thunder, to wrest the Bolt of Vengeance out of his Hand."[18]

If Franklin could not change the minds of all God-fearing Christians, he certainly had an impact within the Republic of Letters. As a result of his influential *Experiments and Observations on Electricity* (the first edition appearing in 1751 and numerous expanded editions thereafter), and thanks to the publication of Joseph Priestley's (1733–1804) Franklinist account of electricity, *The History and Present State of Electricity* (1767), by the late 1760s the official historiography of electricity had effectively silenced debates among natural philosophers between experimental and religious accounts of the electrical fire.



7
After William Law, Plate VI: *The Wrath of God descends on Lucifer*, from Jakob Böhme, *The Works of Jacob Behmen, the Teutonic Theosopher*, 1764. Engraving, 9 ⅝ × 7 ⅝ in. (24.4 × 19.5 cm). O. Meredith Wilson Library Rare Books Collection, University of Minnesota, Minneapolis.

Priestley offered a rationalist and materialist explanation, one that stressed the progressive value of natural philosophy within civil society. There was a place for piety within this philosophy, but it was a piety that derived not from awe at the incomprehensible workings of the creator, but from recognition of the solemn responsibilities that came with the natural philosopher's ability to materialize that creator's powers.[19] Priestley's account had no room for entertaining possible tensions or contradictions between electricity—that is, the sparks demonstrated with the electrician's instruments—and the divine "celestial fire" manifested in the lightning.

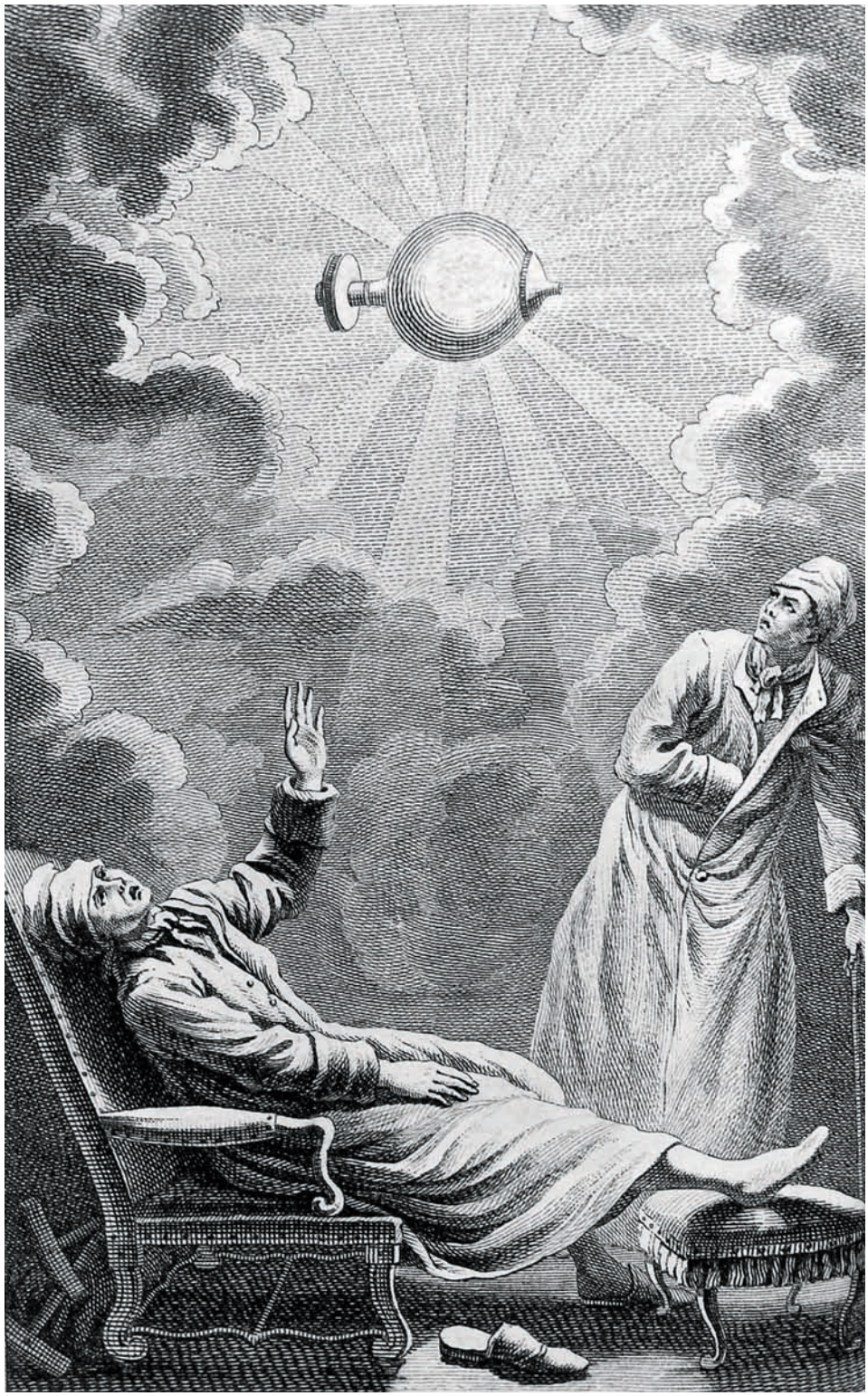
Yet such tensions had recently—during the 1740s and 1750s—been at the center of public controversy in London about the nature of the electrical fire, and it is important to situate Chamberlin's portrait

of 1762 against this stormy background. The key figures in the controversy were the electrical demonstrator and instrument maker Benjamin Martin (1705–1782) and the surgeon and electrical amateur John Freke (1688–1756). Both men published books on electricity in 1746, and their ensuing debate, which Simon Schaffer has examined in depth, turned on the question of whether the electricity that appeared in demonstrations was a product of the electrician's instruments—this was Martin's materialist position, one in which natural philosophy trumped theological explanation—or the manifestation of a much greater, divine fire.[20] Freke argued the latter position, one in which he was guided by the writings of the seventeenth-century German theologian and mystic Jakob Böhme, or "Behmen" as he was known in England, whose philosophy of fire and spirit had become important for pietist critiques of Whig culture. Freke and others within his political and religious circle embraced a private, inner light to salvation and opposed it to the vulgarity of a shallow world of commerce in which showmen like Martin sought only to profit from God's creation.

An edition of Böhme's life and writings published in 1764 includes figures of his "deep principles" designed by William Law (1686–1761), one of the chief disseminators of Behmenist ideas in England. In one of the engravings, arrow-tipped bolts of lightning representing the wrath of God precipitate down (or outward in this diagrammatic rendering) from the divine celestial fire (fig. 7). In Freke's view, Martin's theatrical demonstrations were a debasement and a corruption of this celestial fire, a materialist reduction of Böhme's divine, vital principle to the product of a mere human instrument. If we were to find an image of Freke's fears realized, it might look something like the frontispiece to a French volume on the uses of electricity to heal paralysis, published in 1772, in which the healing light of an ineffable God manifests itself as a generator in the sky exuding rays of electrostatic energy (fig. 8).

In Benjamin Martin's view, Freke was a religious *enthusiast*, a superstitious dreamer for whom electricity was a mystery accessible only through nonrational experience. During the Protestant Reformation, mainstream Reformed theologians had critiqued the enthusiasm of their more radical brethren who made claims to prophecy and divine inspiration unmediated by scripture, and who often engaged in ecstatic or convulsive behaviors. Enthusiasm has a complex history, and it could come in many stripes, from Freke's pietist enthusiasm, which was cultivated within conservative Tory circles and stressed private individual illumination, to the more public enthusiasm of the

8
Frontispiece to Abbé Sans, *Guérison de la paralysie par l'électricité* (Healing paralysis with electricity), 1772. Engraving, 5 ⅛ × 3 ⅛ in. (13 × 8 cm). Library and Artifact Collections of the Bakken Museum, Minneapolis.



religious revival.[21] What remained consistent among all enthusiasts, however, was their quickness to see God's direct interventions in the world and to bear witness to them. It is the enthusiast who would attribute the lightning strikes outside Franklin's window to the wrath of God, whereas the rational electrician would see a God who has established laws in the world and allowed them to take their course, leaving them discoverable and useful to mankind.

Across the Atlantic, resistance to the enthusiasm of the Great Awakening directly shaped how one of the key figures in electrical experimentation, Ebenezer Kinnersley, conceived his practice. Kinnersley was a Baptist preacher who rejected the enthusiasm of preachers like Gilbert Tennent and George Whitefield, and he railed against them for whipping up audiences into "Enthusiastical Raptures and Exstasies" in which they pretend "they have large Communications from God; to have seen ravishing Visions; to have been encompass'd, as it were, with Flames of lightning, and there to have beheld our Blessed Saviour nail'd to the Cross, and bleeding before their Eyes in particular for them."[22] Against such ravings, Kinnersley sought to wed piety to reason in the form of polite and educational electrical entertainments. If electricity was a wonder, it was a rational wonder, operating according to laws set forth by the God of Nature. But even so, the electrical demonstration hardly appealed to reason alone. Kinnersley's audiences were not invited simply to think about electricity like so many Franklins in their studies; they were asked to feel its effects. When a man came up from the crowd to kiss the young woman who was connected to an electrostatic generator, they both experienced the electrical fire as an unmediated bodily revelation. Experiment and enthusiasm, in other words, could at times be difficult to distinguish, as one might expect to be the case in a society where matters of science and religion crossed paths at every turn.[23] Kinnersley, after all, brought a preacher's devotion to his electrical pursuits; and even Franklin, a friend of Whitefield and Tennent and printer of their sermons, had been involved in the dissemination of the awakening.[24]

While the line separating scientific enlightenment from the enthusiasm of the revival could at times become ambiguous, everything still depended on maintaining it. Chamberlin's portrait may in this regard be understood as a kind of protective conductor, redirecting the enthusiastic response inspired by its lightning storm toward rational ends. Franklin, significantly, turns away from the storm. Instead of directing us toward the distant scene—as sitters often do

in portraits with emblematic features, like the portrait by Benjamin Wilson—Franklin's relationship to it is indirect, prosthetic. It is through his instruments, his art, that he draws down the lightning. Franklin himself is a solid, somewhat rotund presence. He sits upright in his chair, his posture echoing the stable verticality of the lightning rod out the window and contrasting with the toppling buildings in the distance. He is a singular, alert intelligence whose keen senses are attuned to his devices: the bells, which ring in defiant, rationalist answer to the common practice—one that Franklin critiqued—of ringing church bells to ward off God's anger in the lightning; and the two cork balls, suspended from one of the bells by silk threads, that repel each other as they become charged.[25] Franklin looks and he listens. His perceptions will, in turn, be harnessed by a powerful intellect that will transfer them through his pen to his paper. Lightning will become words on the page, a letter to his friend Peter Collinson: it was this series of letters that became the *Experiments and Observations on Electricity*.[26] A tight circuit thus runs from the lightning to the bells to the man to recorded observation. The portrait insists that through Franklin's instrumental rationality, nature is transformed into knowledge. If the explosions outside the window signify dispersion and chaos, electricity uncontained, then the prominent armrest of Franklin's chair, terminating in a decorative scroll, signifies the opposite: spiraling in on itself, the hand-carved scrollwork stands for the focused work of the writing hand that rests on it. In the scholar's study, nature is contained by human art.

It would be a mistake, however, to overstate the painting's efficiency as a conductor, for Franklin's bells were not always so successful at redirecting the lightning. The bells were the terminating points of a wire that ran from the lightning rod, through the roof, and then divided at the well of the staircase outside the study. One night Franklin was awakened by "loud cracks on the staircase," and upon opening the door, he noticed that "the fire passed, sometimes in very large quick cracks from bell to bell, and sometimes in a continued dense, white stream, seemingly as large as my finger, whereby the whole staircase was enlightened as with sunshine, so that one might see to pick up a pin."[27] At other times the bells sounded loudly enough to be heard all over the house, prompting Franklin's wife, Deborah, to write to him in London and complain about the disturbing ringing.[28]

9
Thunder houses, ca. 1765–1789.

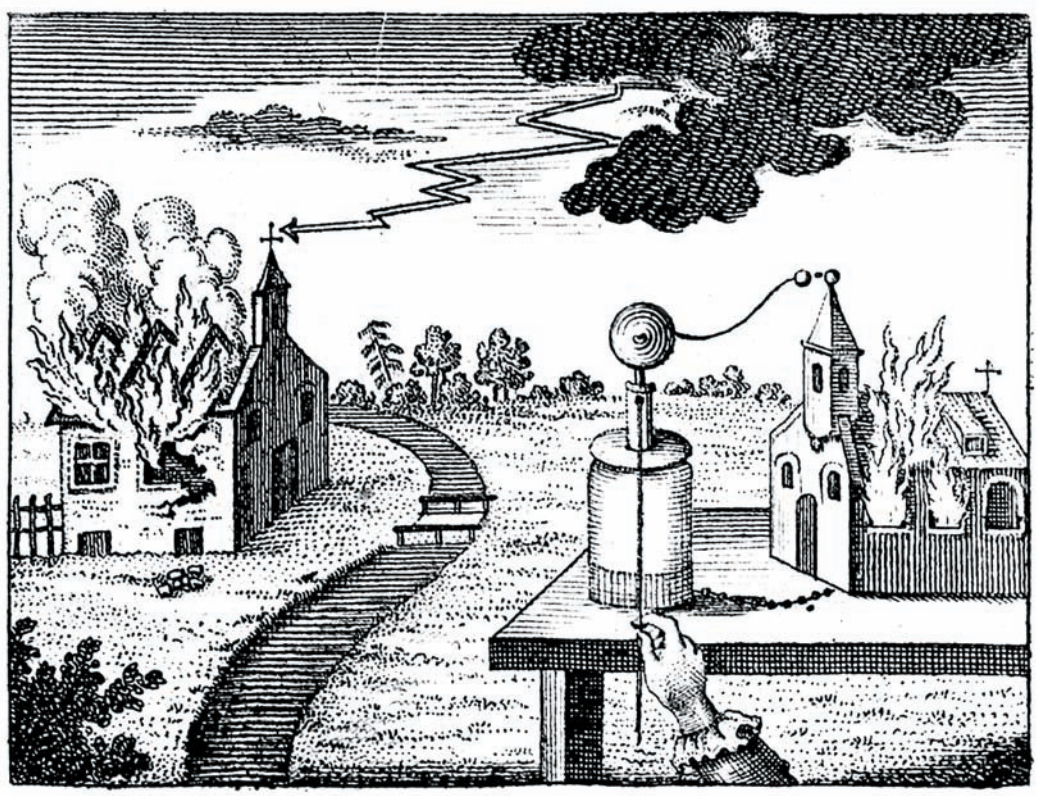
Left to right, 16 ⅜ × 4 ¾ × 4 ¾ in. (41.6 × 12 × 12 cm), 15 ½ × 7 ½ × 5 ⅞ in. (39.3 × 19 × 15 cm), 10 ½ × 6 ¼ × 10 ⅜ in. (26.7 × 15.8 × 26.4 cm). Collection of Historical Scientific Instruments, Harvard University, Cambridge, Massachusetts, 0018, 0017, 0019.

Franklin's bells may have toned down the thunderstorm, but something of the storm remained in them, a reminder that eighteenth-century electrical experimentation sought to know the electrical fire not just as words on paper but as a felt force. What if, then, as interpreters of Chamberlin's portrait, we adopted a less unidirectional perspective, one that would likely be closer to Franklin's own? What if, instead of moving from the chaos outside into a subdued interior and coming to rest there, we turned back toward the storm? To do so would be to see the world outside the window as an amplified version of what happens within, the lightning as an exemplification of the kinds of marvels that both Franklin and Kinnersley sought to reproduce in their experiments even as they harnessed nature's power.

Indeed, the scene outside the window might just *be* another experiment. The buildings that are being destroyed by the lightning bolts recall a popular electrical demonstration of the period, staged by Kinnersley and many others, known as the "thunder house."[29] Figure 9 includes three eighteenth-century examples from the Harvard collection of scientific instruments: a tall jointed steeple (left), the profile of a house (center), and a church with a small steeple (right). If an electrician applied a spark to the conducting tip of the jointed steeple or house profile while interrupting the internal circuit that

runs from the tip to the ground, the model would collapse. In the case of the steeple, the top sections would fly off in a manner similar to the collapsing steeple in Chamberlin's painting. The thunder house with the small steeple was used in a somewhat more dramatic demonstration, illustrated on the title page to an eighteenth-century German instructional text on electricity (fig. 10). The conducting rod of this type of thunder house included a chain that could be attached to the rod in order to direct electricity away from the model, but if the chain was removed (as it is in the illustration), and if a spark was applied from a Leiden jar or electrostatic machine, the electricity would pass directly into the house and there ignite a packet of gunpowder, causing the walls of the house to blow apart like the house outside Franklin's window. As the German engraving makes clear in its inclusion of the parallel background case of an unprotected church that has burst into flame because of a lightning strike, the thunder house demonstrates the protective value of the lightning rod.

As this experimental model suggests, electricians were—like painters—consummate imitators of nature. They re-created lightning



10
Title page illustration to Dominikus Beck, *Kurzer Entwurf der Lehre von der Elektricität* (Short outline of the theory of electricity), 1787. Engraving, 2 ¼ × 2 ⅞ in. (5.6 × 7.3 cm). Library and Artifact Collections of the Bakken Museum, Minneapolis.

in controlled conditions in order to experience it on a smaller scale. Priestley wrote that the electricians of his day imitate "in miniature all the known effects of that tremendous power." [30] Franklin, for instance, describes an experiment in which he imitated a cloud by making a pasteboard tube ten feet long and a foot in diameter, charged and suspended by silk threads, and then drew electricity from it.[31] Priestley was certain that in conducting such experiments, electricians were "disarming the thunder of its power of doing mischief, and, without any apprehension of danger to themselves, drawing lightning from the clouds into a private room, and amusing themselves at their leisure, by performing with it all the experiments that are exhibited by electrical machines." [32] But in spite of this insistence that human art is capable of mastering the lightning, the line between the storm and its imitation was not always so clearly marked, for electricians often did apprehend danger to themselves during their experiments. Franklin notes that he drew a charge from his model cloud that was strong enough to make his knuckle ache.[33] Electricians regularly reported receiving powerful shocks in the line of duty, and in the most famous case of a thunderstorm intruding on the protected realm of experiment, the German electrician Georg Wilhelm Richmann was killed in 1753 when a bolt of lightning struck an ungrounded conductor in his laboratory.[34] The difficulty of determining whether the scene outside Franklin's window is nature or its imitation is therefore significant, because it puts into question a crucial distinction on which Priestley's disenchanting narrative depends.

Positioned between his experiment and the thunderstorm, turning toward his bells but prepared, it appears, to turn his attention back toward the window at any moment, Chamberlin's Franklin is more ambivalent than a Priestlian interpretation of the painting would allow. If he is Prometheus having stolen fire from the gods, he is also Hercules at the crossroads confronted with a choice between an experimentalism that resides comfortably within the study and one that reaches toward the inexplicable wonders of the thunderstorm. The challenge of deciding how we should read Chamberlin's portrait comes down to a question of how meaning flows through the world and the role of human art in discovering that meaning. Does it flow into the study, where thunder and lightning are explained by the laws revealed through the experiments of natural philosophers? Or does it flow out the window, toward a God whose mystery is always in excess of the human art that attempts to reveal it? If Chamberlin has captured Franklin at a decisive experimental moment, the papers in Franklin's

left hand nevertheless remain blank.[35] Firm conclusions are not yet to be drawn. We can only contemplate the choice the portrait offers.

The question of whether the origins of the electrical fire are divine or natural is by no means restricted to Enlightenment natural philosophy. It is a pictorial question as well, a question of what a picture can adequately represent and what might lie beyond the capacities of human art. For the same reason human societies long attributed lightning to the gods, lightning has been a marker of the limits of representation. In his *Natural History* (first century CE), Pliny praised Apelles for painting "things that cannot be represented in pictures—thunder, lightning and thunderbolts."[36] In the sixteenth century, Pliny's comment provided Erasmus with language for praising the modern Apelles, Albrecht Dürer, whose art tests the limits of pictorial naturalism by depicting the undepictable: "fire; rays of light; thunderstorms; lightning; thunderbolts."[37] Kant later found a place for lightning and thunder within his aesthetics of the sublime, since the fear excited by "thunder clouds towering up into the heavens, bringing with them flashes of lightning and crashes of thunder," confronts us with our inability to take in the immensity of a nature that lies beyond the representational capacities of our senses.[38]

It is surely of interest, moreover, that one of the most heavily glossed art-historical texts of the early twentieth century, an essay concerned with the origins and limits of symbolic representation, turns on this problem of representing the lightning: Aby Warburg's (1866–1929) lecture delivered at Ludwig Binswanger's sanatorium at Kreuzlingen in 1923, a study of the snake as a lightning symbol in the Pueblo cultures of the southwestern United States. Warburg based his lecture on his observations during a trip he had taken to the American Southwest over thirty years earlier. The Hopi Snake Dance—a seasonal ritual which Warburg, in fact, never witnessed—is the lecture's centerpiece. Although Warburg, in his eagerness to find parallels to the pagan primitivism he detected within Renaissance art, appears to have misunderstood important aspects of the dance, the lecture nevertheless provides a compelling illustration of his mythic thinking about the origins of the symbol.[39] For Warburg, the Snake Dance demonstrated the achievement of a level of symbolic control over nature's processes. Through its mimetic magic, the Hopi dancers entered "into cultic exchange with the most dangerous beast, the live serpent," first through

an intimate struggle with nature as they held the snakes in their hands and mouths, and then by releasing the snakes back into nature, only now transformed. No longer a terror from the underworld holding man in fear, the serpent now became a symbol capable of returning as the lightning to produce rain. This symbol, Warburg found, still survived in the drawings of Hopi schoolchildren, some of whom, despite the impact of modern American schooling, continued to depict lightning as an arrow-tongued serpent.[40]

Warburg was seeking in the Hopi dances an antidote to a technological modernity initiated by Franklin. Franklin is mentioned only briefly in the closing paragraphs of the lecture, but he carries much symbolic weight for Warburg, who saw Franklin as the modern Prometheus who destroys the reflective distance so hard-won by primitive man. Believing he has conquered nature, technological man steals the lightning directly from nature without need of the symbol; instead, "the lightning serpent is diverted straight to the ground by a lightning conductor. Scientific explanation has disposed of mythological causation."[41] Warburg's Franklin is a version of the

11
Aby Warburg, *Uncle Sam*, 1895–1896. Photograph. The Warburg Institute Archive, London.

great disenchanter that Max Weber had portrayed twenty years earlier as the embodiment of the spirit of capitalism, the "bland deist" for whom the highest good is to make money, and whose utilitarianism has no room for reflection because it is preoccupied with the endless work of reducing everything in the world to its monetary end.[42] At the close of his slide lecture, Warburg offered his audience an image for this figure, a photograph he took in San Francisco of a man whom he calls "Uncle Sam in a stovepipe hat," the "gold-seeker" who has ousted primitive man and who hurries down the street while above his head runs the wire with which "he has wrested lightning from nature" (fig. 11).[43]

There is some irony in the fact that Warburg's lecture can help us see beyond his own caricatured image of Franklin. Warburg's notion of "a culture of symbolic connection," which he positioned between "a culture of touch" on the one hand, where man has not yet achieved freedom from the oppressive terrors of nature, and on the other hand "a culture of thought," which has so alienated itself from those terrors that it believes itself to be past them, is an apt description of the in-between world Chamberlin has conjured in his portrait of Franklin.[44] Seated between a chaotic nature and his electrical device, Franklin is no Uncle Sam. On the contrary, he occupies the liminal condition of Warburg's dancers: if Franklin is a disenchanter, he is nevertheless one who wrests the lightning from nature through an experimental mimicry that has not yet fully severed its magical links with the world beyond his window. There is still room for wonder in Franklin's study, and a final example of the electrician's art may help us see how a sober Presbyterian painter in eighteenth-century London put that wonder to work.

In his *Experiments and Observations*, Franklin describes an experiment, originally devised by Kinnersley, called "the magical picture." The electrician begins with "a metzotinto with a frame and glass, suppose of the King (God preserve him)." A mezzotint by John Smith (1652–1743), after Sir Godfrey Kneller's (1646–1723) portrait of King George II, is the kind of picture Franklin must have had in mind (fig. 12). Franklin then provides detailed instructions for cutting out the interior of the picture and then pasting the border and interior sections to opposite sides of the piece of glass, which has been gilt with foil (a conductor) on portions of both the front and back. Then a crown is made from foil and inserted into a slit in the print at the top of the king's head,

12
John Smith after Sir Godfrey Kneller, *King George II*, ca. 1727–1743. Mezzotint, 13 5/8 × 9 7/8 in. (34.5 × 25 cm). Stanford University Libraries, California. Special Collections and University Archives, Leon Kolb collection of portraits, 0516.

so the crown touches the unseen foil behind the picture. The end result, which had the appearance of a typical framed mezzotint when held in the electrician's hand, was now ready to be tested on a member of the audience. "If now," writes Franklin, "the picture be moderately electrified, and another person take hold of the frame with one hand, so that his fingers touch its inside gilding, and with the other hand endeavor to take off the crown, he will receive a terrible blow, and fail in the attempt. . . . The operator, who holds the picture by the upper end, where the inside of the frame is not gilt, to prevent its falling, feels nothing of the shock, and may touch the face of the picture without danger." [45]

The magical picture belongs to the myriad educational entertainments of the Enlightenment, from automata to magic lantern shows to trompe l'oeil painting, that taught lessons about discernment and deception. Earnest experimentalists and charlatans alike (it was not always easy to tell the difference), understanding that knowledge was a matter of experience, created illusions and dared their audiences to trust the evidence of their senses. Often the stakes in such entertainments were political, and indeed Wendy Bellion has shown that these pleasurable deceptions were vital to the creation of "citizen spectators" in the early American republic.[46] The magical picture, too, comes with a political lesson, in this case a lesson about loyal subjects of the king within the colonial Atlantic. While the performer, who does not touch the foil, pretends his immunity to electrical shock "is a test of his loyalty," the individual who removes the king's crown is punished for his seditious act. Franklin further writes that if the performance is carried out with a ring of persons to take the shock, it may be called "The Conspirators."[47]

The audience is entertained by the electrician's trick and enjoys its political lesson; but the real lesson, of course, is about the dangers of credulity. The magical picture plays on the (superstitious) belief in the animated picture, the fetish that has the capacity to answer back and punish the individual who offends it. It is the irrational primitive with his fetish who fails to see through its magic, and thus he endows a mere object with powers that any enlightened observer would realize it cannot possibly sustain.[48] The disenchanting electrician who performs the "magical picture" experiment would seem to be a version of Warburg's Uncle Sam. He teaches us that what looks like magic is really just electricity, a phenomenon that answers to man and not to the gods. While the audience member who removes the king's crown appears to be punished with a shock for his political act of desacralization, we know the true act of desacralization belongs to the electrician, who shows that the image never was magical in the first place.

But there's more to the performance of the magical picture than this dry, rationalist lesson. We know the picture is not magical, yet we still feel its invisible force in our bones when we receive its shock. The disavowal of the fetish is incomplete because its effects continue to be felt in the body even after the lesson is learned, and it is here, in the gap between knowledge and experience, that Franklin's experiment opens a space for reflection. Perhaps it even opens onto a theory of picturing, which would proceed as follows: in order to disenchant the picture we have to enchant it; *disenchantment comes through an*

opening onto an electrical potential that lies beyond the frame of representation. Or outside the window, as the case may be. All of this seems fully polite and rational, but still we catch a glimpse of what might lie beyond our understanding. And Franklin does go on to note that "if the picture were highly charged, the consequence might perhaps be as fatal as that of high-treason."[49]

When Franklin sent prints of Chamberlin's portrait to his friends in Boston, he hoped that "a long Visit in this Shape" would not be disagreeable to them. He seems to have sensed that Chamberlin's portrait carried something of his presence within it. Why else would he have ordered so many mezzotints? Franklin fetishized Chamberlin's portrait, just a bit. It is easy—too easy—to look at Chamberlin's portrait and dismiss its shock, its magic. Art history, a practice normally carried out within the comfort and quiet of the study, tends toward the containment of this shock, capturing the potential of pictures within disciplinary frameworks that allow us to turn our heads from the problem posed by the scene outside the window. But just beyond those frameworks, just behind Franklin's head, the lightning still prompts reflection—as it did for Apelles's admirers—about "things that cannot be represented in pictures." We can think of Chamberlin's portrait as a kind of "magical picture." It is its capacity to shock—a capacity contained and framed, yes, but still full of electrical potential and capable of opening, temporarily at least, to an experience beyond the frame—that creates the very conditions of possibility for this painterly demonstration of Benjamin Franklin's Promethean art.

This article has benefited much from the questions and comments of audiences at the Center for Advanced Study in the Visual Arts and at Harvard's Department of History of Art and Architecture. Special thanks to Matthew Hunter, Jennifer Marshall, and Jennifer Roberts for their insights.

1 Charles Brockden describes the event in a letter to Thomas Noble of July 21, 1745. See Milton J. Coalter Jr., *Gilbert Tennent, Son of Thunder: A Case Study of Continental Pietism's Impact on the First Great Awakening in the Middle Colonies* (New York: Greenwood Press, 1986), 125–26.

2 Ibid., 126.

3 Gilbert Tennent, *All Things Come Alike to All: A Sermon, On Eccles. IX. 1, 2 and 3 Verses. Occasioned by a Person's Being Struck by the Lightning and Thunder* (Philadelphia: printed by William Bradford, 1745), 40.

4 Benjamin Franklin, *New Experiments and Observations on Electricity* (London: D. Henry and R. Cave, 1754), 112.

5 The phrase appears in Kant's essay from 1756: "Continued observations on the earthquakes that have been experienced for some time," trans. Olaf Reinhardt, in *The Cambridge Edition of the Works of Immanuel Kant: Natural Science*, ed. Eric Watkins (Cambridge: Cambridge University Press, 2012), 373. It should be noted that Kant's praise for Franklin is decidedly ambivalent (even though the literature on Franklin never notes this fact, despite the frequency with which the phrase is quoted). The full passage is monitory: in Kant's view, Promethean endeavors such as Franklin's ultimately lead man "to the humbling reminder, which is where he ought properly to start, that he is never anything more than a human being" (ibid.).

6 See Mary D. Sheriff, "'Au Génie de Franklin': An Allegory by J.-H. Fragonard," *Proceedings of the American Philosophical Society* 127, 3 (June 16, 1983): 180–93. There is a third portrait made during Franklin's lifetime that directly associates him with the lightning. Painted by Charles Willson Peale (1741–1827) in 1789 and in the collection of the Philadelphia History Museum, the portrait shows an older Franklin who is seated, holding a lightning rod, with a bolt of lightning out the window. On the portraiture of Franklin, see also Brandon Frame Fortune and Deborah J. Warner, *Franklin & His Friends: Portraying the Man of Science in Eighteenth-Century America* (Washington, DC: Smithsonian National Portrait Gallery, 1999); Deborah Jean Warner, "Portrait Prints of Men of Science in Eighteenth-Century America," *Imprint* 25, 1 (Spring 2000): 26–33; Wayne Craven, "The American and British Portraits of Benjamin Franklin," in *Reappraising Benjamin Franklin: A Bicentennial Perspective*, ed. J. A. Leo Lemay (Newark: University of Delaware Press, 1993), 247–71; Richard Dorment, *British Painting in the Philadelphia Museum of Art: From the Seventeenth through the Nineteenth Century* (Philadelphia: Philadelphia Museum of Art, 1986), 38–44; and Charles Coleman Sellers, *Benjamin Franklin in Portraiture* (New Haven, CT: Yale University Press, 1962).

7 William T. Whitley, *Artists and Their Friends in England, 1700–1799* (London: The Medici Society, 1928), 375. The key sources on Chamberlin's life are ibid., 83–84; and Edward Edwards, *Anecdotes of Painters Who Have Resided or Been Born in England* (London: Leigh and Sotheby, et al., 1808), 121–22.

8 According to Debora Jean Warner, William Franklin ordered another hundred copies a few years later. On the circulation of the print, see Warner, "Portrait Prints of Men of Science," 27–28; and Fortune and Warner, *Franklin & His Friends*, 77.

9 Benjamin Franklin to Jonathan Williams, Feb. 24, 1764, in *The Papers of Benjamin Franklin*, vol. 11, ed. Leonard W. Labaree (New Haven, CT: Yale University Press, 1967), 89.

10 James Delbourgo, *A Most Amazing Scene of Wonders: Electricity and Enlightenment in Early America* (Cambridge, MA: Harvard University Press, 2006), 16.

11 "Notice is hereby given to the Curious," *New York Gazette*, June 1, 1752.

12 Mircea Eliade, *Patterns in Comparative Religion* (New York: Sheed & Ward, 1958), 38.

13 Lucretius, *The Nature of Things*, trans. A. E. Stallings (London: Penguin Books, 2007), 187.

14 Psalm 77:17, in *The Bible: Authorized King James Version*, ed. Robert Carroll and Stephen Pricket (Oxford: Oxford University Press, 1997), 681. See also Psalms 18:14 and 144:6 and Zechariah 9:14. For a medieval example of this iconography, see the

thirteenth-century Bible Moralisée in the Bodleian Library, MS. Bodl. 270b, fol. 132r; in one of the illustrated roundels on this page, God sends down lightning in the form of arrowheads onto the Saracens.

15 See the recent critical edition: Julius Wilhelm Zincgref, *Emblematum ethico-politica*, 2 vols., ed. Dieter Mertens and Theodor Verweyen (Tübingen: M. Niemeyer, 1993).

16 See Robert Blair St. George, *Conversing by Signs: Poetics of Implication in Colonial New England Culture* (Chapel Hill: University of North Carolina Press, 1998), 181–83; and David D. Hall, *Worlds of Wonder, Days of Judgment: Popular Religious Belief in Early New England* (New York: Alfred A. Knopf, 1989).

17 Cotton Mather, *The Christian Philosopher*, ed. Winton U. Solberg (Urbana: University of Illinois Press, 1994), 72. See also James Campbell, *Recovering Benjamin Franklin: An Exploration of a Life of Science and Service* (Peru, IL: Carus, 1999), 64.

18 John Adams, quoted in I. Bernard Cohen, *Benjamin Franklin's Science* (Cambridge, MA: Harvard University Press, 1990), 153. On debates about conductors, see ibid., 118–58; and Delbourgo, *A Most Amazing Scene of Wonders*, 50–86.

19 On the significance of Priestley's publication for the historiography of electricity, see Simon Schaffer, "The Consuming Flame: Electrical Showmen and Tory Mystics in the World of Goods," in *Consumption and the World of Goods*, ed. John Brewer and Roy Porter (London: Routledge, 1993), 512–15.

20 See ibid.

21 On Freke's enthusiasm, see ibid., 502–4. On the history of enthusiasm generally in early modern Europe, see Michael Heyd, *"Be Sober and Reasonable": The Critique of Enthusiasm in the Seventeenth and Early Eighteenth Centuries* (New York: E. J. Brill, 1995).

22 Ebenezer Kinnersley, *Pennsylvania Gazette*, July 24, 1740, as quoted in Thomas S. Kidd, *The Great Awakening: The Roots of Evangelical Christianity in Colonial America* (New Haven, CT: Yale University Press, 2007), 66.

23 On the *Venus Electrificata*, or electric kiss, see Delbourgo, *A Most Amazing Scene of Wonders*, 115–19. It is important to note that experimentalists could themselves be charged with enthusiasm: see Heyd, *"Be Sober and Reasonable,"* 144–64.

24 Franklin was the publisher of Whitefield's sermons and journals; he also published Tennent's most famous sermon, *The Danger of an Unconverted Ministry* (1740). On the friendship and collaboration between Franklin and Whitefield, see Frank Lambert, "Subscribing for Profits and Piety: The Friendship of Benjamin Franklin and George Whitefield," *William and Mary Quarterly* 50, 3 (July 1993): 529–54.

25 On the ringing of church bells, see Cohen, *Benjamin Franklin's Science*, 119–25. The bells in Franklin's study were caused to ring by a small brass ball suspended between them, which vibrated when electrified (ibid., 89). The ball is just visible in the Chamberlin portrait and slightly more so in the mezzotint.

26 The experiment with the bells and cork balls is mentioned in the letter of April 18, 1754, in Franklin, *New Experiments and Observations* (1754), 128–29.

27 Franklin, quoted in Cohen, *Benjamin Franklin's Science*, 90. See also Delbourgo, *A Most Amazing Scene of Wonders*, 60.

28 J. A. Leo Lemay, *Life of Benjamin Franklin*, vol. 3, *Soldier, Scientist, and Politician, 1748–1757* (Philadelphia: University of Pennsylvania Press, 2009), 129; and Joyce E. Chaplin, *The First Scientific American: Benjamin Franklin and the Pursuit of Genius* (New York: Basic Books, 2006), 138.

29 Fortune and Warner, *Franklin & His Friends*, 74.

30 Joseph Priestley, *History and Present State of Electricity*, 1775, as quoted in Simon Schaffer, "Natural Philosophy and Public Spectacle in the Eighteenth Century," *History of Science* 21 (1983): 8.

31 Benjamin Franklin, *Experiments and Observations on Electricity* (London: E. Cave, 1751), 59–62.

32 Priestley, quoted in Schaffer, "Natural Philosophy and Public Spectacle," 8.

33 Franklin, *Experiments and Observations* (1751), 60.

34 See Delbourgo, *A Most Amazing Scene of Wonders*, 14–15, 60.

35 This is true of the original painting, although Fisher's mezzotint does show Franklin's writing on the sheet.

36 Pliny, *Natural History*, vol. 9, trans. H. Rackham (Cambridge, MA: Harvard University Press, 1952), 333.

37 Erwin Panofsky, "Erasmus and the Visual Arts," *Journal of the Warburg and Courtauld Institutes* 32 (1969): 225.

38 Immanuel Kant, *Critique of the Power of Judgment*, ed. Paul Guyer, trans. Paul Guyer and Eric Matthews (Cambridge: Cambridge University Press, 2000), 144.

39 On Warburg's misinterpretation of the Hopi dances, see David Freedberg, "Warburg's Mask: A Study in Idolatry," in *Anthropologies of Art*, ed. Mariet Westerman (Williamstown, MA: Clark Institute, 2005), 3–25. On Warburg's mythic thought, see Joseph Mali, *Mythistory: The Making of a Modern Historiography* (Chicago: University of Chicago Press), 133–86.

40 Aby M. Warburg, *Images from the Region of the Pueblo Indians of North America*, trans. Michael P. Steinberg (Ithaca, NY: Cornell University Press, 1995), 51.

41 Ibid., 50. Warburg mentions Franklin in the company of the Wright brothers, "the modern Icarus" (54).

42 Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, trans. Stephen Kalberg (Los Angeles: Roxbury, 2002), 14–18.

43 Warburg, *Images from the Region of the Pueblo Indians*, 53.

44 Ibid., 17.

45 Franklin, *Experiments and Observations* (1751), 27.

46 Wendy Bellion, *Citizen Spectator: Art, Illusion, and Visual Perception in Early National America* (Chapel Hill: University of North Carolina Press, 2011). Also see Delbourgo, *A Most Amazing Scene of Wonders*, 129–64; and Barbara Marie Stafford, *Artful Science: Enlightenment Entertainment and the Eclipse of Visual Education* (Cambridge: MIT Press, 1996).

47 Franklin, *Experiments and Observations* (1751), 28.

48 On the Enlightenment fetish, see William Pietz, "The Problem of the Fetish, IIIa: Bosman's Guinea and the Enlightenment Theory of Fetishism," *RES: Anthropology and Aesthetics* 16 (Autumn 1988): 105–24; and W. J. T. Mitchell, *What Do Pictures Want? The Lives and Loves of Images* (Chicago: University of Chicago Press, 2005), 145–68, 188–96.

49 Franklin, *Experiments and Observations* (1751), 28.