

THOMAS J. CAMPANELLA

‘mark well the gloom’:
SHEDDING LIGHT

ON THE GREAT DARK DAY OF 1780

ABSTRACT

This essay is about one of the most extraordinary natural events in early American history, the great “Dark Day” of May 19, 1780. On that morning a preternatural gloom settled upon the New England landscape, and by noon the sun had been all but blotted from the sky. Using accounts drawn from contemporary diaries, journals, newspapers, broadsides, and other sources, this essay reconstructs the events of the Dark Day and explores the manifold ways—from theological speculation to amateur scientific inquiry—in which New Englanders sought to explain and rationalize the sudden darkness.

Ye Sons of Light who saw the Night,
triumphing at High noon,
The nineteenth Day of th’ Month of May,
Mark well the dismal Gloom.¹

THE RISING SUN first struck the fir-quilled hump of Porcupine Mountain, on the northern coast of Maine, at 3:52 on the morning of Friday, May 19, 1780.² An hour later the sunbeams had cast their way across New England, reaching Connecticut’s south shore and the western flank of the Housatonic Valley. Night melted into day; songbirds greeted the dawn and a thousand Yankee farmsteads stirred to life. It seemed a perfectly ordinary spring morning in New England. But things were far from ordinary on this vernal day. It had been a rough and long winter—one of the coldest in memory—and though the breath of spring was in the air, so were troubling signs. For several days now the weather had been unseasonably warm. In many parts of New England the atmosphere was

cloudy and vaporous at dawn, and some had observed an odd pinkish hue to the sun's normally yellow disk earlier in the week. "A remarkable thick air," had been evident for several days now, noted merchant and judge Samuel Phillips Savage of Weston, Massachusetts; "the sun rises and sets very red."³ Others had noted that in evening the waning moon, too, blushed a strange hue of pink.

Now, as this Friday morning progressed, an eerie transformation was underway. Savage noted that shortly after nine o'clock there "came on an appearance over the whole visible heavens ... a light grassy hue, nearly the color of pale Cyder." The bilious sky was soon "attended with a gloom nearly resembling that of an Eclipse of the Sun." By ten o'clock the sun had almost entirely disappeared, and the skies grew rapidly dark. The songbirds that cheered the day only hours before now fell silent. "Fowles retired to their Roosts, or collected together in clusters," wrote Savage, while cocks crowed and crickets shook their fiddles. It was all as if night was falling.⁴ From downeast Maine to the Connecticut coast, in kitchens and barnyards, schoolhouses and churches and workshops, on boats plying the coastal waters, in forests and fields and pastures, New Englanders put down their tools and books and looked up to the sky in fear and wonder. This was no coming thunderstorm, no hoary pile of clouds. A great and terrible shadow was coming over the land, and soon "every thing bore the appearance and gloom of night."⁵

The noonday meal was served by candlelight, if it was served at all. By then it had become so dark that a single candle "cast a shade so well defined ... that profiles were taken with as much ease as they could have been in the night."⁶ So complete was the murk "that those who had good eye sight," wrote a correspondent to the *Massachusetts Spy*, "could scarcely see to read common print, [and] it was the judgment of many that at about 12 o'clock ... the day light was not greater, if so great, as that of bright moon-light."⁷ In Weston, Sam Savage could hardly read the time on his watch, even while wearing his spectacles and standing in front of a large window. Next door his neighbor had been spreading manure in a field, but was forced to quit by the diminishing light (no longer being "able to discern the difference between the ground and the Dung"). Like the fowls and songbirds, the farmer soon retreated. The brief day ended, and now "the birds of the Night were abroad," Savage observed, "and by their melancholy notes added to the Solemnity of the Scene."⁸

Elsewhere the closing darkness was stoically endured. According to one account, the Connecticut legislature was in session all morning, and the lawmakers glanced with growing discomfort at the scene outside. The House had already adjourned, sending its delegates home to join their families. Now the members of the Council of Safety pleaded with Senator Abraham Davenport to follow suit. Senator Davenport, grandson of one of the founders of New Haven and Yale University, would have none of it.⁹ In the gathering gloom, he rose and declared: "The day of judgment is either approaching, or it is not. If it is not, there is no cause of an adjournment: if it is, I choose to be found doing my duty. I wish therefore that candles may be brought." Candles were ordered and the meeting continued (the business of the day included considering an amendment

to an act regulating the harvest of shad and alewife in Connecticut's waters).¹⁰ While the lawmakers labored in their chamber, mischief was afoot elsewhere. Lawyer William Pynchon confided to his journal that while the good people of Salem scurried about seized with "melancholly and fear," sailors alone seemed unfazed by the closing gloom. Instead, they "went hallooming and frolicking through the streets," gaily calling upon all to join their last bacchanalian romp. The seamen were "reproved in vain," wrote Pynchon, and they "cried out to the ladies as they passed, 'Now you may take off your rolls and high caps and be d[amne]d.'"¹¹

The darkness lifted somewhat toward late afternoon, but nightfall came soon thereafter. "It was so terrible dark," confided Experience Richardson of Sudbury, Massachusetts, "that we could not see our hand before us."¹² Samuel Tenney suggested that the inky black "was probably as gross as ever has been observed since the Almighty fiat gave birth to light." Even a sheet of paper "held within a few inches of the eyes" was as black as velvet.¹³ In his normally bright west room, Savage "could not ... discern either of the Windows but by feeling," for "All was a universal black."¹⁴ When the belated gibbous moon finally rose—at three minutes past nine o'clock in Boston—it was not silver (nor even pink, as it had been for several evenings now) but blood-red. The moon was nearly full, yet its ruddy light was soon extinguished by the pall of gloom. Now a truly terrible blackness descended on the land—"a kind of Egyptian darkness," wrote a correspondent to the *Massachusetts Spy*, in which "No object was discernable but by the help of some artificial light."¹⁵

A BRUSH WITH JUDGMENT DAY

MANY—PERHAPS MOST—New Englanders responded to the sudden darkness by turning to God. All day and into the night the faithful rushed to their meeting-houses. This was still, in spite of a rising Enlightenment tide, a fiercely religious society. And the Bible, a normative text in nearly all aspects of early New England life, had much to say about dark skies, black suns, red moons, and the like. Congregants knew only too well that, for example, the Lord had instructed Moses in the Book of Exodus 10:21 to "Stretch out thine hand toward heaven, that there may be darkness over the land of Egypt, even darkness which may be felt. And Moses stretched forth his hand toward heaven; and there was a thick darkness in all the land of Egypt three days."

Indeed, preternatural darkness is a recurrent theme in both the Old and New Testaments of the Bible. While light is a symbol of goodness and purity, darkness is a "master image for chaos, separation, and death, and a synonym of sin and evil."¹⁶ Isaiah 13:9-10, for example, foretells a day "cruel both with wrath and fierce anger" that will destroy the sinners of Babylon, when the "sun shall be darkened in his going forth, and the moon shall not cause her light to shine." In Ezekiel 32:7, Yahweh threatens to "cover the sun with a cloud." Zephaniah 1:15 promises "a day of clouds and thick darkness" to punish wayward royalty. In Joel 2:31 a sun-blackening signals the day of the Lord's coming, while Amos 8:9

takes up a similar theme to chastise the Israelites. In the New Testament, too, are numerous references to dark days—Matthew (24:29), Mark (13:24), and Acts (2:20) all warn of darkened suns, as does the Book of Revelations (6:12). Perhaps most famous of all is the sudden darkness that descends as Christ expires on the cross (Luke 23:44-45): “And it was about the sixth hour, and there was a darkness over all the earth until the ninth hour. And the sun was darkened.”

These and other biblical passages took on a frightening measure of urgency on May 19, 1780. Was the sudden darkness an omen of the end of days? A literal reading of the Bible suggested as much, and it seems that many New Englanders feared precisely this. As clergyman-diarist Timothy Dwight put it, “A very general opinion prevailed that the day of judgment was at hand.”¹⁷ The Reverend David Hall noted in his journal that “People came flocking to the Meetinghouse requesting my presence.” The gathered faithful implored Hall to lead them in prayer. “The people were *very* attentive,” he noted a bit sarcastically, adding that perhaps the Lord had indeed moved to “awaken us up to our Duty.”¹⁸ To Reverend Whitaker of Salem the packed pews signaled an opportunity to lecture on how “extortion and other sins” brought gloom down upon the people’s heads.¹⁹ Some of the flock may have been straining for other sounds. As the poet John Greenleaf Whittier would later write, “All ears grew sharp / To hear the doom-blast of the trumpet shatter / The black sky.”²⁰

While the fatal trumpet failed to sound, the specter of darkness at noon was indeed read as a sign of God’s displeasure with his American flock, and quickly became grist for millennial fundamentalism. In the weeks and months that followed, numerous tracts and sermons were published linking the events of May 19 to scriptural accounts of sky darkenings and the end of days. Samuel Gatchel, deacon of the Second Congregational Church in Marblehead, Massachusetts, offered commentary on a number of Biblical passages in an attempt to “discern the Signs of the Times.” Gatchel was hardly surprised that “Wise Men and Astrologers” failed to ascertain the meaning of the “remarkable Phenomenon, or DARK-DAY,” for in his view this was no freak of nature but rather a heavenly portent—a “forerunner of some extraordinary event or period.”²¹ Other evangelists put their admonitions to verse:

Nineteenth of May, a gloomy day,
 When darkness veil’d the sky;
 The sun’s decline may be a sign
 Some great event is nigh.

Let us remark, how black and dark,
 Was the ensuing night;
 And for a time the moon’s decline,
 Which did not give her light.

Can mortal man this wonder scan?
 Or tell a second cause?
 Did not our GOD then shake his rod,
 And check strong nature’s laws?²²

There was plenty the Almighty might be displeased with, for these were troubled times for the infant American republic. The colonies had split from Britain only four years earlier, and the ragtag American militia was still engaged in a pitched battle against the greatest military power in the world. The revolution that began with brave skirmishes at Lexington and Concord was now a protracted war being fought from Maine to Georgia. The Americans also had to contend with some of the worst weather of the century. At Morristown, New Jersey, Washington's troops were freezing to death: "The snow on the ground is about two feet deep," wrote a field surgeon in December, "and the weather extremely cold; the soldiers are destitute of both tents and blankets, and some of them are actually barefooted and almost naked ... we can scarcely keep from freezing."²³ By April, Washington was in dire straits; "the weak state of our force," he wrote to Congress, has "laid me under great embarrassments."²⁴ He had few officers left, and one of his top men—Benedict Arnold—was being court-martialed for misconduct; in only a matter of months Arnold would commit his infamous act of treason.

Events in the South were more troubling still. In Georgia, British commander Sir Henry Clinton had taken Savannah and Augusta, and now turned toward Charleston. Clinton had earlier launched an ill-fated seaborne attack on Fort Sullivan there in the summer of 1776 (half his ships became grounded and their cannonballs bounced harmlessly off Sullivan's palmetto-log ramparts).²⁵ This time, however, Clinton came by both land and sea, and with a much greater force of men. Charleston was soon besieged. British General Cornwallis then cut off all land supply routes to the city, and on Friday, May 12, just one week before the gloom descended on New England, American commander Benjamin Lincoln surrendered Charleston, along with several thousand troops (many of whom would later perish on prison ships in Charleston harbor). It was one of the greatest American losses of the revolution, and news of it reached New England just as the great darkness fell. This was all very entertaining for the loyalists, who roundly mocked the fretful colonials, claiming in letters to England that many Americans believed the sudden darkness was due to "the Devil spreading his wings over Northern rebellious colonies—and if they do not repent, the next time he will certainly fly off with them all."²⁶

CHASING SUPERSTITION

THERE ALSO WERE more scientifically grounded reactions to the Dark Day. Even as the church pews creaked, "natural philosophers" and other amateur scientists were busy making field observations, gathering data, scribbling notes, and publishing lengthy communications in local newspapers in an attempt to explain the causes of this perplexing event. Some of their theories were highly inventive; others were remarkably accurate suppositions about the causes of the preternatural night. Collectively, these probings formed a secular counterpoint to the answers offered by religion. While the mere act of probing for answers beyond the Bible was heresy to some Christians, others saw little conflict between God's will and the laws of nature. Indeed, the fundamental

compatibility of scientific inquiry and Christian theology was terrain explored in great depth by an earlier generation of New Englanders, such as Cotton Mather and Jonathan Edwards. And if the Dark Day originated in natural causes, then it need not signal gloom and doom for the American revolutionaries.

Mather was among the first to cross the threshold from doctrinaire Puritanism to an Enlightenment view of the world. A truly liminal figure, Mather could speculate with equal eloquence that thunder was, on the one hand, caused by “Common Laws of Matter and Motion” such as the chemical interaction of “vapours of Niter and Sulphur,” and, on the other, the result of supernatural forces of evil (“The Devil is the prince of the Air,” whose “Armies ... can make Thunders”).²⁷ He saw no inherent incompatibility between these explanations, and believed them both correct—that natural laws governed the mechanics of the universe, but that there was a supreme architect (and a supreme destroyer) behind it all. If anything, science was a tool that could help validate and honor the Creator, revealing “a minutely purposeful universe.” As Kenneth Silverman has put it, “Mather moved almost effortlessly in his thinking between theological and scientific modes of explanation.”²⁸

Jonathan Edwards, too, easily crossed the philosophical divide between Puritanism and the Enlightenment. One of the formative figures in the Great Awakening, Edwards was a devout Puritan and orthodox theologian, but he was also keenly interested in science and the evolving European Enlightenment. A 1723 letter he intended for the editors of the Royal Society’s *Transactions* illustrates well his faith in both God and science. In this missive Edwards marvels at the spiders’ ability to “fly”—“their marching in the air from one tree to another, sometimes at the distance of five or six rods, though they are wholly destitute of wings”—and speculates on the several roles such traveling spiders might play in the natural world. For Edwards, however, this type of empiricism served a theological purpose: flying spiders are but proof of the “exuberant goodness of the Creator, who hath not only provided for all the necessities, but also for the pleasure and recreation of all sorts of creatures, even the insects.”²⁹

By the time of the American revolution the stern theocracy of Puritan New England was largely a thing of the past; indeed, even in Edwards’s day the orthodox world view of the initial settlement period had lost much of its appeal. By 1780 New England society was in the midst of simultaneous political, economic, and cultural revolutions. A struggle for national independence raged throughout the colonies, and within a generation the first wave of the industrial revolution would reach Yankee shores. In Derbyshire, England, a young man named Samuel Slater had been apprenticed to a millwright, soon to learn the secrets of mechanization that would change the course of American history. New England was busy with tinkers, inventors, and radical thinkers whose ideas and industry would soon propel the region—and Boston in particular—into prominence, eventually eclipsing Philadelphia as the Athens of America—or, as Oliver Wendell Holmes would later describe it, the “hub of the Universe.”

The transition did not occur overnight. In spite of Mather and Edwards and other transitional figures, a culture of scientific inquiry was slow to form in

eighteenth-century New England. There were, however, some promising early starts. Along with Mather, Zabdiel Boylston and others began experimenting with smallpox inoculations in the 1720s, though the disease would not be conquered until the 1800s. The Medical Society of Boston was founded in 1735 by William Douglas, but it fizzled out only seven years later (Douglas was, for many years, the only physician in Boston with an actual medical degree).³⁰ Harvard College sparked many an intellectual fire, but it was still chiefly a training place for ministers. By the time of the Revolution, there were as yet no scientific societies in New England, nor any regularly published journals in which to debate scientific findings. The American Academy of Arts and Sciences was not founded until 1780 (several months after the Dark Day) and its journal—*Memoirs of the American Academy*—did not begin publication until 1785.³¹

In Philadelphia things were somewhat different. There, the American Philosophical Society—the first scientific society in America—was founded in 1743 by Benjamin Franklin and John Bartram. Its aim was to encourage and pursue “all philosophical Experiments that let Light into the Nature of Things, tend to increase the Power of Man over Matter, and multiply the Conveniences or Pleasures of Life.” Although the Society vanished for several years, it was revived in 1769 to become one of the pillar institutions that made Philadelphia the intellectual and cultural center of the colonies for many years.

It was the Philosophical Society, in fact, that John Adams had in mind when he first spoke, in the summer of 1779, of founding a counterpart organization in Boston—what was to eventually become the American Academy of Arts and Sciences.³²

PULP SCIENCE

IN BOTH PHILADELPHIA and Boston, however, pamphlets, broadsides and—especially—newspapers served as a kind of grassroots forum for debating a multitude of scientific subjects. Colonial newspapers served a variety of functions—posting news from elsewhere in the colonies and overseas, reprinting articles of interest about farming, trade, and commerce, relating news of significant local events, and, since the outbreak of hostilities, reporting on the progress of the revolution. They also published lengthy letters from readers. In an age before learned societies and peer-reviewed scientific journals, newspapers provided a kind of grassroots forum and seedbed for scientific inquiry. “Along with the public lecture,” writes David Ferro, “the newspaper became a primary device where actors and artifacts made legitimizing natural claims to a larger audience and enlisted allies in both scientific and broader disputes.”³³ This was especially the case in New England. One of the earliest examples of this trend was the bitter squabble between William Douglas and Cotton Mather in the 1720s over the safety and benefits of smallpox inoculation, which prompted a phalanx of letters in the *New-England Courant*.³⁴

The first regularly issued newspaper in the American colonies began publication in 1704 in Boston, and ever since Massachusetts has enjoyed a lively pulp culture. The *Courant*—founded by Benjamin Franklin’s elder brother,

James—was the third Boston newspaper to begin publication and the first truly to rattle the rafters of the New England establishment when it hit the streets in August 1721 (officials accused it of cultivating a “Tendency ... to mock Religion, and bring it into Contempt”).³⁵ In Philadelphia the *Pennsylvania Gazette*, founded by Ben Franklin in 1729, eventually became the most heavily subscribed newspaper in the colonies. By 1745 there were nearly two dozen papers being published in the American colonies, many in New England. On the eve of the revolution a literate Yankee could choose among the conservative *New England Weekly Journal* (hailed as “Harvard’s honour and New England’s hope”), the *New Hampshire Gazette* (founded in 1756 and still published), the *Independent Chronicle* (1776) or Isaiah Thomas’s *Massachusetts Spy*, established in 1770 and self-proclaimed “the most daring production ever published in America.”³⁶

Not only did local papers provide a forum for scientific debate, they actively encouraged one. New England newspapers solicited theories in the immediate aftermath of the Dark Day, perhaps in the spirit of Enlightenment liberality, but more likely motivated by the prospect of a spirited debate that would sell papers. Either way, in the weeks and months following May 19 a lively conversation about the possible causes of the Dark Day erupted in the pages of New England newspapers. An indicator of just how important these newspapers were in terms of documenting scientific inquiry at the time is that, in the very first volume of the American Academy’s *Memoirs*, published in 1785, Samuel Williams’s lengthy essay on the Dark Day—“An Account of a Very Uncommon Darkness in the States of New England, May 19, 1780”—drew largely upon letters published in several newspapers in the wake of the event itself. Imagine today an esteemed journal like *Nature* or *The New England Journal of Medicine* drawing upon letters to the editor published in the *Boston Globe*!³⁷

THE GREAT DEBATE

WITHIN DAYS OF May 19 a number of “natural philosophers” began proposing and refuting theories about the Dark Day in Boston’s *Independent Chronicle* and *Independent Ledger*, the *New Hampshire Gazette*, the *Massachusetts Spy*, and others. Nathaniel Willis, editor of the *Independent Chronicle*, personally solicited at least one learned opinion, from “a very worthy gentleman in a neighboring town”—identified only as “A Friend to Learning and Politeness” (who, among other things, reported that “Some in the country have given it as their opinion that this darkness was occasioned by the sins of the Boston people”).³⁸ The *Boston Gazette*, too, issued a call to scientific arms: “The Printers,” they confessed, “acknowledge their incapacity of describing the phenomenon which appeared in this town on Friday last, and shall therefore leave it to astronomers whose more particular business it is.”³⁹ So did the *Providence Gazette*, which welcomed “the observations of the learned and ingenious upon such remarkable phenomena,” which would “readily find a place in this GAZETTE.”⁴⁰

In Hartford the editors of the *Connecticut Courant* made a similar claim: “Our ingenious and philosophical customers are desired to send an account of

the particular phenomena attending [the sudden darkness] ... particularly an exact description of the time of its beginning, continuance and end, the appearance and tincture of clouds, and other visible objects.”⁴¹ Not to be outdone, the editors of Boston’s popular *Independent Ledger* quickly joined in: unsatisfied themselves with Biblical explanations of the sudden darkness, they implored readers on May 22 to explain the “extraordinary Phaenomenon” of the previous week.⁴² The response was swift and enthusiastic. One writer, Samuel Sterns of Paxton, Massachusetts, wrote the *Ledger* to tell of the “diverse strange opinions” his neighbors had offered to explain the smothering of light on May 19. One suggested that a “blazing star” had “come betwixt us and the sun,” another that the culprit was an errant “transit of Venus, or Mercury, upon the disk of the sun.” Still other neighbors had theorized that perhaps a great mountain had somehow come to obstruct the rays of the sun. Evidently the offending peak had “taken flight, and was gone off towards that magnificent luminary.”⁴³

Sterns then set about explaining his own theories about the darkness, armed with “knowledge I have in Philosophy and Astronomy.” The sun’s strong rays in the days before May 19, Sterns argued, heated the atmosphere to such a degree that it caused an “ascension of numerous particles ... aqueous, sulphurous, bitimeneous, salineous, vitreous,” into the earth’s atmosphere. Just about everything seemed to head skyward—“waters of the seas, rivers, ponds”; “fumes of burning Vulcanoes” (caused by “subterraneous veins of liquid fires”); even the “juice of trees, plants, and herbs.” All these ingredients were “exhaled into the regions of the air where their positions are subject to various mutations or changes, by reasons of the motion and compulsion of the air.” Finally, the manifold particles were rammed together by “certain winds from opposite points of the compass,” and were so “condensed together” by the weight of the earth’s atmosphere that they “obstructed the appearance of the refulgent of the sun by day, and the silver rays of the moon by night.”⁴⁴ Exactly why all the fumes and juices of earth would choose to congregate on this particular hot day instead of another one was left unanswered.

Another correspondent to the *Independent Chronicle*—this one going by the name “Viator,” Latin for traveler or wayfarer—offered a more lucid explanation of the darkness, based on his own observations in Ipswich, Massachusetts, and those made by several of his friends, “gentlemen of liberal education,” as he described them. Viator noted that “the hemisphere for several days had been greatly obscured with smoke and vapour, so that the sun and moon appeared unusually red.” Again on May 19 the rising sun was red in color, but before long the clouds thickened and blotted out the crimson disk. “Between 8 and 9 o’clock,” noted Viator, “the sun was quite shut in, and it began to shower.” It looked as though a powerful storm was approaching from the southwest; and while the sky churned and boiled at higher altitudes, nary a blade of grass stirred at ground level. “From the thickness of the clouds, and the confusion which attended their motions, we expected a violent gust of wind and rain; the wind, however, near the earth, continued small, and it rained but little.” Over the next several hours Viator and his companions conducted a series of experiments

with candles and shadows and newsprint, and observed that even in front of a bank of windows—seventy-two panes in all—large print “could not be read by persons of good eyes.” By one o’clock in the afternoon the last “glin of light” in the eastern sky was extinguished, and the darkness became “greater then it had been for any time before.” An hour later a strange luminescence appeared in the west, becoming brighter with time. The motion of the clouds in the western sky was now “more quick, their colour higher and more *brassy* than at any time before.” There also appeared to be “quick flashes, or coruscations, not unlike the *Aurora Borealis*.” Sometime after three o’clock the gentlemen cautiously ventured outside, where they immediately “perceived a strong *sooty* smell”: “Some of the company were confident a chimney in the neighbourhood must be burning; others conjectured the smell was more like that of burnt leaves.” By half past four o’clock, the group (“which had past [sic] an unexpected night very chearfully together”) broke up and went their separate ways. As for himself, Viator headed to the local tavern, where he found the patrons “much agitated.” “Among other things which gave them surprise,” he wrote, was the “strange appearance and smell of the rain-water which they had saved in tubs.” The tavern crowd led him ‘round back to see for himself: “Upon examining the water, I found a light scum over it, which rubing [sic] between my thumb and finger, I found to be nothing but black ashes and burnt leaves. The water gave the same strong sooty smell we had observed in the air, and confirmed me in my opinion, that the smell ... was occasioned by the smoke, or very small particles of burnt leaves, which had obscured the hemisphere for several days past, and were now brought down by the rain.” Viator now had enough evidence to float a theory: “The vast body of smoke from the woods which had been burning for many days, mixing with the common exhalations from the earth and water, and condensed by the action of winds from opposite points, may perhaps be sufficient causes to produce the surprising darkness.”⁴⁵

On the same day that Viator’s correspondence appeared in the *Independent Chronicle*, an anonymous letter in a rival paper—the *Massachusetts Spy*—suggested that the events of May 19 “perhaps might afford to those who indulge themselves in the abstruse and curious researches, a large field for philosophical speculations.” Revealing himself to be one of these philosophers, the writer set forth a hypothesis of his own. Because the sun is the “great and original source” of light on earth, he proposed, “whatever cause most obstructs his rays from coming to us, involves us in the greatest darkness.” What, then, so effectively blocked the light on May 19? “Vast quantities of elastick, heterogeneous vapours, generated in consequence of the great body of snow which covered the earth so long the winter past, and exhaled during the warm dry weather, immediately preceding this time.” These vapors “congested and condensed into thick clouds, which extended through the atmosphere for a vast distance.” The “more gross” of these clouds were very close to the earth’s surface. As a consequence, those rays of sunlight that were able to penetrate the superior layers of mist “must suffer so many reflections and refractions ... that but very few could possibly be transmitted, and those that were would be the least reflexible and refrangible, which are those of the red, yellow, orange and green

colours.” This, then, might well account for the “sickly gloom in which objects then appeared.” Moreover, the density of cloud cover and its nearness to earth “prevented our receiving much advantage from the reflection of any part of the atmosphere, which was not then clouded.” The result, more obvious to the writer perhaps than his readers, was a sudden and enveloping murk. In conclusion, the “abstruse and curious” researcher regretted that these were but “some general hints, suggested in an inaccurate and loose manner,” which might be “taken up by some more able judges of natural causes.”⁴⁶

This imaginative snow-creates-cloud thesis struck a chord with at least one *Spy* reader—a Pepperell, Massachusetts, man who identified himself only as “A Peripatetick” (Greek for foot traveler or also a follower of Aristotle). His letter to the *Independent Chronicle* was published on June 1, and reprinted two days later in the *New Hampshire Gazette*. Taking issue with Viator’s emphasis on smoke and soot, Peripatetick stressed that “detached appearance” of the clouds in early afternoon was “alone sufficient to account for the darkness.” While a dense layer of clouds “spread uniformly over the heavens” would do little to obscure the sun, *several* such layers at different altitudes might well block a large portion of the light by reflecting the sun’s rays to the next higher layer. Peripatetick then bade skeptics conduct a little experiment: “If anyone chuses to make an experiment for himself to illustrate the matter, let him take a few panes of glass, and place them at a small distance from each other in such a manner that the sun may shine directly through them all; in this case he will find that the rays of light are much more obstructed than they will be in passing through a single glass, equal in thickness to all the others. The reason is obvious. The reflection of light is from the surfaces of transparent bodies, and not from their interior parts.” Peripatetick then took aim at the “various suppositions” that had been offered to explain the Dark Day. “Some have supposed that the earth was passing through the tail of a comet; to this it is sufficient answer that stars are visible through the tails of comets, it is therefore impossible that this cause should obscure the lustre of the sun.” Next he dispatched a “gentleman of learning” who suggested that the darkness was caused by “the nucleus of a comet intervned between the earth and the sun.” Peripatetick pointed out that this was impossible given that the tides that day “did not rise to an unusual height, as they would have done had a compact body of such magnitude as a comet been near the earth.” He anticipated at least one riposte: surely the brevity of the offending comet’s transit would explain the absence of a tidal bore?

“It would be vain,” he countered, “to assign the rapid motion of a comet as a reason why the tides should not rise any higher than usual; for though it was but a short time in conjunction with the sun, yet it’s [sic] motion being nearly rectilinear, it must have continued for several hours near the earth, and the universal law of gravity holds equally good whether bodies are in motion or at rest.” As preposterous as these theories may sound to modern ears, Peripatetick treated the comet theory more seriously than Viator’s ash thesis, which he roundly mocked: “I believe it is the first time that it ever came within the compass of a human imagination to suppose, that the haziness of the sky in

warm weather was occasioned by ashes being lodged in it, which needed the assistance of rain to bring it down.”⁴⁷

Another correspondent, appropriately named “Nubes,” also favored clouds over smoke. In the June 15 issue of the *Chronicle*, Nubes asserted that it was improbable that the atmosphere could have supported such immense “quantities of soot” at heights sufficient to obstruct the tops of the highest mountains. While he admitted that “A strong sulphurous smell was to my own sense very perceptible,” he attributed this to “smoak from the chimnies” rather than to far-off forest fires. Nubes then launched a lengthy homily on scientific method: “The success of all inquiries into the natural causes of any singular and unusual appearances must ever depend upon the accuracy with which we collect and compose the circumstances attending such phaenomena, with the operation of certain known laws of nature, examined under the eye of our own observation, and upon the judgment we form of the difference of effects which such circumstances must produce.” Nubes concluded by pointing out that “An almost infinite number of thin detached clouds were on that day seen to move rapidly with the wind, and other clouds of the same kind were evidently discernable above them.” These, he proposed, may have intercepted the light in its “passage from the sun” and, by refracting the sun’s rays much as occurs at sunset, caused the widely reported brassy color of the atmosphere. Clouds were thus the “instrumental cause” of the sudden darkness—not smoke, soot, or ashes, and certainly not a comet.⁴⁸

Peripatetick’s haughty dismissal of Viator’s smoke thesis drew a swift response from another correspondent—this one calling himself “A well wisher to *Science*.” The writer thanked both Viator and Peripatetick for probing the causes of the Dark Day, and as a “curious observer” was happy to make some speculations of his own (thus “employing his thoughts to the good purpose of serving his fellow creatures”). Before doing so he pointed out that science was not a zero-sum game, and that it was very likely *both* Viator and Peripatetick were correct in their assessments: “But may not both these accounts be true? And are they not perfectly consistent?” He then chastised Peripatetick, stressing that he had no right to “treat the relation [account] of Viator with so much contempt.” After all, “Such reflections, and such a manner of writing rather partake of the venom of *the dabbler in political disquisitions* than manifest the Philosopher who searches into the phenomena of the natural system.”

As to Viator’s assertion that the atmosphere was full of smoke and ash, the writer presented in full a letter received by him from “a friend in New Hampshire, eminent for his abilities and learning.” This eyewitness reported that the atmosphere had been very smoky indeed for several days preceding May 19. The sun had disappeared a full half-hour before dropping beneath the horizon, and in the low grounds “it was so dark the Wednesday before [May 17] that a man, who was planting a piece of corn, told me he could not see from one end of his row to the other.” Again, on Friday, the Dark Day itself, the sky was ominously tinted by “a yellowish vapour like the fume of a Malt house or coal kiln.” As the murk deepened the landscape faded into obscurity, and the air

filled with the smell of burning leaves. Small birds flew into the houses and barns; others were found scattered on the grounds outside, having been “probably suffocated” by the dense smoke.

Well-wisher’s friend from New Hampshire also reported having spoken to a man who had been riding “in the woods above Pennicook [Penacook, New Hampshire],” where he could scarcely breathe when crossing low ground on account of the thick smoke. Another told of “a dark coloured scum like soot” floating on the surface of a nearby river. Meanwhile, several neighbors “caught [sic] rain water (for there was a drizzling rain all the day at times) and it was so black they would not use it for washing.” In Berwick, Maine, on the New Hampshire border, another eyewitness reported that “there were the remains of a snow-drift, which lay before an house and had been so covered with wood chips, &c. that it had not dissolved. The day before the darkness, the man had raked off the chips and dirt [so] that the sun might melt it, so that it was as white as in winter, but by the descent of the vapour on Friday it [had] become all over dark and sooty.” Well-wisher ended by reproving those who would deny the possibility of a natural phenomena simply because it was unknown. “The *ignorant* and *vulgar*,” he claimed, “are very apt to object against every solution afforded by the phylosophic [sic] mind, by a constant repetition of *this hackneyed question—Why have we never seen the same thing before?* In answer to this, let me say—Have we ever known such a winter or spring as the last? Have there ever been such fertile causes of vapour? Perhaps the same smoke would not have been observable, had it not been for the vast exhalations from the great body of snow on the earth.”⁴⁹

‘OH! BACKSLIDING NEW-ENGLAND’

ALL THIS IRRELIGIOUS postulating did not go unanswered by the faithful. One broadside, entitled “A Warning Piece” and printed in Portsmouth, New Hampshire, shortly after the Dark Day, pointedly refuted some of the aforementioned theories:

Ye Sons of Light who saw the Night,
triumphing at High noon,
The nineteenth Day of th’ Month of May,
mark well the dismal Gloom.

No Orb above, in Course could move
thus to eclipse the Sun;
Then understand, it was the hand,
of the eternal One.

Who drew the pale, and sable veil,
which interpos’d the Light;
and overhead a Curtain spread,
converting Day to Night.

For every Town all burning down,
 and Forrest in our Land
 Would not create a Gloom so great;
 'twas GOD's immediate Hand.⁵⁰

In an even lengthier broadside titled "Some Remarks on the Great and Unusual Darkness," a writer identified only as "a Farmer, In the State of the Massachusetts-Bay" claimed that the sudden darkness "excited a few of the Learned to make some *very curious* Observations"—that the gloom was, for example, "occasioned by the Smoke of Burnt Leaves; which, I think, nothing can be more simple and absurd." After quoting from Amos 8:9, the farmer had this to say:

My FRIENDS and COUNTRYMEN,

The late wonderful and unusual darkness ... struck the Inhabitants of this State with horror and amazement, and at the same time filled them with alarming apprehensions: Yea the very brutes seemed greatly agitated. If so, could a thinking being set unmoved, while he beheld the Sun, (that splendid luminary, whose bright beams of light afford the utmost joy to the beholder) vail'd in darkness at noon-day? To view nature dressed in her mourning attire:—The earth enveloped in darkness:—The husbandmen returning from their fields in great surprise:—The midnight centinels crowing in answer to each other:—The dismal din of peeping frogs:—The night-birds singling forth their dreary notes:—The beasts grazing in wild consternation:—Every countenance seemed to gather blackness: Yea, a dismal gloom which filled the beholder with fear and astonishment, waiting with much anxiety for some great event. In fine, the darkness was such as we nor our fathers never saw its equal.

The author did not dispute that the "force of natural causes" had brought about the gloom, only that these forces were but the agents of a greater power. In other words, the darkness was no less than "the LORD's *doings, and it is marvelous in our eyes.*" The sun and moon and clouds were not autonomous objects, but "elements ... at his disposal ready to obey his sovereign command." Rather than bicker over the details of cause and effect, New Englanders should acknowledge that such a "great and memorable event" was in fact "the effect of Divine Power." Not to do so was "the greatest stupidity imaginable," for evidently "the divine Being has some great and noble end by this dispensation, which becomes us to search out and promote." For "These things *come not by chance, neither do they arise out of the dust,* but are sent for some valuable purpose, and if we rightly improve them, by the divine blessing, they may be for the general good and happiness of mankind." As for the "strange hypothesis of the learned that was put in the Public Papers"—that "the great and unusual darkness was occasioned by the smoke of burnt leaves, together with the common exhalations from the earth and water"—why had this not been observed before? After all, leaves had burned and "exhalations" risen from the earth from time immemorial.

But even if heaven-sent, what did the darkness mean? The Farmer could only speculate, feet planted firmly in the soil of his faith. “Though I do not pretend to predict what will follow this, for I am no Prophet ... yet we may rationally conclude that some singular judgment will follow”—one that may well prove “the very beginning of sorrow.” He then listed the “many evidences” of a coming end of days: “Our enemies have been suffered to ravage our towns; the fruits of the earth have been cut short by reason of drought, storms and mildews; many of us have heard the poor cry for bread, when it was out of our power to relieve them. How many of our young men have been slain in battle! And our virtuous virgins not given in marriage! We have beheld with compassion parents bewailing the loss of their children slain, or carried into captivity; wives lamenting the loss of their tender husbands. Ask the bereaved orphan, and he will tell you with a flood of tears, that his beloved father was slain in battle.” The farmer finished with a fiery flourish: “*Oh! Backsliding New-England, attend now to the things which belong to your peace before they are forever hid from your eyes.*”⁵¹ Prophet or not, the Farmer was blaming the Dark Day on the war and suggesting that it was time for peace.

Of course, as Mather and Edwards would have pointed out, even if the Dark Day was somehow the work of an angry God, this did not necessarily invalidate the claims of science. While Biblical literalists might prefer to imagine the sun reduced to a smoking disk by heavenly fiat, science and faith were not oil and water. Even the pious Farmer admitted as much. The natural phenomenon observed on May 19 may well have been divine in origin. This was precisely a point Well-wisher tried to make in observing that rather than “a portentous omen of the wrath of Heaven,” the whole gloomy episode of the Dark Day could more likely be “accounted for from natural causes, without derogating from the wisdom and justice of *him*, who made and disposed the various parts of the universe, and has given to it general, uniform and simple laws.” He called upon fellow naturalists—“those who indulge themselves in the abstruse and curious researches of natural causes”—to make the necessary inquiries and furnish answers. Others were more scornful of the devout, those who so easily fell prey to “*gross vapours of superstition.*” Indeed, claimed another correspondent to *The Independent Ledger*, superstition “hunts for votaries among those who refer every thing to the *immediate hand* of Heaven. And this opportunity has been improved by certain *Preachers to the Passions* to excite much groundless fear and uneasiness. To them I shall address the words of the prophet Jeremiah — *Learn not the way of the Heathen, neither be dismayed at the signs of Heaven; for the Heathen are dismayed at them.*”⁵²

LIGHT UPON DARKNESS

IF NOT THE “immediate hand of Heaven,” what exactly did bring about the sudden censure of light on May 19, 1780? Who among the enthusiasts of scientific method came closest to the true origins of the Dark Day? While some of the theories can be dismissed out of hand, others require closer scrutiny. One of the most popular notions regarding the Dark Day was that it had been

caused by a solar eclipse. This is hardly surprising given the prominence of eclipses in history and literature. Solar eclipses were predicted by the Babylonians, and in China, India, and ancient Greece, and nearly all premodern peoples considered the phenomenon a dreadful omen.⁵³ As the Duke of Gloucester ruminates in *King Lear*, “These late eclipses ... portend no good to us.” Knowledge of a coming eclipse was also used in devious ways. Christopher Columbus is said to have flummoxed the natives at Saint Ann’s Bay in Jamaica in 1504, using a copy of Regiomontanus’s *Calendarium* to “predict” a total lunar eclipse. In an account popularized by the fabulist Washington Irving, the Genoan ordered the moon be blotted from the sky and its remnant rays turned the color of blood. In a similar narrative, the protagonist of H. Rider Haggard’s *King Solomon’s Mines* (1886) caused the moon “to be eaten up” by an eclipse, thus making it possible to escape his terror-struck African captors. More famous still is Mark Twain’s *A Connecticut Yankee in King Arthur’s Court* (1889), in which hero Hank Morgan threatened to “smother the whole world in the dead blackness of midnight” if his captors did not set him free.⁵⁴ Still, however dramatic, most eclipses last no more than a few minutes—hardly enough to plunge a region into darkness for most of a day. This alone eliminates the possibility that the Dark Day was caused by a solar eclipse. Moreover, even in the eighteenth century, the science of eclipses was well known, and there was no eclipse expected that day anywhere in North America.

What could have caused a more lasting darkness? There are several possibilities, and here the amateur scientists came closer to a possible cause. Since the censure of light on May 19 was not the result of an astronomical event, it could only have been caused by some kind of airborne light-blocking matter in the atmosphere over New England. And this, in turn, could have been the result of a number of factors, from the mundane to the extraordinary. The most spectacular—and most unlikely—of these would have involved a meteor, asteroid or cometary debris crashing to earth. Even a relatively small space rock penetrating the atmosphere could cause catastrophic damage to the earth’s surface, which would in turn send a tremendous volume of particulate matter into the atmosphere. Such debris would act like a great light shield, reflecting back the sun’s rays into space and plunging the earth into darkness. Just such a collision occurred in June 1908, when a space rock no more than 164 feet in diameter struck the atmosphere over Siberia. Known as the Tunguska event, the resulting airburst flattened hundreds of square miles of conifer forest and was recorded on seismic instruments six hundred miles away. Dust from the explosion reduced atmospheric transparency in North America, and formed “noctiluscent clouds” over vast areas of the globe. The glow of the high-altitude Tunguska dust caused eerie “white nights” across Europe that summer—the very antithesis of a dark day. In London it was said to be bright enough at midnight to read a newspaper.⁵⁵

Light-blocking atmospheric debris can also come from deep within earth’s interior, a possibility to which Samuel Sterns drew attention when he implicated “fumes of burning Vulcanoes” and “subterraneous veins of liquid fires.”

Throughout the planet's history, volcanic eruptions have spewed light-blocking ejecta many miles into the atmosphere. A mega-eruption 73,500 years ago blasted a sixty-mile wide crater near Toba in Sumatra, sending aloft millions of tons of sulphuric acid and ash. Scientists have estimated that 90 percent of sunlight was blocked from the surface of the earth.⁵⁶ An event of Toba's scale has yet to be repeated, but dozens of smaller volcano-related sun darkenings are recorded in history. Plutarch tells of an "obscuration of the sun's rays" caused by an eruption of Mt. Etna in Sicily in 44 BC. This gloom lasted an entire year, during which the sun "rose pale and without radiance, while the heat that came down from it was slight and ineffectual." With the sun thus enfeebled the air became "dark and heavy," and unripe fruit "withered away and shriveled up on account of the coldness of the atmosphere." Julius Ceasar was assassinated only two months after the Etna eruption; his funeral games thus took place under threatening skies that were believed to be an omen. The darkness in 44 BC was not limited to the Mediterranean world; evidence of a "nuclear winter" that year has been found in Greenland ice-core samples, growth rings of bristle cone pines in California and in meteorological records in Han dynasty China, where chronicles report that "The sun was bluish white and cast no shadows."⁵⁷

In 1783, three years after the Dark Day, Benjamin Franklin wrote about a "constant fog" that hovered over Paris and its countryside. This was no ordinary fog but the effect of airborne particulates cast forth by the Laki fissure eruption in Iceland.⁵⁸ Laki was also the likely cause of what English naturalist Gilbert White described that year as "a most extraordinary appearance unlike anything known within the memory of man ... The sun at noon looked as blank as a clouded moon, and shed a rust-colored ferruginous light on the ground and floors of rooms; but was particularly lurid and blood-colored at rising and setting."⁵⁹ In 1815 came the great Tambora eruption in Indonesia, to date the largest volcanic blast in history (rating a "seven" on the Newhall-Self volcanic explosivity index). The eruption, heard more than nine hundred miles away (roughly the distance from New York to Nashville) sent up a plume of ash and gas that quickly enveloped the globe, darkening skies and diminishing global temperatures so dramatically that 1816 was known as the "year without a summer." Tambora's ejecta also caused spectacular sunsets across northern Europe that were captured in many of Turner's paintings, while the frigid gloom may even have inspired Mary Shelley's *Frankenstein*.⁶⁰ A generation later came Krakatoa, on August 23, 1883, which tore apart Indonesia's Sunda Strait and dropped ash on ships more than three thousand miles away.⁶¹ Research has shown that the red sky in Edvard Munch's iconic painting "The Scream" was no figment of the artist's imagination, but something he personally witnessed between November 1883 and February 1884. Red twilights resulting from the Krakatoa blast were reported throughout Europe during this period, and in Christiania (Oslo, Norway, Munch's home town).⁶²

Was New England's Dark Day a result of sun-blocking volcanic ejecta or debris sent aloft by a meteor strike? It is certainly possible. The Dark Day occurred during a period known as the Little Ice Age, which extended from about

1450 to 1850. During these centuries, winters in Europe and North America were bitterly cold; the Thames froze over frequently, as did rivers and canals in the Low Countries, and glaciers advanced measurably in the Swiss Alps, Alaska, and elsewhere. The long winters of the Little Ice Age are perhaps most evocatively portrayed in Pieter Brueghel's snowbound scenes of Flemish village life. The winter of 1780 was an especially bitter one, still among the coldest in American history. Much of Chesapeake Bay and the Potomac River froze solid, as did the Hudson River and New York harbor. In New England heavy snows piled unthawed for months on end, and the average temperature in Hartford, Connecticut, in January was a mere four degrees Fahrenheit.⁶³ The fearsome weather dominates dairies and journals of the time. Experience Richardson of Sudbury, a deeply pious widow, noted on January 3, 1780, that "Now we have a terrible hard winter, one snow upon another and it is terrible Banked and it is very cold." Four days later the landscape was snuffed out again; "We have as terrible storme of snow as ever I knew ... there is one Great snow upon another and it keeps Coming still."⁶⁴ Samuel Savage also recorded "a most severe [storm] of snow" on 3 January, and two days later reported that "The distress for fuel is great—many persons are obliged to cut down their Apple Trees." The following week Savage ventured out to probe the snow, and found it to be an extraordinary "7 feet by measure" between his house and barn. The cold, too, was relentless; Savage doubted whether "the oldest man in America" could recall "a spell of extreme cold weather as for six weeks past."⁶⁵

The causes of the Little Ice Age are not fully known, but likely involve several factors. First, the period from 1645-1715 was one of unusually low solar activity, as evidenced by the presence of sunspots. Sunspots are solar magnetic storms, and their periodic diminution or absence correlates with a reduction in the total energy output of the sun. The paucity of sunspots in the fifteenth and sixteenth centuries is known as the Maunder Minimum, which was later linked to climatic conditions by measuring tree growth rings. More relevant to the present inquiry is the second factor—an extraordinary amount of volcanic activity. According to Brian Fagan there was "an average of five major eruptions per century" for most of the Little Ice Age, and many of these were equivalent in force to the 1883 Krakatoa eruption.⁶⁶ In the two years prior to the Dark Day there were several major eruptions in the Japanese Islands: Raikoke in the Kurile Islands in 1778, followed by Sakurajima on Kyushu in November the next year. Both were "large-volume explosive eruptions," measuring a four on the volcanic explosivity index. In June of 1779 Avachinsky erupted on the Kamchatka peninsula, nearly burying Captain James Cook's *Resolution* and *Discovery* with falling ash as they rode anchor at Avacha Bay. Two months later, in August 1779, Italy's famous Vesuvius erupted. Things hardly settled down in 1780, which brought eruptions in the South Pacific, Ecuador, Japan, the Alaskan peninsula, Java, Chile, and the Peruvian Andes, where the stratovolcano Tutupaca, one of the highest in the world, blew its top. In Italy Stromboli was active, along with Vulcano, one of the Aeolian Islands (and namesake of all volcanoes). Mount Etna, another storied Italian peak, erupted in April and again in May, one day before New England's Dark Day.⁶⁷

All this volcanic activity could well explain the extraordinary cold of the winter of 1780, but it is unlikely that it would have led to so brief and intense a period of darkness over such a limited area of the earth's surface. Even the eruption of Etna on May 18 is unlikely to have resulted in darkened skies in such a specific and remote place. While volcanic activity may well have caused a general obfuscation of the sun's energy that year, more proximate causal factors must be found to explain the Dark Day. Here, too, it turns out that the amateur scientists were close to the mark. Several of these correspondents noted the presence of soot and ash fallout during the Dark Day and correctly surmised that extensive forest fires played some role in blackening the sun. They also hypothesized that clouds and "heterogeneous vapours" were to blame, perhaps "generated in consequence of the great body of snow which covered the earth so long the winter past."⁶⁸ It was Viator who drew the two factors together most closely, suggesting that "The vast body of smoke from the woods which had been burning for many days, mixing with the common exhalations from the earth and water, and condensed by the action of winds from opposite points, may perhaps be sufficient causes to produce the surprising darkness."⁶⁹

Indeed, the Dark Day was most likely brought about by a meteorological event known as an "advection inversion" combined with a massive influx of smoke from forest fires that were raging across northern New England at the time. An advection inversion is a temperature inversion that occurs when a warm air mass passes over a cool surface—precisely what happened across New England in the days leading up to May 19, 1780. The earth's surface had been super-cooled for months and was still frozen and snow-covered in places by the second week of May. But for two weeks prior to the Dark Day the weather had been unseasonably mild. Samuel Savage observed day after day of "fair" and "pleasant" weather, while the Reverend Ebenezer Gay of Hingham, Massachusetts, marked "fair & warm" in his diary for the preceding six days.⁷⁰ By the seventeenth the atmosphere was becoming thick and vaporous with "exhalations," as advection fog formed when the warm air was cooled to its dew point temperature by ground contact.

It is also clear from the historical record that extensive fires were burning nearly out of control in New Hampshire, Vermont, Maine, and parts of southern Canada and eastern New York in the weeks prior to May 19. An observer writing in the *Independent Chronicle* in June, 1780 related reports that fires had been "burning for some time with amazing fury" in northern New England, and raged "to such a degree in several townships" that people "were in danger of being suffocated." In the area of Cohass Meadows, along the Connecticut River in New Hampshire, the fires "raged to such a degree that great damage has been done to the timber: some houses, mills, bridges, and a vast deal of fence have been consumed." Indeed, "the woods on all quarters seemed to be on fire."⁷¹ Other sources reported vast forest fires "in northern New Hampshire, and in Canada near the New Hampshire line," as well as "along Lake Champlain, extending down to the vicinity of Ticonderoga." Like the native Americans before them, the settlers were "burning over their forests preparatory to cultivation."⁷²

Such field reports were confirmed by Harvard mathematician Samuel Williams. In his 1785 article on the Dark Day in the *Memoirs of the American Academy of Arts and Sciences*, Williams reminded readers that “in this part of America, it is customary to make large fires in the woods, for the purpose of clearing the lands in the new settlements.” He also pointed out that “This was the case this spring, in a much greater degree than is common.” In the county of York, in the western parts of the state of New-Hampshire, and in Vermont, uncommonly large and extensive fires had been kept up. The people in the new towns had been employed in clearing up their lands in this way, for two or three weeks before. Some large and extensive fires had raged in the woods for several days before they could be extinguished.⁷³

The smoke from these conflagrations would have risen by convection to a considerable altitude before descending on top of the inversion. This would have resulted in a condition described by C. F. Talman in a 1915 *Scientific American* essay entitled “Dark Days and Forest Fires.” In it Talman argued that smoke from forest fires can often be lifted by convection “above the level of the lower clouds, which thus mask the cause of the phenomenon.” In other words, a huge amount of smoke can drift over a region socked in by an inversion and there will be little evidence at ground level indicating its presence. “Hence,” wrote Talman, “the startling effect of darkness in the daytime, often with little or no turbidity of the air near the earth’s surface”—precisely the state of things on the Dark Day as reported by several correspondents. An atmosphere charged with smoke at ground level—even a foggy atmosphere—would obscure the landscape, to be sure, but it would “hardly be placed in the same class with the awe-inspiring dark days of the chroniclers.”⁷⁴ Only with the rain showers that came later on the strange day of May 19, 1780 did evidence fall to earth—as cinders, soot, and ash—of the true causes of the noonday night.

CONCLUSION

MAY 19, 1780 WAS, in the end, but a single day in the life of colonial America. But the darkened skies it brought to New England both shook the old social order and helped propel society toward a new day of Enlightenment reason. The reverberations of that shock would be felt long after the dim sun of the Dark Day set in the western sky. For generations after the day itself, the Dark Day would be evoked in folklore and poems, on the pulpit and—more than anywhere else—in religious tracts. As late as 1906, the Reverend E. P. Woodward published a lengthy treatise that left no stone unturned in its quest for the true “prophetic significance” of the event.⁷⁵ It is beyond the scope of this essay to delve into the theological minutiae of Woodward’s argument, but the simple fact that the good minister filled nearly three hundred pages in his exhaustive study is testament to the enduring power of the Dark Day in the Yankee imagination.

But perhaps the greatest legacy of the Dark Day is that it contributed to the formation of a culture of scientific inquiry and intellectual creativity that would one day flourish in New England, and transform Boston into the new intellectual

center of America. In the weeks and months following the Dark Day a spirited debate over the causes of the darkness erupted in New England's principal newspapers, demonstrating that, in an age before such learned institutions as the American Academy of Arts and Sciences, the local press played a key role in the development of a culture of scientific inquiry in America. Although some of the speculations of the amateur scientists and "natural philosophers" were extravagant or improbable, others came close to the likely truth about the causes of the event. In their efforts to posit natural causes for what might have seemed to be a supernatural event, we can discern an early phase in the secularization of the New England mind.

Thomas J. Campanella teaches and writes about urban design and the history of the built environment. He is assistant professor in the Department of City and Regional Planning at UNC Chapel Hill. He is the author of *Republic of Shade: New England and the American Elm* (Yale University Press, 2003).

NOTES

1. "A Warning Piece. A Poetical thought or paraphrase, occasioned by that stupendous darkness ... which obscured the light of the sun on the 19th day of May in the present year 1780" (Portsmouth: Printed & Sold by Daniel Fowle, 1780).
2. Porcupine is the highest peak on this easternmost place on the Maine coast, and thus the first part of the continental United States to see the light of day, along with Cadillac Mountain in Bar Harbor.
3. Samuel Phillips Savage Diaries, 1770-1795, Massachusetts Historical Society (hereafter MHS).
4. Ibid.
5. Samuel Williams, "An Account of a very uncommon Darkness in the States of New-England, May 19, 1780," *Memoirs of the American Academy of Arts and Sciences*, 1783, vol. 1 (Boston: Adams and Nourse, 1785), 235.
6. *The Boston Gazette and Country Journal*, May 29, 1780, 4.
7. *Massachusetts Spy*, May 25, 1780.
8. Samuel Phillips Savage Diaries, 1770-1795, MHS.
9. J. Robert Bromley, *Abraham Davenport, 1715 to 1789: A Study of the Man* (Stamford, CT: Stamford Historical Society, 1976), 23-24.
10. Timothy Dwight, in *Connecticut Historical Collections*, J. W. Barber, ed. (New Haven, CT: Durrice and Peck, 1836), 403. See also David E. Philips, *Legendary Connecticut: Traditional Tales from the Nutmeg State* (Willimantic, CT: Curbstone Press, 1992).
11. William Pynchon Diary, May 19, 1780, MHS.
12. Experience Wight Richardson Diary, 1728-1782, MHS.
13. Samuel Tenney, Exeter, NH, December 1785, letter in *Collections of the Massachusetts Historical Society*, vol. 1, 1792 (Boston: Belknap and Hall, 1792), 97, 98.
14. Samuel Phillips Savage Diaries, 1770-1795, MHS.
15. *Massachusetts Spy*, May 25, 1780.
16. *The Interpreter's Dictionary of the Bible* (Nashville, TN: Abingdon, 1976), 131; David Noel Freedman, ed., *Eerdmans Dictionary of the Bible* (Grand Rapids, MI: W. B. Eerdmans, 2000), 317.
17. Dwight, *Connecticut Historical Collections*, 403.
18. David Hall Diary, vol. 2, 1769-1789, MHS.

19. William Pynchon Diary, May 19, 1780, MHS.
20. John Greenleaf Whittier, "Abraham Davenport," *The Complete Poetical Works of John Greenleaf Whittier* (Boston: Houghton Mifflin, 1894), 260.
21. Samuel Gatchel, "The Signs of the Times: Or Some Expositions and Remarks On sundry Texts of Scripture, relative to the remarkable Phenomenon, or Dark-Day...." (Danvers, MA: Printed and Sold by E. Russell, at his Printing-Office near the Bell-Tavern, 1781). See, also, John Kennedy, "A Scriptural Account of the uncommon Darkness that happened on Friday May 19th, 1780," (Boston: Printed and sold at the Bible and Heart in Cornhill, by Thomas and John Fleet, 1780).
22. "On the Dark Day May 19th 1780," n.d., MHS.
23. James Thacher, *A Military Journal, during the American Revolutionary War, from 1775 to 1783* (Boston: Richardson & Lord, 1823).
24. George Washington to Continental Congress, April 2, 1780. George Washington Papers at the Library of Congress, 1741-1799 (Series 3A, Varick Transcripts).
25. See John Buchanan, "The Road to Guilford Courthouse"; also "Battle of Fort Sullivan," at <http://www.patriotresource.com/battles/sullivan.html>.
26. Jonathan Sewall, Bristol, England, to Judge Samuel Curwen, London (August 24, 1780), reprinted in George A. Ward, *The Journal and Letters of Samuel Curwen, an American in England, from 1775 to 1783* (Boston: Little, Brown and Company, 1864), 288-316.
27. Kenneth Silverman, *The Life and Times of Cotton Mather* (New York: Harper & Row, 1984), 93-94.
28. *Ibid.*, 250.
29. Jonathan Edwards, Windsor, CT, to Paul Dudley, Boston (Oct. 31, 1723). Dudley was a Fellow of the Royal Society of London, and it is likely that Edwards had hoped his spider essay would be published in its *Transactions*. See <http://www.jonathanedwards.com/science.htm>.
30. Henry R. Viets, "Some Features of the History of Medicine in Massachusetts During the Colonial Period. 1660-1770," in *Cotton Mather and American Science and Medicine*, ed. I. Bernard Cohen, vol. 1 (New York: Arno Press, 1980), 397-404.
31. The only way to reach a learned audience was to correspond with the Royal Society and publish in its *Philosophical Transactions*. Mather began writing to the Royal Society in 1712, and over the next ten years reported about everything from passenger pigeons to abnormal births and "Monstrous Impregnations." See G. L. Kittredge, "Cotton Mather's Scientific Communications to the Royal Society," (pp. 8-9) and "Cotton Mather's Election into the Royal Society," (pp. 81-85), in *Cotton Mather*, ed. Cohen.
32. David McCullough, *John Adams* (New York: Touchstone, 2001), 223.
33. David L. Ferro, "Selling Science in the Colonial American Newspaper: How the Middle Colonial American General Periodical Represented Nature, Philosophy, Medicine, and Technology, 1728-1765" (PhD dissertation, Virginia Polytechnic Institute and State University, 2001).
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