



Christopher M. Rios

Article

1941–2016: The American Scientific Affiliation at 75

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The year 2016 marks the American Scientific Affiliation's seventy-fifth anniversary. Such milestones provide opportunities to reflect on one's heritage, assess the current state of affairs, and look to what lies ahead. This essay offers a reflection, a brief reminder of the issues facing the organization at the beginning, at the twenty-fifth, and at the fiftieth anniversaries.

The ASA at the Beginning

The American Scientific Affiliation (ASA) was founded in Chicago in September 1941 when five evangelical scientists met to discuss the formation of a “society for the correlation of science and the Bible.”¹ The meeting came at the invitation of William H. Houghton (1887–1947), president of Moody Bible Institute, and was the result of a friendship he had developed with F. Alton Everest (1909–2005) and Irwin A. Moon (1907–1986).

Though Houghton issued the call, it was Moon, a former MBI student and scientifically minded pastor and preacher gaining attention for his spectacular “Sermons from Science,” who proposed the formation of an association of evangelical scientists. His interactions with students through his national preaching tours made him keenly aware of how science both captured the imagination and challenged the faith of Christian youth. By 1940, he, Houghton, and Everest, a Baptist electrical engineer at Oregon State College who would become the leader of the young ASA, determined that a group of Bible-believing scientists could do much to buttress the faith of Christian students and help ministers address the growing scientific questions they faced.

The invitations were sent in June. Five men answered the call: Everest, biologist John P. Van Haitisma (1884–1965), mathematician Peter W. Stoner (1888–1980), chemist Russell D. Sturgis (1897–1969), and chemist Irving A. Cowperthwaite (1904–1999). This group would never meet again, but the week they spent together in the early fall of 1941 laid the groundwork for a renewed effort to reconcile science and Christian faith.²

The founding of the ASA marks a reawakening of the evangelical engagement with science in the United States, an engagement that was at its nadir in 1940. For the majority of their history, evangelicals could claim a robust and diverse relationship with science. Since the time of John Wesley (1703–1791) and George Whitefield (1714–1770), they variously promoted, dismissed, advanced, challenged, advocated for, and benefited from developments in science and the scientific mindset. Indeed, for most of this period, science was just as often considered a friend of Christianity as it was a foe.

Yet, in the late nineteenth and early twentieth centuries, this tradition was overshadowed by a rejection of scientific orthodoxy that seemed to define evangelical views. Darwin's theory of evolution is commonly seen as the catalyst for this change, but it was only one cause of increased tensions. Higher criticism, with its challenge of traditional views of

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scripture, seemed equally threatening, if not more so. Similarly, the twentieth-century development of the social sciences, with their examination and reassessment of the sources of religious faith and experience, brought challenges that for some dwarfed the threat of Darwinism. The result was a feeling that modern science had become defined by theories that undermined biblical faith; by the 1920s, an antiscience, especially antievolutionary, movement was sweeping through many parts of the nation.

Science, historians have shown, was not the only or even the most crucial cause of this reaction. The antievolution crusades of the 1920s were as much a response to social changes and debates over national identity as they were about evolution.³ Nevertheless, religious rhetoric that pitted science against Christianity or described Darwinism as the first step on the path to atheism prompted a popular resistance to the scientific mainstream that was unprecedented within the evangelical faith.

The founders of the ASA shared many of the concerns held by fundamentalists of their generation, but the organization they created lacked the narrow commitments that defined other conservative groups. They agreed that modern attitudes had disrupted the harmony that had existed between science and the Bible. Yet they also recognized that the churches had played no small part in creating the discord. In their view, widespread scientific ignorance among seminary faculty, pastors, and Sunday school teachers led to preaching and teaching that both offended the educated and weakened the faith of those pursuing a college education. Harmony was possible, Everest and the others were convinced, but it had to be established with the day's best science. The founding of the ASA was thus a reawakening of an attitude that had lain dormant for nearly a generation.⁴

1966: The ASA at 25

The ASA had much to celebrate when it commemorated its twenty-fifth anniversary at North Park College in Chicago in the summer of 1966. The United States's entry into World War II, which came just months after Everest and the others met in 1941, interrupted early plans. But as the war drew to a close, ASA activities gained momentum. Annual meetings started in 1946. The *Journal of the American Scientific Affiliation (JASA)* began in 1949. Two books

were published by 1950. And membership grew steadily. By the mid 1960s, the ASA had over a thousand members and a dozen regional groups in locations throughout the country from New York and New England to San Francisco and Southern California. These developments were signs of considerable progress.

The twenty-fifth anniversary also came at a time when tensions were high within the organization, and they were easy to detect. Organizers of that year's annual meeting arranged an eighteen-member panel on the "Future of the ASA" that included some of the group's most prominent figures. It also included those who held strongly opposing views. If the hopes were that such diversity would reflect well on the organization, the results seem to have been otherwise. An ASA newsletter later reported that the impression left on those in attendance was "considerably more negative" than expected.⁵

The tension evident at North Park College was the result of changes that had occurred during the organization's first twenty-five years, especially the gradual acceptance of evolution by many of the group's leaders. ASA founders shared many of the reservations about evolution common within the evangelical churches in the interwar years. Yet they nevertheless committed themselves to an openness about these and other matters that distinguished the ASA from other organizations. This commitment, combined with the founders' vision of elevating scientific thinking within the churches, prompted an engagement with ideas that many questioned, and it set the stage for developments that few would have expected.

Demanding immediate attention were questions about the age of the earth. Since the 1920s, flood geology—the idea that "true science" supported the biblical depiction of Earth's age as only a few thousand years and that the evidence of its antiquity was explainable by the flood depicted in the Book of Genesis—had steadily grown in influence within the evangelical churches. Early ASA leaders rejected these views and went to great lengths both to affirm the scientific understanding of the earth's antiquity and to show how it could be reconciled with the Bible. These early developments signaled not only the ASA's commitment to professional science, but also its unwillingness to allow literalistic readings of scripture to determine scientific or

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theological views. As the ASA took its stand against flood geology, leaders began to warm to the idea that evolution offered a valid understanding of God's creative work. By the time Everest commemorated the organization's first decade, he had already come to believe that "the Bible does not give unequivocal grounds for being anti-evolutionary."⁶ By the early 1960s, prominent members not only came to see evolution as a valid understanding of God's creative work, but also advocated for its acceptance among evangelicals.

Despite these efforts, and partly in response to them, the early 1960s witnessed a reawakening of the anti-evolutionary mood that flourished in the interwar period. In 1961, John C. Whitcomb (b. 1924) and Henry M. Morris (1918–2006) published *The Genesis Flood*, a work that helped to define and promote young-earth creationism throughout the remainder of the century. In 1963, a group of antievolutionists broke away from the ASA to form the Creation Research Society (CRS), an alternative organization committed to young-earth creationism and exclusively concerned with the question of origins. Seven of the ten CRS founders were ASA members, a number that suggests the level of frustration felt by some within the ASA concerning the group's direction. Still, most members showed little sympathy for the attempt to oppose mainstream science simply because of its apparent disagreement with scripture, in this way maintaining the attitude of the ASA founders.

Three factors gave rise to the ASA's changing views about evolution. First was the group's commitment to authentic science and openness to controversial views, the latter demonstrated not only by the panel convened in 1966 but also in the ASA's attempted collaboration with the CRS throughout the following years. Second was the personal example offered by those who demonstrated the ability to reconcile evolutionary science with biblical faith. Figures such as theologian Bernard Ramm (1916–1992), biologist Russell Mixter (1906–2007), geneticist V. Elving Anderson (1921–2014), and chemist Walter R. Hearn (b. 1926) are just a few of the ASA members whose commitment to science and scripture inspired a generation. Third, and perhaps most important, were the ASA's developing views of scripture.

Scientific discoveries have long prompted debates about the Bible's accuracy and authority. Today,

challenges brought by natural science receive the majority of popular attention, but higher criticism and other forms of literary analysis have often been a more threatening source of contention. For instance, the Victoria Institute, a British organization founded in 1865 to defend Christianity against Darwinism, was initially more concerned with the higher critical views expressed in *Essays and Reviews* (1860) than with *Origin of Species* (1859). It was clear that the scientific examination of scripture could be just as troubling as the scientific study of nature, if not more so. Still, since higher criticism was discussed mainly in academic circles and thus relatively easy to ignore, most Christians were only vaguely aware of the challenges it posed or were quickly dismissive of it as scholarly mumbo jumbo that interfered with the Bible's true message. Many Americans throughout the twentieth century would have affirmed former US President Grover Cleveland's famous line about wanting the Bible without "notes or criticisms or explanations about authorship or origin, or even cross-references. I do not need or understand them, and they confuse me."⁷

Evolution, on the other hand, was not so easy to ignore. The development of public education in the early twentieth century and the emphasis put on high school science in the 1960s confronted Americans with views that many assumed contradicted the biblical message. For most, coming to terms with these challenges required either questioning the science or reassessing one's understanding of the Bible. Thus, questions about biblical interpretation came to play a major role in the development of an organization committed to both science and scripture.

The ASA's evolving views about scripture were evident in its periodic revision of the group's statement of faith. The original creed affirmed belief in "the whole Bible as originally given, to be the inspired work of God, the only unerring guide of faith and conduct."⁸ A member had to affirm that "since God is the Author of this Book, as well as the Creator and Sustainer of the physical world about us, I cannot conceive of discrepancies between statements in the Bible and the real facts of science."⁹ By 1950, the creed was shortened to belief in "the unique inspiration, integrity, and authority of the Bible as the word of God."¹⁰ By the end of the decade, the statement was revised to the belief that "the Holy Scriptures are the inspired Word of God, the only unerring

guide of faith and conduct.”¹¹ These changes were not intended to reflect a weakened commitment to scripture but a clarification of what that commitment meant. By the mid-1960s, such questions were among the most contentious issues facing the ASA. Members wrestled with what it meant to affirm the authority and inspiration of scripture without insisting on the historical and scientific interpretation demanded by the CRS or other fundamentalist Christians.

These issues were in no way settled by 1966. Nevertheless, the group had set a course that, while upsetting some, for many others made the founders’ goals possible. As a sign of things to come, perhaps, Everest’s report on the twenty-fifth anniversary meeting gave a nod to the “hermeneutic trouble[s]” plaguing the organization. The ASA had found a way to establish peace between science and the Bible, but it still proved elusive among the members.

1991: The ASA at 50

The ASA’s fiftieth anniversary, celebrated at Wheaton College, Illinois, came in the midst of yet another spike in national debates about science and religion. The previous decade had heard widespread calls for “equal time” laws, which sought to mitigate the influence of evolutionary science in the public schools by requiring teachers to give equal attention to “competing theories” of natural history, namely, scientific creationism. Such theories hardly qualified as science. Nevertheless, by the early 1980s, three-quarters of the nation favored equal time for both evolution and the “biblical theory of creation” in science classrooms.

When states began to require equal time in their schools, a backlash from advocacy groups, anti-religious public intellectuals, and the scientific community helped thrust the debates into the cultural spotlight. Legal challenges by the ACLU resulted in a 7–2 decision by the Supreme Court in 1987 that ruled such laws unconstitutional because they were intended “clearly to advance [a] religious viewpoint.”¹²

Meanwhile, Richard Dawkins’s 1986 publication of *The Blind Watchmaker* began to popularize antireligious ideas in the name of science in a way unmatched since the logical positivists nearly a cen-

tury earlier. As is often the case, Dawkins’s efforts motivated his adversaries as much as his supporters, giving impetus to the rise of both “new atheism” and the intelligent design (ID) movement in the following decades. With such apparent antagonism between science and Christianity dominating the public arena, it is understandable that J. W. Haas Jr., commenting on the ASA’s fiftieth anniversary, described the ASA’s goal of encouraging a positive attitude toward science as even “more formidable” than it was in 1941.¹³ If the loudest voices had it right, Christians stood resolutely against evolution, science disproved the claims of the faithful, and those seeking harmony were guilty of unjust compromise.

The ASA, of course, took great interest in these matters, especially in the scientific community’s response to the popularity of scientific creationism. In 1984, the National Academy of Sciences (NAS) published *Science and Creationism: A View from the National Academy of Sciences*.¹⁴ A slim booklet of less than thirty pages, *Science and Creationism* sought to confront the claims made in favor of equal time laws by distinguishing between scientific and creationist ideas. Science was based on measurement, discovery, testing, validation, and evidence. Creationism met none of those criteria and thus deserved no place in science classrooms. Reintroducing creationism into the public schools, the booklet stated, “would be akin to requiring the teaching of Ptolemaic astronomy or pre-Columbian geography ... Creationism, with its accounts of the origin of life by supernatural means, is not science,” and teaching it threatens the need for a “scientifically literate citizenry.”¹⁵ Still, the NAS booklet attempted to separate its criticism of creationism from a broader criticism of religious faith: “It is false,” the authors wrote, “to think that the theory of evolution represents an irreconcilable conflict between religion and science.”¹⁶

Two years later the ASA entered the conversation by releasing *Teaching Science in a Climate of Controversy: A View from the American Scientific Affiliation*.¹⁷ Produced largely as a response to the NAS publication, *Teaching Science* intended neither to attack nor defend creationism, but rather to show that “a broad middle ground” existed between those who reject evolution because of their faith and those who reject Christianity because of evolution—space that allowed considerable opportunity for teaching about science.¹⁸ The authors also aimed to help

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science teachers do more than simply dispense scientific facts; they could rather accomplish the “more significant task” of showing how scientists look at the world.¹⁹ Teaching in this way, the authors hoped, would foster “not blind faith in science but understanding and a reasonable amount of public trust.”²⁰

Teaching Science epitomized the ASA’s commitment to openness in controversial areas, especially as it related to the theory of evolution. Despite the group’s defense of an evolutionary view of creation, it refused to make it an official position of the ASA. This stance was born of a deeply engrained commitment to neutrality in areas of disagreement. It also reflected the popularity of antievolutionism within American churches. The text thus walked a fine line. It affirmed the antiquity of the earth and evolution overall, but took issue with the NAS’s conclusions about the certainty of evolutionary science, especially its unqualified treatment of human evolution. It also emphasized a lack of fossil evidence for the evolution of life prior to the Cambrian explosion and called for more transparency on the part of public educators about the gaps in the geological record. The authors highlighted similar questions that remained about human evolution and criticized the NAS for its claim that “the ‘missing links’ that troubled Darwin and his followers are no longer missing.”²¹ In this regard, wrote the biochemist John E. Halver, author of the work’s preface and a member of both the NAS and ASA, the NAS’s claims “ignored certain unresolved problems that should be an integral part of scientific education.”²²

The willingness to equivocate on the certainty of evolutionary science brought criticism from the scientific establishment and perpetuated confusion about the ASA’s identity. In 1987, science journalist Constance Holden named the ASA booklet as evidence of the “increased sophistication” of antiscience groups in the public square.²³ An even harsher assessment came from William V. Mayer, professor of biology at the University of Colorado, Boulder, and prominent member of the National Association of Biology Teachers. Mayer described the ASA as a group that attempted to provide “a veneer of scientific respectability for hyperorthodox Christian fundamentalism masquerading as science.”²⁴ He described *Teaching Science* as “insidious” not only because of its “clandestine agenda,” but also because “it’s a very good public relations piece.”²⁵ Such descriptions were

hardly accurate, but they reflected the misunderstanding caused by the group’s position.

A fairer assessment came from Francisco J. Ayala, an esteemed evolutionary biologist and geneticist and one of the authors of the NAS booklet. Ayala’s own faith and efforts to reconcile Christianity and science made him sympathetic to the ASA. Yet he saw the group’s unwillingness to fully support evolutionary science as a “radical inconsistency” with its goals and a “missed opportunity” to make real strides in ameliorating the tension. Ayala was not misinformed about the ASA overall, and he certainly did not confuse it with organizations like the CRS. His criticism instead focused on the booklet’s equivocation over evolution and its emphasis on the unanswered questions. By doing so, Ayala argued, *Teaching Science* “failed the opportunity of explaining ... how a religious view of the world is compatible with scientific knowledge.”²⁶ Despite such criticism, ASA leaders have remembered *Teaching Science* as an “outstanding example of the ASA’s concern with students and the process of education,” and pointed to it as an example of the ASA’s desire to help bridge the scientific and Christian communities.²⁷

Another example of this desire was the wide variety of topics ASA members engaged throughout the decades. By the mid-1950s, the journal regularly published articles on issues ranging from biology to archeology to sociology. In the group’s second quarter century the array of subjects became vast. In 1991 alone, *Perspectives on Science and Christian Faith (PSCF)* published articles on physics, medical ethics, genetics, economics, psychology and neuroscience, and the coming of the information age. Just one of the topics that earned repeated attention was the environmental crisis. Consideration of the global population explosion came as early as 1961. By the 1970s, ecology and environmentalism became recurring themes at conferences and in the journal. Contributors explored issues such as the effects that human population growth and the modern consumer culture had on the environment, what the Genesis mandate concerning human dominion meant when it came to care of the environment, and how the biblical demand for social justice should influence attitudes toward the preservation and distribution of Earth’s resources. Nevertheless, the evolution controversies were never far from the group’s attention, and as *Teaching Science* symbolized, these topics touched on tensions that remained deeply rooted in

the ASA, tensions that pointed to fundamental questions facing the organization and that were coming to the fore in 1991.

For the ASA's fiftieth anniversary, *PSCF* published an essay by physicist Richard Bube that outlined his view of the pitfalls and possibilities facing the organization. Bube, perhaps the most prominent ASA figure during the previous quarter century, began by explaining the group's identity and purpose as (1) helping solve potential conflict between science and Christianity without departing from either "authentic science or authentic biblical theology" and (2) setting forth its ideas in a manner accessible to scientists and nonscientists alike.²⁸ Since its inception, the ASA had sought to foster productive dialogue and debate about important issues, but reaching a broad audience was a perennial difficulty, in part because the organization tried to reach two vastly different groups. Bube put it thus:

We face a tension here that draws us on the one hand toward becoming an increasingly elite society of scholars ... On the other hand, we could just as easily be drawn to ... service to our Christian community and outreach beyond that community for evangelism.²⁹

The former would make ASA esoteric. The latter would make it irrelevant to professional scientists and theologians. The goal for Bube was somehow to cultivate a variety of conversations, some scholarly and specialized, others general and aimed at an audience outside the laboratory or the ivory tower.

This challenge was only complicated by the ASA's commitment to orthodoxy in both science and theology, and the need to avoid what Bube called the twin threats of pseudoscience and pseudotheology. The term "pseudoscience" had been in use since the mid-nineteenth century to identify a wide variety of ideas ranging from phrenology and UFO sightings to evolution and creationism.³⁰ What qualified as pseudoscience often lay in the eye of the accuser. As Bube described it, pseudoscience occurred

whenever the methods of interpretation suitable for this mode of revelation [i.e., science] are rejected, whenever scientific concepts and constructs are dictated by nonscientific concerns, and whenever science is called upon to provide information or guidelines in areas where it is unable to do so.³¹

Similarly, pseudotheology occurred

whenever the methods of interpretation for this mode of revelation [i.e., theology] are rejected, whenever theological concepts and constructs are dictated by non-theological concerns, and whenever theology is called upon to provide information or guidelines in areas where it is unable authentically to do so.³²

Both errors thus stemmed from confusion about the proper methods and boundaries of the disciplines, especially when those relevant to one area were applied to the other.

Bube offered two examples of this improper blending of science and theology. The first was "scientific theology," a phrase that had seen a spike in usage since the late 1960s, in no small part due to the Scottish theologian T. F. Torrance. In the early 1970s, Torrance employed the phrase in a series of lectures that called for a new connection between scientific and theological understandings that would allow "the theoretic and empirical components of our knowledge of God" to be brought together so that "physical statements and theological statements" might be "intimately correlated."³³ Torrance's views found some favor among other prominent Christian scientists, but Bube took issue with his willingness to blur the lines between science and theology.

For Bube, science had a clearly defined and historically established methodology that provided both a powerful capacity for discovery and clear boundaries for exploration. Similarly, theology stemmed solely from biblical interpretation and the experience born from a personal relationship with God in Jesus Christ. There is no reason to suppose, Bube argued, "that current scientific descriptions have obvious spiritual and theological implications." Permitting such overlap of disciplines risked a "thorough transformation" in which "the God of the Bible is replaced by 'nature.'"³⁴

For the second example, Bube took aim at the emerging ID movement, which he called an attempt at a "grand synthesis of pseudoscience and pseudotheology." He wrote,

Contrary to frequently heard claims, physicists are not telling us that there is an innate 'intelligence' present in each atom of matter. There may well be people saying such things, but they are philosophers who are mistakenly seeking some kind of apparent foundation in science for their own preconceived faith commitments.³⁵

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Bube's criticisms neither ended the calls for "scientific theology" (Alister McGrath later published a series of three books under that title) nor halted the development of ID. Both theories attracted supporters and detractors within and outside the organization over the next two decades. But they nonetheless demonstrated his and the ASA's desire to maintain orthodoxy in both science and theology in a challenging environment. Fifty years from the beginning of the organization, the ASA still had plenty of work to do.

2016: The ASA at 75

So how fares the ASA today? As I write this, plans are underway to commemorate the seventy-fifth anniversary at Azusa Pacific University. Attention will be given to the ASA's past, which is appropriate and helpful since so many of the early issues remain. But as the meeting schedule suggests, the group is clearly not stuck there. Origins, hermeneutics, and science education are on the agenda, yet so are sessions on genetics, physics, environmental science, technology, and, of course, neuroscience—the conference theme. Thus, in this time of polarization over questions of science and faith (as with so much else), the ASA is continuing to do what it has been doing for three quarters of a century—providing room for thoughtful dialogue about issues of connection and contention. 

Notes

- ¹F. Alton Everest to Irwin Moon, March 29, 1941, in the introduction to *Creation and Evolution in the Early American Scientific Affiliation*, ed. Mark A. Kalthoff (New York: Garland Publishing, 1995), xi.
- ²J. W. Haas Jr., "Irwin A. Moon, F. Alton Everest and Will H. Houghton: Early Links between the Moody Bible Institute and the American Scientific Affiliation," *Perspectives on Science and Christian Faith* (hereafter PSCF) 43, no. 4 (1991): 249–58.
- ³See, for example, Adam R. Shapiro, *Trying Biology: The Scopes Trial, Textbooks, and the Antievolution Movement in American Schools* (Chicago, IL: University of Chicago Press, 2013).
- ⁴For more on the founding of the ASA, see Mark A. Kalthoff, "The New Evangelical Engagement with Science: The American Scientific Affiliation, Origin to 1963," PhD diss. (Indiana University, 1998): 158–220; Ronald L. Numbers, *The Creationists: From Scientific Creationism to Intelligent Design, Expanded Edition* (Cambridge, MA: Harvard University Press, 2006), 180–204; D. G. Hart, "The Fundamentalist Origins of the American Scientific Affiliation," PSCF 43, no. 4 (1991): 238–48.
- ⁵F. Alton Everest, ed., "Future of the ASA," *News: The American Scientific Affiliation* 8 (October 6, 1966),

<http://www.asa3.org/ASA/topics/NewsLetter5960s/OCT66.html>.

- ⁶F. Alton Everest, "The American Scientific Affiliation—The First Decade," *Journal of the American Scientific Affiliation* (hereafter JASA) 3, no. 3 (1951): 33–38.
- ⁷Quoted in Martin E. Marty, *Modern American Religion, Volume I: The Irony of It All, 1893–1919* (Chicago, IL: University of Chicago Press, 1986), 42.
- ⁸"The Constitution of the American Scientific Affiliation" as recorded in the chapter titled "The Story of the American Scientific Affiliation," in *Creation and Evolution in the Early American Scientific Affiliation*, ed. Kalthoff, 9.
- ⁹Kalthoff, ed., *Creation and Evolution in the Early American Scientific Affiliation*, xix.
- ¹⁰*Ibid.*, xxx.
- ¹¹F. Alton Everest, *The American Scientific Affiliation: Its Growth and Early Development* (Ipswich, MA: American Scientific Affiliation, 2010), 103–19.
- ¹²Quoted in "High Court Voids Curb on Teaching Evolution Theory," *New York Times*, June 20, 1987, <http://www.nytimes.com/1987/06/20/us/high-court-voids-curb-on-teaching-evolution-theory.html>.
- ¹³J. W. Haas Jr., "The American Scientific Affiliation at 50," PSCF 43, no. 2 (1991), <http://www.asa3.org/ASA/PSCF/1991/PSCF6-91Haas.html>.
- ¹⁴James D. Ebert et al., *Science and Creationism: A View from the National Academy of Sciences* (Washington, DC: National Academies Press, 1984).
- ¹⁵*Ibid.*, 5, 7–8.
- ¹⁶*Ibid.*, 26.
- ¹⁷David Price, John Wiester, and Walter Hearn, *Teaching Science in a Climate of Controversy: A View from the American Scientific Affiliation* (Ipswich, MA: American Scientific Affiliation, 1986).
- ¹⁸*Ibid.*, 8.
- ¹⁹*Ibid.*, 9.
- ²⁰*Ibid.*, 13.
- ²¹*Ibid.*, 42.
- ²²*Ibid.*, 8.
- ²³Constance Holden, "Textbook Controversy Intensifies Nationwide," *Science* 235, no. 4784 (January 1987): 19–21.
- ²⁴William V. Mayer, "Clandestine Science," *The American Biology Teacher* 49, no. 5 (1987): 269.
- ²⁵*Ibid.*, 270.
- ²⁶Francisco J. Ayala, "Evolution and Creation: One Missed Opportunity," *BioScience* 37, no. 7 (1987): 450.
- ²⁷Richard H. Bube, "The Future of the ASA: Challenges and Pitfalls," PSCF 43, no. 4 (1991): 274.
- ²⁸*Ibid.*, 273.
- ²⁹*Ibid.*, 277.
- ³⁰Daniel P. Thurs and Ronald L. Numbers, "Science, Pseudoscience, and Science Falsely So-Called," in *Wrestling with Nature: From Omens to Science*, ed. Peter Harrison, Ronald L. Numbers, and Michael H. Shank (Chicago, IL: University of Chicago Press, 2011), 281–306.
- ³¹Bube, "The Future of the ASA," 276.
- ³²*Ibid.*, 275.
- ³³Thomas F. Torrance, "Newton, Einstein, and Scientific Theology," *Religious Studies* 8, no. 3 (1972): 249.
- ³⁴Richard H. Bube, "Tension in Theology: Creation versus Redemption," JASA 32, no. 1 (1980): 2.
- ³⁵Bube, "The Future of the ASA," 277.

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