

A reprint from

American Scientist

the magazine of Sigma Xi, The Scientific Research Society

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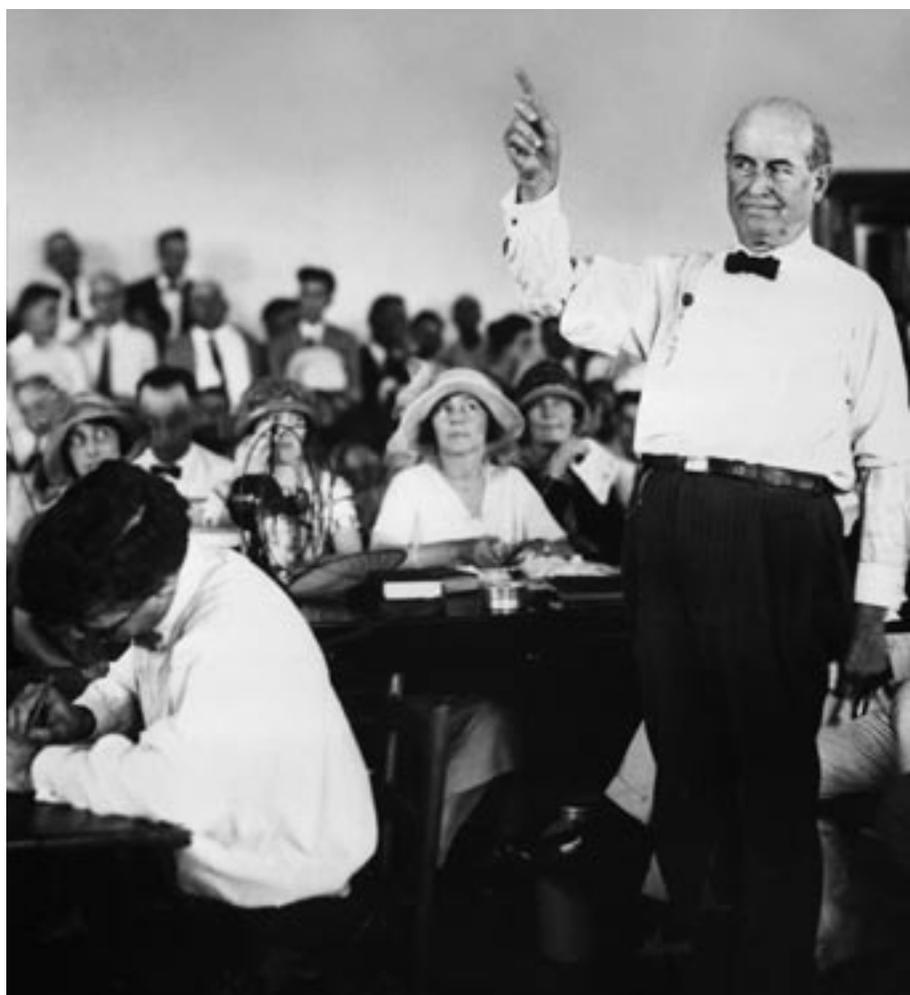
Science and Religious Fundamentalism in the 1920s

Religious pamphlets by leading scientists of the Scopes era provide insight into public debates about science and religion

Edward B. Davis

Recent controversies in Kansas, Ohio, Pennsylvania and other states over the teaching of evolution have raised fundamental questions about science, its public image and its role in a religious society. Although debate has focused on our nation's constitutional disestablishment of religion, the underlying issues are far broader. How is science related to religion and morality? Can scientists and religious authorities cooperate in educating the public about the content and limits of scientific knowledge, or are they separated by contrary views of what knowledge is? What are the role and responsibility of religious scientists in such conversations?

These questions are not new. Americans have been concerned about the religious implications of scientific knowledge since at least the early 18th century, when Cotton Mather's *The Christian Philosopher* (1721) brought Enlightenment natural philosophy to the New World. Sophisticated theological discussions of the relation between science and religion were an important part of many science textbooks before the Civil War. Even textbooks written for nonsectarian public schools at the end of the 19th century often employed religious language, although references to specific doctrines had largely disappeared. Since the early 20th century, public school textbooks have become increasingly secular, yet it is still unremarkable to find mention of creation stories, especially



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Figure 1. In July 1925, the attention of the American public was fixed on Dayton, Tennessee. The trial of John Scopes, arrested for teaching evolution in a public school, began as a publicity stunt, but the involvement of William Jennings Bryan (above) as lead prosecutor and Clarence Darrow as defense attorney helped turn it into a confrontation between Protestant fundamentalism and modern science. This was not at all what liberal theologians and scientists had intended as Scopes's defense was prepared. Pamphlets written by leading scientists of the 1920s in response to the antievolution movement illuminate a different dimension of the controversy. These tracts sought to convince the public of the compatibility of science and Christianity.

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those from the Judeo-Christian tradition, in high school biology texts. And owing to the renaissance of antievolutionism since the early 1960s, one may be more likely to find creation stories cited now than 50 years ago.

Historians often turn to the 1920s, the decade of the Scopes trial, to understand the background for current debates on the science-religion interface. Although much has been written about this famous court battle over the teaching of evolution, the trial's original dimensions are rarely mentioned. Liberal theologians and scientists initially intended to use the case to prove that religious faith could be reconciled with the theory of natural selection. Then, Clarence Darrow, the renowned attorney and atheist from Chicago, forced his way in and destroyed any effort to project a religious image from the Rhea County courthouse. We still know surprisingly little about the religious beliefs of leading American scientists of the 1920s. It is becoming clear, however, that the court case was part of a larger liberal Protestant strategy to foster a posi-

tive public image of both modern science and "modernist" religion.

An important part of this campaign began in 1922 with the publication of a series of religious pamphlets written by prominent American scientists. The authors hoped to convince readers of the compatibility of science and religious faith and thereby stem the growing strength of the antievolution movement. Long overlooked by historians, these pamphlets were printed by the tens of thousands and widely distributed, and today offer insight into public discussions of science and religion. It is this gap in the story of science and religion in America that I would like to fill in these pages.

The Origin of Fundamentalism

Although the ideas associated with Protestant fundamentalism have their roots in the 19th century, the word "fundamentalist" itself was not used in print until 1920. As originally defined by Curtis Laws, the editor of a national Baptist weekly, "fundamentalists" were those "who mean to do battle royal" in defense of certain traditional Christian beliefs and against the efforts of liberal Protestants to make those beliefs more consistent with secular thought and culture. As this definition suggests, fundamentalism is best understood as an attitude—the militant rejection of modernity—rather than as a specific set of doctrines. This type of conservative Protestantism and the issue that became one of its central planks—vociferous opposition to the teaching of evolution—are primarily post-World War I phenomena. Previously, some prominent conservative Protestants had actually accepted evolution as a means of divine creation.

The best known of the early fundamentalist leaders was William Jennings Bryan. The popular image of Bryan, derived largely from the play and film *Inherit the Wind*, is of a pompous boor with a general disregard for new ideas. The real Bryan was a populist reformer, not a reactionary.

Widely respected in his day, Bryan was nominated three times to carry the banner of the Democratic Party in the presidential election. He endorsed many progressive causes, among them women's suffrage, Philippine independence, the silver standard, a graduated income tax and the direct election of senators. Furthermore, as the late Stephen Jay Gould argued, Bryan's opposition to the teaching of evolution was wholly consistent with his progressive positions. He feared that it would lead to the exploitation of workers, the destruction of democracy and the moral paralysis of the populace.

Bryan had reason to be uneasy about the social implications of the theory of natural selection. The early 20th century witnessed the rise of both social Darwinism, which led Bryan to call natural selection "the law of hate—the merci-



Figure 2. Soon after the Tennessee legislature banned the teaching of evolution in public schools, science teacher John Scopes (left) was asked by the head of the Rhea County school board if he would stand trial in order to test the constitutionality of the new law. Scopes agreed, was convicted and fined \$100. The defense, led by Clarence Darrow, actually wanted a conviction in order to form the basis of an appeal to test the law in higher courts. Scopes is seen walking with attorney John Neal and chemical engineer George Rappleyea, who had originally suggested that Dayton become the site of the challenge to the law. (Photograph courtesy of Bryan College.)

less law by which the strong crowd out and kill off the weak," and eugenics. Social Darwinists, such as English philosopher Herbert Spencer, who coined the phrase "survival of the fittest," used the theory of natural selection to argue that those who had succeeded in human society were simply the most "fit." This defense of a *laissez faire* approach to social policy stood in stark contrast to Bryan's long career of advocating progressive social reform.

As wealthy industrialists such as Andrew Carnegie were invoking social Darwinism to defend ruthless business practices, many reform-minded scientists were embracing eugenics. Originated by Francis Galton, an English statistician and a cousin of Charles Darwin, eugenics was an extreme form of the application of the principles of natural selection to the management and improvement of human society. Eugenists believed that character was determined primarily by heredity. They thus encouraged the reproduction of well-educated elites and discouraged, or even prevented, the reproduction of those they deemed intellectually or morally inferior.

Although Galton initially proposed the concept of eugenics in the 1880s, its popularity in the United States peaked in the 1920s, partly in response to the massive influx of immigrants during the early 20th century. By the end of the 1920s, 24 states had passed laws permitting eugenic sterilizations, and about 12,000 sterilizations had been performed. Support for eugenics reflected both prejudice against recent immigrants and the growing faith in science of American intellectuals, who saw eugenics as a means of applying their scientific knowledge to social problems.

Fundamentalist opposition to the teaching of evolution increased in response to World War I. Bryan and his fellow fundamentalists believed that the militarism of German society could be linked to its use of natural selection in social policy and to the rise in German academic circles of higher literary criticism, which held that the Bible should be examined as a literary text rather than as the word of God. These developments across the Atlantic added fuel to the fire of Wagnerian proportions that was raging against "German" ideas among fundamentalists. As the war drew to a close, the fundamentalist movement found its name, created organizations such as the World's Christian Fundamentals Association and began in earnest to attack the teaching of evolution.

Science Responds

In such an inhospitable climate, many scientists felt that some sort of religious response to fundamentalist critiques of the teaching of evolution was necessary. The opportunity came in February 1922, after the *New York Times* published a



Figure 3. Cartoonists across the country found a fertile subject in the debates over science and religion in the 1920s. This cartoon by artist E. J. Pace depicts the fear of fundamentalists that the "Pied Piper" of scientific education would lead their children astray from Christianity. (Image courtesy of the Billy Graham Center, Wheaton, Illinois.)

Sunday editorial by Bryan. Repeating objections he had been making in stump speeches across the nation for several months, Bryan argued that Darwin's theory of evolution was "only a guess and was never anything more," although scientists might dress it up as a "hypothesis." Darwinism's denial of miracles and the supernatural posed a danger to religion, ultimately "leaving the Bible a story book without binding authority on the conscience of man." Those who tried to reconcile evolution with belief in God, Bryan claimed, would, like Darwin, become agnostics. And since evolution was neither a proven fact nor religiously neutral, he said, it should not be taught in public schools.

These were serious charges, and they required an answer. The *Times* invited two prominent scientists, Princeton biologist Edwin Grant Conklin and paleontologist Henry Fairfield Osborn, president of the American Museum of Natural History, to respond the following Sunday. A third editorial, by popular Manhattan pastor Harry Emerson Fosdick, appeared the next week.

A fuller response was not long in coming. That September, the editorials by Fosdick and Conklin became the first two pamphlets in a series of "Popular Religious Leaflets" on "Science and Religion" published over the next decade by the American Institute of Sacred Literature (AISL), a

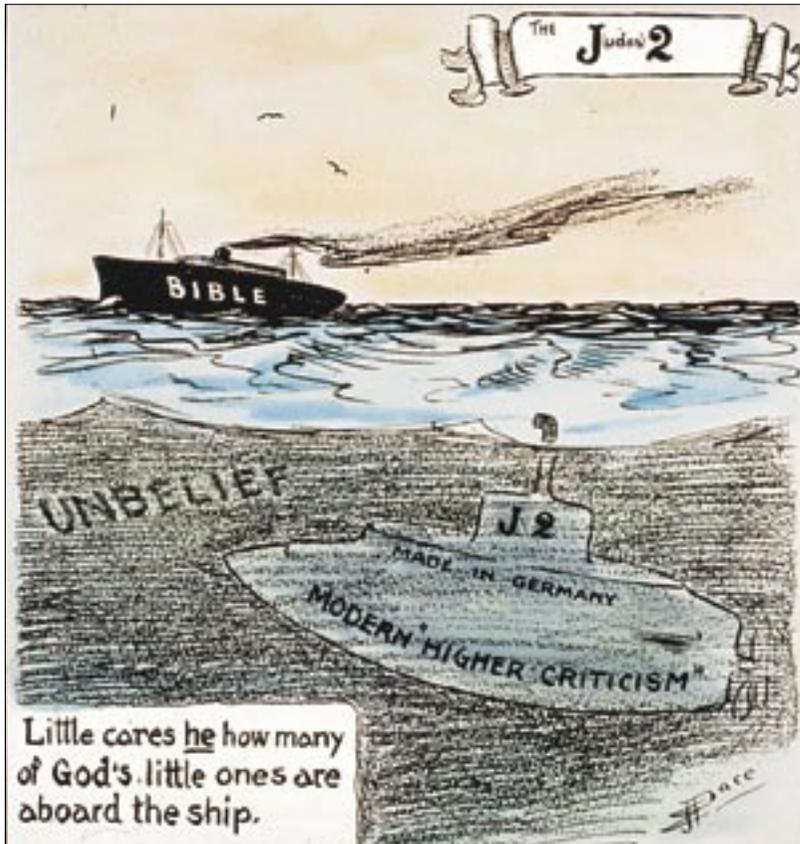


Figure 4. The rise of higher literary criticism in Germany angered many American fundamentalists. Here, E. J. Pace compares the World War I sinking of the British passenger ship *Lusitania* by a German U-boat to attacks on the literal truth of the Bible by German literary scholars. (Image courtesy of the Billy Graham Center, Wheaton, Illinois.)

now-defunct correspondence school under the auspices of the University of Chicago Divinity School. Shailer Mathews, dean of the divinity school, edited the series and wrote one pamphlet, and Fosdick authored two pamphlets.

Seven scientists contributed the remainder of the pamphlets. In addition to Conklin, the authors—five of whom served at some point as president of the American Association for the Advancement of Science—included Nobel laureates for physics Robert Millikan of the California Institute of Technology and Arthur Holly Compton of Chicago, geologist Kirtley Mather of Harvard, physicist Michael Pupin of Columbia University, astronomer Edwin Frost of Chicago and naturalist Samuel Schmucker of the West Chester (Pennsylvania) State Normal School. Compton's pamphlet also included contributions from Mathews and from Charles Gilkey, dean of the Rockefeller Chapel at the University of Chicago.

Despite their authors' notoriety, the pamphlets today are rare and virtually unknown to historians. Small enough to fit into a shirt pocket, they have largely been lost or discarded in the 80 years since publication, and research libraries seldom collect and catalogue religious tracts. I discovered them by chance—serendipity is as helpful an ally for historians

as for scientists. While researching a debate about evolution in which Schmucker participated, I found a copy of his pamphlet at a nearby seminary library. Inside the front cover was a list of other titles in the series. Then it was simply a matter of reeling in the rest, locating any correspondence related to them and piecing together the story behind them.

The pamphlets were anything but rare in the years surrounding the Scopes trial. They were widely distributed, especially to those who played important roles in the national debate about teaching evolution. The principal of every public high school in the country received copies of various pamphlets, as did every legislator at every level of government, numerous university chaplains, some 30,000 Protestant ministers and more than 1,000 carefully chosen scientists.

Scientists at many research universities made the pamphlets required reading or distributed them individually to students. Pastors and university chaplains made them available in their churches and chapels. At Dartmouth, they were used in William Patten's required course on evolution, the first course of its kind in the nation. In 1930, a full five years after the Scopes trial, religious organizations on 41 campuses, including Columbia, Cornell and the University of Pennsylvania, ordered AISL pamphlets in bulk.

This massive campaign of public dissemination was made possible by contributions from hundreds of people. In the two fiscal years overlapping the Scopes trial, more than 100 scientists donated to the pamphlet fund, many of them among the most prominent members of their field. Editor Mathews undoubtedly knew that this would impress the Rockefeller Foundation, a crucially important benefactor of science. John D. Rockefeller had started the University of Chicago, as well as its divinity school, and his son ensured that the Rockefeller Foundation underwrote AISL activities. The pamphlets were particularly important to John Jr., who agreed to match a percentage of all other contributions. They were also important to the AAAS, which contributed five times to the annual AISL fund.

Faith in Science

The pamphlets presented a variety of modernist theological positions reconciling scientific knowledge with religious faith. I was a bit surprised that the most sophisticated theological position was articulated by the chemistry-trained naturalist Samuel Schmucker. My surprise was tempered, however, when I realized that his grandfather was Samuel Simon Schmucker, founder of the Lutheran Theological Seminary at Gettysburg and one of the most influential American theologians of the 19th century.

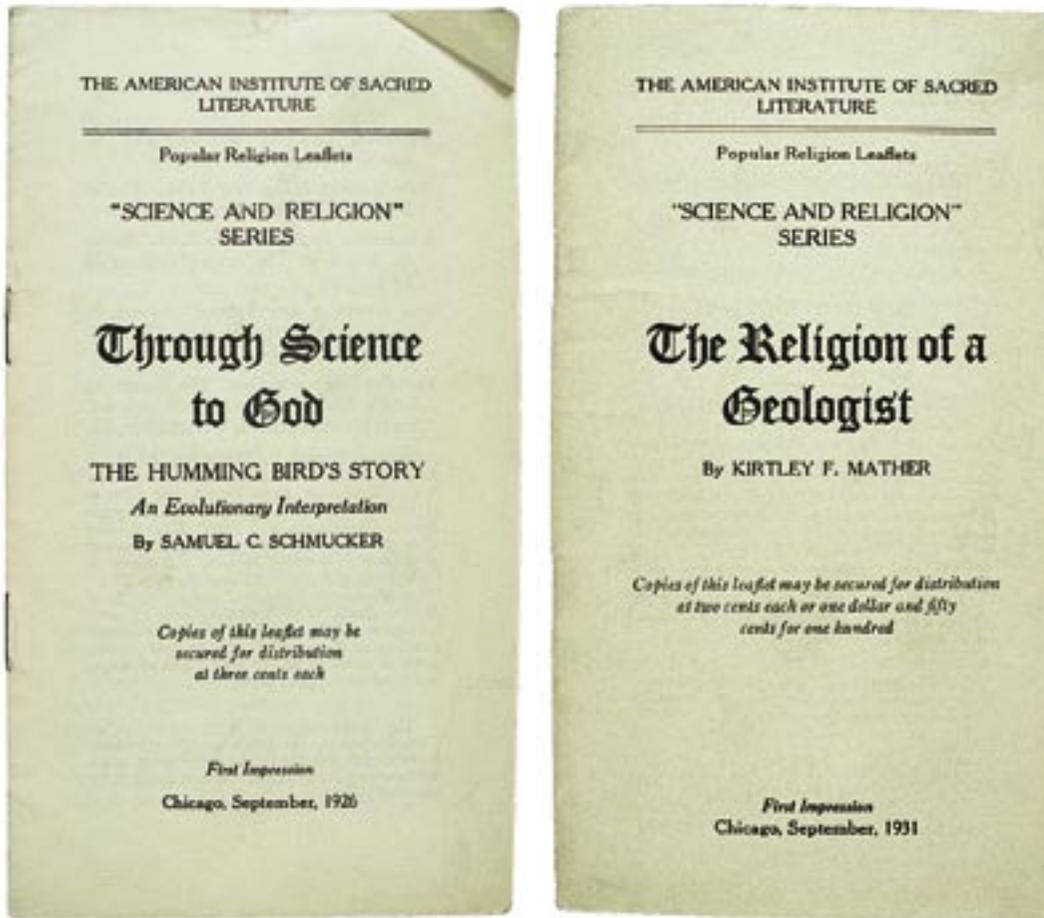


Figure 5. Pamphlets written by Samuel Schmucker and Kirtley Mather and distributed by the American Institute of Sacred Literature epitomized the nontraditional takes on Christianity of many scientists and liberal theologians. The God they described in their writings reflected their “modernist” approach to religion, an approach at odds with more traditional, fundamentalist interpretations of the Bible. (Mather pamphlet courtesy of the author. Schmucker pamphlet courtesy of the University of Chicago.)

In his pamphlet, *Through Science to God*, Schmucker outlined a post-Darwinian natural theology by drawing on ornithology to argue for a type of theism. Having already published some research on sexual selection in insects, Schmucker used hummingbirds to illustrate how evolution works by natural selection. He drew a moral lesson from the fact that the males have attractive coloration to draw mates, but no protective coloration to hide from predators: “Here at last, in the bird-world as in the human world at its highest, perfect love has cast out fear.”

Schmucker also asked why beauty and the care for beauty seem to increase throughout evolutionary history, and why the overall trend of evolution has been “steadily upward, through long, succeeding ages.” He answered that the laws of nature that had produced this trend were “not the fiat of almighty God,” but “the manifestation in nature of the presence of the indwelling God”; they were “eternal even as God is eternal.” Apparently unaware that he was contradicting Newton’s own belief about gravity, Schmucker concluded that it “is inherent in the nature of the bodies. It was not ‘put there’ by a higher power.”

Clearly, Schmucker’s concept of God was not traditional. His evolutionary theism made the world co-eternal with a wholly immanent God, and he discarded the notion of a transcendent creator. He viewed God as indistinguishable from the laws of nature and put his faith in the evolutionary process that had created humankind. This process, he argued elsewhere, would lead inevitably to our moral perfection as we gradually cast off our animal nature.

Schmucker believed eugenics to be the best means by which human beings could carry out God’s desire to eliminate sinful behavior, the exploitation of workers and undemocratic systems of government. He was hardly alone. Liberal Protestant scientists and clergy of the 1920s took to eugenics as bees take to pollen. They understood their faith in terms of actions, not beliefs, and saw eugenic reforms as a way to spread the kingdom of God on Earth. Advocacy of eugenics united scientists with liberal clergy, who were keen to find allies against their more conservative brethren.

Pastor Harry Emerson Fosdick, who wrote two of the AISL pamphlets, served as a formal advisor to the American Eugenics Society,



Figure 6. Physics Nobelists Arthur Holly Compton (*left*) and Robert Millikan (*right*) were among the contributors to the series of religious pamphlets published by the AISL (*see facing page*). Millikan argued in his booklet that religion and science had different but similarly important roles in society. In a discussion of “life after death,” Compton left open the possibility of an afterlife, but he may not have believed literally in the biblical story of the resurrection. (Photograph courtesy of the Archives, California Institute of Technology.)

while Schmucker and many other Protestant scientists offered explicit religious justifications for their efforts to promote eugenics. Edwin Grant Conklin and Henry Fairfield Osborn refused to testify on behalf of the defense at the Scopes trial in part perhaps because of Clarence

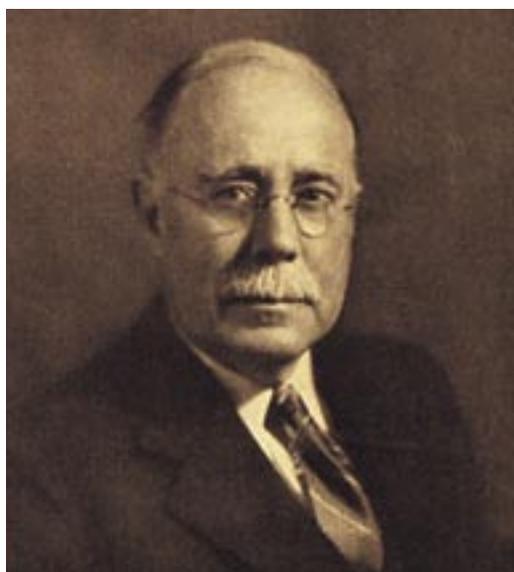


Figure 7. Theologian Shailer Mathews edited the AISL pamphlets and worked with scientists to publicize his very liberal Christian views. He titled his autobiography, from which this photograph is taken, *New Faith for Old*, reflecting his desire to replace conventional Christianity with a new faith that would incorporate scientific knowledge.

Darrow’s opposition to eugenics. Osborn also used his position as president of the American Museum of Natural History to popularize eugenics through infamous displays depicting long-since-discarded ideas about race and evolution. In 1921, the second International Congress of Eugenics was held at the museum and presided over by Osborn.

The most famous of the pamphlet authors, Robert Millikan received the Nobel Prize for Physics two years before the Scopes trial. In addition to his scientific publications, he often wrote about the relationship between science and religion, publishing *Evolution in Science and Religion*, for example, in 1927. The title of his AISL pamphlet, *A Scientist Confesses His Faith*, neatly sums up the contents: a litany of testimonies from religious scientists past and present, collectively evincing that “there is actually no conflict whatever between science and religion when each is correctly understood.”

Embedded within the litany are implicit, purely functional definitions of the key terms underlying his claim. “The purpose of science,” he wrote, “is to develop without prejudice or preconception of any kind a knowledge of the facts, the laws, and the processes of nature. The even more important task of religion, on the other hand, is to develop the consciences, the ideals, and the aspirations of mankind.” Millikan argued that his “definition of religion is in essence that embodied in the teachings of Jesus, who, unlike many of his followers of narrower vision, did not concern himself at all with creeds, but centered his whole teaching about a life of service and the spread of the spirit of love.”

Fellow physics Nobelist Arthur Holly Compton also saw room for science and religion to coexist. His pamphlet, *Life After Death*, argued against a materialist view of consciousness and defended the reasonableness of belief in an afterlife. Yet he did not specifically mention the resurrection—a curious omission for a Christian tract on this subject—underscoring the fact that many modernists (perhaps including Compton) did not believe in the literal truth of such biblical stories.

Theologian Shailer Mathews held even less traditional views than some of his scientific allies. Years earlier, when both were teaching at Chicago, Millikan had asked Mathews whether he believed in God, to which Mathews replied, “That, my friend, is a question which requires an education rather than an answer.” Mathews wanted a new Christian faith to replace the old, the religion of Jesus without the Jesus of religion.

One of those attracted to Mathews’s understanding of Christianity was Kirtley Mather, who had taken a Bible course from Mathews while an undergraduate at Chicago. For more than 30 years, Mather taught a large adult Sunday school class (known as “the Mather

Class”) for the Newton Centre Baptist Church near Boston. In this role, Mather introduced perhaps thousands of people to a God that does not perform miracles, cannot answer prayers without using human agents and provides only a vague hope of immortality. When Conklin presented a similar view of religion to Philadelphians in the mid-1920s, he titled his lecture “The Religion of Science.”

The activities of the authors of the pamphlets exemplify the frequent interactions between science and religion in the 1920s. Historian James Gilbert has noted that “neither science nor religion has had a stable and permanent definition in American culture. They continually shift in meaning and in their relation to each other.” This phenomenon, he argues, has made possible the persistence of religion in our highly scientific society. Shifting—and highly contested—definitions of both “science” and “religion” are most evident when their “relationship” is being negotiated. Scientists themselves were, in the 1920s, among the most outspoken voices in this exchange.

A Question of Compatibility

The views of these religious modernists contrasted sharply with those of the first American Darwinian, Harvard botanist Asa Gray. Like

Millikan, Gray was an outspoken defender of the “compatibility”—that was the word he chose—of evolution and Christianity. Gray, however, held much more traditional Christian beliefs. Addressing the student body of Yale Divinity School in 1880, Gray identified “the essential concepts of that Christianity which is in my view as compatible with my evolutionary conceptions as with former scientific beliefs,” as being “briefly summed up” in the Apostles’ and Nicene Creeds, two touchstones of Christian orthodoxy since the early centuries of the church. Gray was not the only traditional Christian of *his* generation to embrace modern science, but by the 1920s traditional religious interpretations of science had almost disappeared, for reasons that remain unclear. Ironically, the liberal religious views espoused by the authors of the AISL pamphlets may have only reinforced fundamentalist fears that evolution contradicts traditional Christian beliefs, and perhaps further alienated American Christians.

The spectrum of religious responses to evolution is broader today than in the 1920s. At one end we find those who employ modern science explicitly in defense of atheism. At the other end are “scientific creationists,” who have developed their own “science” in defense of Christian fundamentalism. In between lies

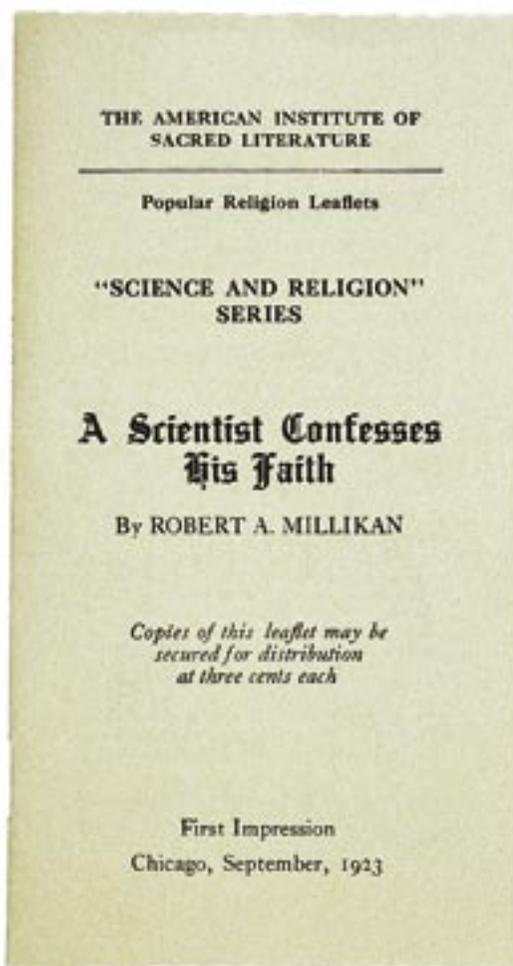
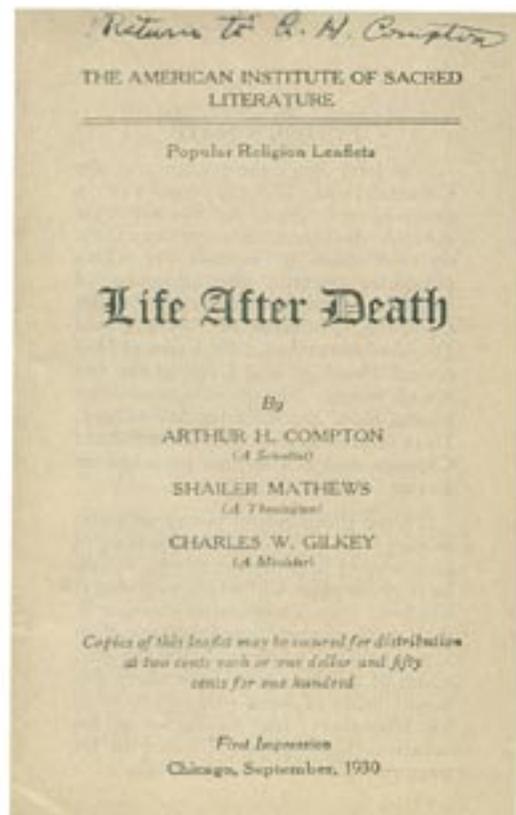


Figure 8. Pamphlets by Nobel laureates Compton and Millikan were published in 1930 and 1923, respectively. (Compton pamphlet courtesy of Department of Special Collections, Washington University Libraries. Millikan pamphlet courtesy of the University of Chicago.)

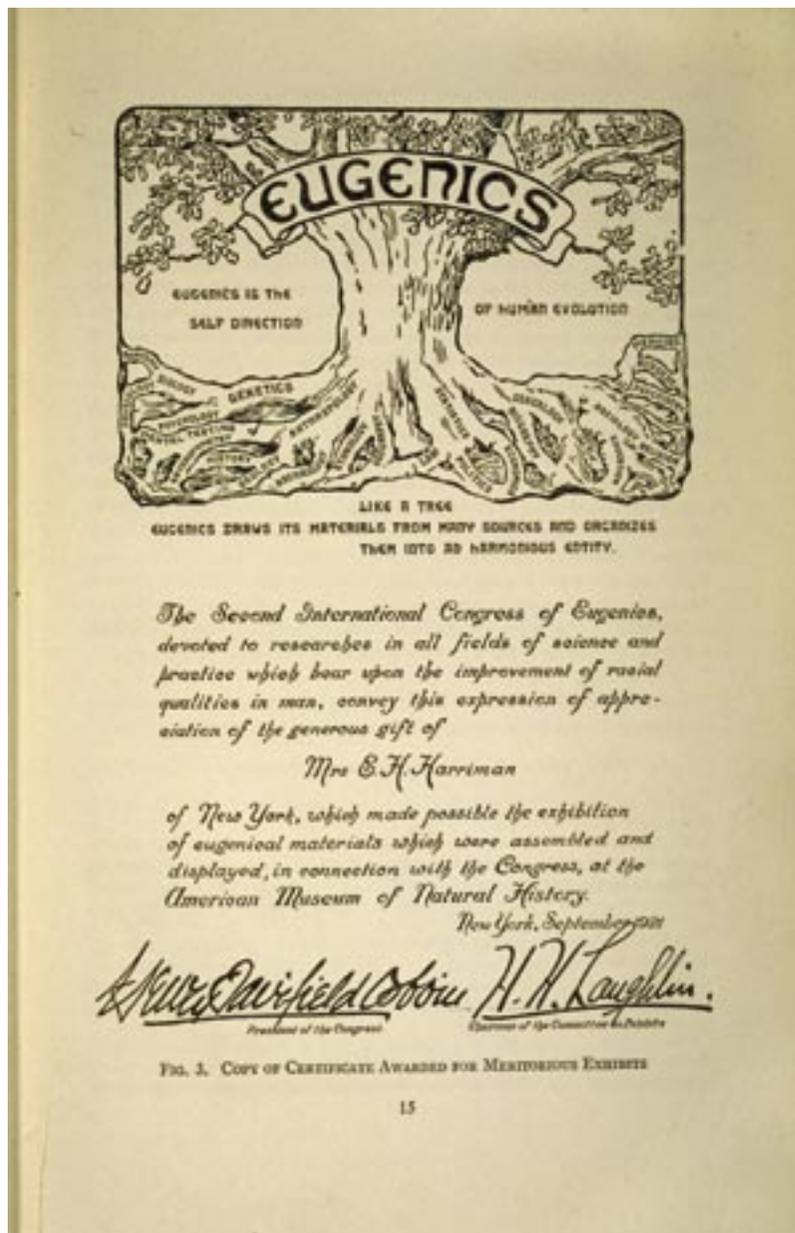


Figure 9. This flyer publicized the second International Congress of Eugenics, held in 1921 at the American Museum of Natural History. Henry Fairfield Osborn, the president of the museum, was one of many scientists who embraced eugenics as a means of social reform. Many religiously liberal scientists and clergy, including some authors of the AISL pamphlets, offered religious support for aspects of eugenics, especially measures to encourage “eugenic purity” in marriage and family practices. The use of evolutionary theory as a scientific basis for these measures complicated the interactions between religion and science in the 1920s. (Image courtesy of Cold Spring Harbor Laboratory Archives.)

a range of more complex positions that are consequently more difficult to explain to the general public. Views similar to those of some of the authors of the AISL pamphlets can still be found, sometimes under the self-chosen label of “religious naturalism,” akin to Conklin’s term, “religion of science.” Others prefer simply to separate religious and scientific thinking to protect the integrity of each, as Gould did in his later years. Still others follow Gray’s path, suggesting a variety of subtle ways to integrate evolution with traditional monotheism.

Leading scientists occupy most of these niches in good numbers, although they are, of course, thin among the ranks of creationists, and the conversation today is therefore more diverse and potentially more helpful to the layperson than in Bryan’s day. Whether it will actually be more helpful in the future may largely depend on the ability of some of those scientists to articulate their views to non-specialists, and on the willingness of science journalists to write about the subtle intermediate positions as well as the more vociferous ones on either end. As a historian and not a prophet, I cannot say how this will play out.

Acknowledgments

Comments from Paul Conkin, David Hollinger, George Murphy and Ronald Numbers have been helpful.

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