

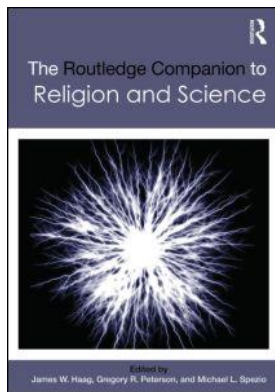
This article was downloaded by: 10.3.98.93

On: 14 Oct 2019

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



The Routledge Companion to Religion and Science

James. W. Haag, Gregory R. Peterson, Michael L. Spezio

Science and Religion

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9780203803516.ch3>

Geoffrey Cantor

Published online on: 26 Oct 2011

How to cite :- Geoffrey Cantor. 26 Oct 2011, *Science and Religion from: The Routledge Companion to Religion and Science* Routledge

Accessed on: 14 Oct 2019

<https://www.routledgehandbooks.com/doi/10.4324/9780203803516.ch3>

PLEASE SCROLL DOWN FOR DOCUMENT

Full terms and conditions of use: <https://www.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

3

SCIENCE AND RELIGION

From the historian's perspective

Geoffrey Cantor

Over the past two or three decades, a number of historians of science have directed their attention to the historical inter-relations of science and religion. Rather than being committed to any strong *a priori* view about how religion and science should – or should not – inter-relate, they have closely and critically interrogated the primary sources in order to ascertain how scientists, theologians, and others of past generations have addressed, and often struggled with, issues at the intersection of science and religion. What has emerged is an exciting new appreciation of the complexity and diversity of science–religion relationships.

Towards a new historiography

The work of this new generation of historians needs to be set against earlier ways of conceiving the historical relations between science and religion. For most historians of earlier generations, two factors – one philosophical, the other cultural – conspired to create a sharp separation between science and religion. The philosophical input came from positivism, which claims that empirical evidence is the only basis for legitimate knowledge claims. Auguste Comte coined the term “positivism” in his *Cours de Philosophie Positive* (1830–42) and portrayed positive knowledge as the highest form of knowledge. To articulate the relation between positive knowledge and earlier types of knowledge, Comte posited a three-stage progression, starting with the theological stage. During that stage, God is conceived as the direct cause of physical phenomena, such as illness or the fall of a heavy body. In the second stage – the metaphysical stage – metaphysical causes are instead evoked. Thus the fall of the heavy body might be attributed to the force acting on it; force being metaphysical (rather than physical) because forces are unobservable. In the final stage, according to Comte, scientists confine themselves only to observables; thus for a positivist the falling body's motion is to be described in terms of the distance travelled and time taken. By contrast, claims about the existence and attributes of God were deemed to be matters not of empirically based knowledge, but of opinion, and were generally dismissed as nonsense. Thus for most positivists, science displaced religion in the onward march of progress. In accordance with this positivist view of history, George

Sarton, one of the leading historians of science of the first half of the twentieth century, considered that during its development science gradually emancipated itself from religion. Likewise, Alexandre Koyré (another major historian of the period) banished religion from his account of the rise of modern science in the seventeenth century (Osler 2009).

To appreciate the other factor that influenced earlier generations of historians, we need to acknowledge that, until about the mid-nineteenth century, science and religion were closely inter-related. Particularly in Britain, the highly popular argument from design offered one means of bonding the two together. This fairly widespread, but by no means total, consensus broke down principally during the third quarter of the nineteenth century. Evidence of this breakdown is provided by the publication of a number of works that were widely perceived as atheistical and caused outrage in religious circles, such as the anonymously authored *Vestiges of the Natural History of Creation* in 1844 and Charles Darwin's *On the Origin of Species* in 1859. Yet, as Frank Turner (1974, 1978, 2009) has argued, we should not see these specific publications as causing the split between science and religion; rather, they are indicators of some profound social changes to both science and religion. For example, science was becoming increasingly professionalized and, in order to raise the status of science, its old alliance with religion – exemplified by the now outdated parson-naturalist – was being repudiated. Also, the old theodicies that attributed religious meaning to the physical world were being subject to increasing criticism and were seen as intellectually bankrupt.

By the 1870s, the members of an *avant garde* within the scientific community were proclaiming themselves to be scientific naturalists – naturalists in the sense of allowing only natural, material causes in their science, not supernatural ones. For these and other reasons there was an increasing sense of tension between science and religion during the later decades of the century, and this tension led in turn to conflict between the two. One highly visible flashpoint was the presidential address delivered by the physicist John Tyndall at the meeting of the British Association for the Advancement of Science held in Belfast in 1874, in which he evoked a materialist philosophy of science that caused a storm of protest. The title of John Draper's book published the following year – *History of the Conflict between Religion and Science* – captured the widely held perception that science and religion were thoroughly opposed to one another. Here the “conflict thesis” was born; a thesis that postulates a necessary conflict between science and religion.

Throughout much of the twentieth century, historians of science were heirs to the dual legacy of positivism and the conflict thesis. Thus, in writing the history of modern science, religion was either ignored or seen as a force opposed to science. The latter position was most apparent in the frequently cited examples of Galileo's conflict with the Catholic Church and the religious opposition to evolution – a theme that was nurtured by the 1925 “Scopes Monkey Trial.” Such examples have repeatedly been used to demonstrate that there is a necessary conflict between science and religion.

Both the positivist heritage and the conflict thesis came under scrutiny in the 1950s and 1960s, when the history and philosophy of science emerged as a new discipline. Among philosophers of science there was extensive opposition to

positivism, which found its most popular expression in the Wittgenstein-inspired *The Structure of Scientific Revolutions* (1962) by Thomas Kuhn. Rather than seeing the inexorable march of science as more and more empirical evidence was added, Kuhn argued that on (admittedly rare) occasions, one scientific theory (and all that went with it) replaced another. This marked a discontinuous change – a scientific revolution. Thus, to give Kuhn’s most carefully worked out example, the Ptolemaic Earth-centred paradigm in astronomy was replaced by the Copernican paradigm over a period of some two centuries. Although positivism was not demolished by Kuhn – indeed, positivism still has many followers within the scientific community – a number of alternative accounts of science now became available, including those founded on the sociology of science. In their researches, historians of science avidly made use of these new insights.

Kuhn’s anti-positivist thesis also addressed two other important issues. One was that each paradigm consisted of not only a theory and evidence, but also a bundle of non-empiricist commitments. Although in *Structure* Kuhn did not reflect explicitly on the role of religion, in opposing the positivist account of science he opened the door to allowing religion some role in the development of science, and thereby sanctioned the interaction between religion and science. Second, like many of his generation, Kuhn opposed the Whig agenda for a history of science that requires the historian to chart across time the inexorable accumulation of scientific knowledge, leading to the superior knowledge of our own time. Instead, historians now appreciated the need to understand scientists of the past in their own terms, and as facing problems that may seem alien to our present-day viewpoint. Thus historians of science could re-evaluate the histories of, say, alchemy or the phlogiston theory held by late eighteenth-century chemists. Such topics were no longer to be dismissed as gibberish and their proponents as misguided. Instead, the new contextualist historians sought to understand how Isaac Newton or Joseph Priestley viewed the world. In many cases, including both Newton and Priestley, the historian could no longer sideline their religious views. Contextualism thereby opened the door to addressing issues of science and religion.

A new agenda

Although a few historians of science initially responded to these challenges by addressing issues of science and religion afresh, the publication of John Hedley Brooke’s *Science and Religion: Some Historical Perspectives* in 1991 reflects the new wave of interest in the subject. As well as offering a well researched history of science–religion inter-relations, in this and other works Brooke provided a new historiography for the subject, one that has been endorsed and developed by a number of other historians.

Brooke’s first move was to challenge the existing assumptions, especially the conflict thesis and other master narratives that have frequently been imposed on the historical record. Using a wealth of historical examples, he showed the inadequacy of such narratives. For example, they fail to address Newton’s theological views about God’s role in creating and sustaining the physical universe, and also the many

subtle arguments between Galileo and his clerical contemporaries, not all of whom condemned the Sun-centred system. History, then, has been used as a laboratory in which the master narratives of science–religion interaction have been tested and found wanting. Moreover, as Brooke and others have argued, these master narratives impose ahistorical and thoroughly inappropriate notions of both “science” and “religion” on past ages; both terms having undergone immense changes of meaning since the seventeenth century. Instead, and in line with the new contextualism, historians need to appreciate just how actors in earlier periods conceived “science”, “religion”, and the relation between them. Thus, while we may see science and religion as separate and easily separable activities, for writers through to the seventeenth century and perhaps beyond, no such separation existed. Peter Harrison has even argued that “[s]o inextricably connected were the dual concerns of God and nature that it is misleading to attempt to identify various kinds of relationships between science and religion in the seventeenth and eighteenth centuries” (Harrison 2006: 86).

Brooke also brought to the subject a new and welcome conception of the historian's role. In the introduction to his 1991 book, he insisted that the historian should not “pretend to tell a complete or definitive story” of the science–religion relationship (Brooke 1991: 5). Likewise, in another publication, Brooke and his co-author argued that the value of history consists “precisely in the fact that there is multiplicity – both in the stories to be told and in the manner of their telling” (Brooke and Cantor 1998: 35). This commitment to pluralism exposes a value central to the new historiography, and especially the view that historians should avoid trading in stereotypes – of either the scientist or the theologian. Moreover, rather than resigning history to crude master narratives that serve to bolster partisan interests, Brooke considered that the role of history is to provide “critical perspectives” on science–religion interactions. Serious, critical historical scholarship, he wrote, “has revealed [... the] extraordinarily rich and complex [...] relation between science and religion in the past. [...] The real lesson turns out to be complexity” (Brooke 1991: 5). Many of the historical case studies published over the past twenty years have explored this complexity. Not only have they shed fresh light on such cases as the Galileo affair, but they have opened up new ways of understanding science–religion relations.

Relating science and religion

In arguing for the diversity of science–religion interactions, Brooke cited several of the functions that religious beliefs can perform in respect to science. They have, for example, provided scientists with presuppositions; thus Michael Faraday considered that, as only God can create or annihilate both matter and “force,” both these entities must be conserved in the regular operations of nature. This principle of “force” conservation underpinned his own researches, especially in the areas of electromagnetism and electrochemistry (Cantor 1991). Again, religion has frequently provided a sanction for science. This was particularly important in the late seventeenth century, when many doubted whether science was an acceptable activity. Thus, in

his *History of the Royal Society* (1667), Thomas Sprat sought to legitimate the activities of the Society's members by arguing that science is an aid to Christianity because it inculcates a sense of piety in its practitioners. Likewise, design arguments have frequently been used not only to direct the reader from nature to God, but also to show that the pursuit of science does not threaten religion, but gives it support (Brooke 1991: 19–33).

It has become fashionable to view design arguments as naïve and as inhibiting the development of science. While design arguments certainly lost much of their credibility in the latter half of the nineteenth century, historians now recognize that during the two previous centuries they performed important functions within science, including (as indicated above) helping to legitimate scientific activity. Moreover, they proved attractive to many scientists and provided a way of appreciating God through the study of nature both in the field and in the laboratory. They also performed important conceptual roles. As Darwin appreciated from reading William Paley's *Natural Theology* (1802), there was design in nature since the structure and function of an organism were intimately related. The perception of design in nature has also often been endowed with aesthetic significance. Thus, when Copernicus argued in favor of the heliostatic system, he pointed out that it was more coherent and beautiful than the Earth-centered system and was therefore the one that manifested God's design. Einstein, likewise, famously quipped that “when judging a physical theory, I ask myself whether I would have made the Universe in that way had I been God” (Brooke and Cantor 1998: 227).

Many other forms of science–religion interaction are to be found in the current literature. Matthew Stanley's recent book on the Quaker astrophysicist Arthur Stanley Eddington provides one particularly informative example. Stanley identifies a number of values that are evident in both Eddington's Quakerism and his science. For example, like other contemporary Quakers, Eddington rejected the quest for absolute truth in religion and instead insisted that the search for spiritual truths was an ongoing process. Eddington applied a similar open-ended principle in his astrophysical theorizing, rejecting the rigid approach dominant among contemporary theoreticians, who based their models on true premises. Eddington's Quaker commitments also included his pacifism. As a conscientious objector during the First World War, he confronted the military tribunal at Cambridge and avoided imprisonment by undertaking the famous eclipse expedition in 1919 in order to test Einstein's general theory of relativity. Stanley thus argues that Eddington's science was firmly based on Quaker values (Stanley 2007).

Not only has religion influenced science, but science has also exerted an immense impact on religion. For example, outside the fundamentalist camp, most Christians have long accepted the great age of the universe and the evolutionary origins of organisms, even of humans, and have had to struggle with such problems as the wastage in nature that seems to clash with the notion of a benevolent deity. Or, to give one more specific example, late nineteenth-century Quakers and other liberal Christians adopted the doctrine of progressive revelation as a religious correlate of biological evolution.

While some scientists have had their religion strengthened through the pursuit of science, science has contributed to others losing their faith in conventional religions.

Scientism – the creation of what the German chemist Wilhelm Ostwald called an “ersatz religion” – provides one extreme but fascinating example. The best known case is Auguste Comte’s positivist religion, in which “humanity” was worshipped in place of God. His “religion of humanity” gained a substantial following in late nineteenth- and early twentieth-century Britain and France, and still exists in Brazil (Brooke and Cantor 1998: 47–57).

Historians studying science–religion relations in specific historical contexts have repeatedly emphasized the importance of social and political factors. Thus present-day arguments between evolutionists and creationists in America are not simply about which is the best theory to account for animal species and even humankind. Like many subsequent confrontations, the famous 1925 “Monkey Trial” was over the politics of education – what should be taught in the classrooms of Dayton, Tennessee. One of the key issues was whether education should be controlled locally or whether it should be imposed by outsiders from the northern states. As Adam Shapiro has noted, “The anti-evolution trial came to be seen as an expression of the tensions between urban industrial and rural agricultural cultures in America” (Shapiro 2009). In our own day, evolution remains a highly charged political issue, not only in the United States, where politicians are aware of the power of the fundamentalist Christian lobby, but also in many other countries. In the Muslim world, for example, evolution is often presented as Western and responses to Darwin’s theory are therefore often influenced by attitudes towards the West (Numbers 2006).

Science and religion as practices

Although much attention has been paid to the cognitive connections between science and religion, an important recent trend has been to understand both in terms of practice; this develops the increased interest in scientific practice among historians of science. One particularly informative example is provided by John Heilbron (1999), who explored the Catholic Church’s immense commitment to addressing a particular astronomical problem. Over several centuries, Catholics have utilized astronomical observations to determine the date of Easter, which falls on the Sunday following the first full moon after the vernal equinox. In order to perform this calculation, Catholic astronomers developed observational instruments, utilized advanced mathematics, and performed numerous accurate observations on the Sun’s motion. The Sun’s trajectory had to be determined in order to predict the vernal equinox, and thus the date of Easter. A number of churches, such as San Petronio in Bologna, were used as observatories; light admitted through an aperture high on their walls projected an image of the Sun on the church floor, into which a scale was set. Thus astronomers used the actual fabric of churches to make their measurements. This involvement in astronomy may seem surprising, given the Church’s opposition to Galileo. Yet, as Heilbron argues, the Catholic Church’s commitment to science was not limited to determining the date of Easter. Over an extended period it became a major patron of science and Jesuits in particular have contributed greatly to science and science education. The tradition of Catholic-sponsored science continues today with the Vatican Observatory, which now includes a research group in Arizona as well as its headquarters at Castel Gandolfo near Rome.

Publishing provides another type of practice, and one that historians have recently studied in depth. Rather than focusing solely on the arguments contained in early science and religion texts, such as Paley's *Natural Theology* and the Bridgewater Treatises (first published in the early 1830s), historians have analyzed the entire network of communication involving such texts, including the roles of authors, publishers, reviewers, libraries, and readers.

In *Science and Salvation*, Aileen Fyfe (2004) analyzed the scientific publications of the evangelically oriented Religious Tract Society (RTS), which was founded in 1799. In order to help save souls, the RTS published cheap religious works that were widely distributed. However, by the 1820s a number of publishers had inundated the lower end of the market with cheap books, including secular works of popular science that, according to many Christians, posed a threat to religion. In response, in the 1840s the RTS started to publish books on science and other educational topics, including titles such as *Solar System* and *Plants and Trees of Scripture*. In adopting a "Christian tone," these works sought to show that science was not inimical to Christian faith; instead, Christians should study science – but science with a Christian orientation. Although some of the scientific works published by the RTS were manifestly evangelical, many of their publications adopted a softly edifying style that would be acceptable to a wide spectrum of believers and were intended to encourage non-believers to take the first steps towards conversion.

Like other studies of religious publishing, Fyfe's book moves the focus away from the elite scientific community and to the popularizers of science and their non-expert audiences. Although a few elite scientists wrote popularizations of science during the latter half of the nineteenth century, the authors of works directed to non-expert readerships were often clergymen or women, many of whom portrayed science within a religious framework (Lightman 2007). Moreover, during the second quarter of the century a mass readership was created. Thus many Victorians had their views of science moulded by works issued by religious publishing houses. The RTS, as Fyfe points out, "brought a knowledge of the sciences and novel questions relating to salvation to an ever-expanding audience" (Fyfe 2004: 15). As with the RTS's publications, many of the popular works on science portrayed it within a Christian frame; perhaps emphasizing that the harmonious structure of the physical world was due to its design by the wise and benevolent God. Jonathan Topham, whose research has been directed to book history, especially at the science–religion interface, draws the following conclusion about this book-history approach: "By refocusing their attention on the everyday practices of a far wider range of people than have previously been considered, historians can recover the nuts and bolts of the cultural history of science and religion. The history that can be built from them is not only innovative, but ultimately more satisfactory" (Topham 2009).

As well as the religious book trade, historians have studied the religious periodical press, which by the 1840s was highly differentiated, with most religious denominations and sects possessing and controlling their own periodical publications. Contrary to the view that religious people eschewed science, recent research has shown that most religious periodicals in the Victorian period carried a significant amount of science. Thus, by studying its scientific content, historians have come to appreciate the importance of the religious periodical press in the dissemination of science, and

also how attitudes to science differed across the religious spectrum. The classic study is Alvar Ellegård's *Darwin and the General Reader* (1958), which analyzed how key aspects of the theory of evolution were received by over 100 periodicals during the period 1859–72. Ellegård found that Unitarian and Broad Church periodicals were most supportive of evolution, while Methodists were most opposed to it, with the Low Church only slightly less antipathetic. A number of more recent studies of the reception of evolution and other aspects of science have made sophisticated use of religious periodicals. As Topham notes, "the manner in which periodicals served to shape the religious identities of their readers is particularly important for those seeking to understand how religious people came to relate science to their daily religious practice in nineteenth-century Britain" (Topham 2009).

Religion and religions

Much of the historical writing on science and religion has focused on Protestant responses to science, particularly in Britain and increasingly in America. Yet we should not expect a single and distinct Protestant attitude to science, as Protestantism encompasses a great diversity of belief, and a great range of attitudes to science. Moreover, while the Protestant experience raises a number of important general issues concerning science, it should not be taken as typical of all religions. Although some work has been undertaken on other religious traditions, the study of comparative religious responses to science is still in its infancy (Brooke and Numbers 2011). Yet scholars need to appreciate the context-based histories of the different religions, and not try to assimilate them to a single model (Harrison 2006: 91–97).

The history of Roman Catholic responses to science has been overshadowed by the Galileo affair and by such interventions as Pope Pius IX's promulgation of the *Syllabus of Errors* (1864), which sought to repress scientific innovation. However, Heilbron has rightly emphasized the importance of the Church itself, and the Jesuit order in particular, in the development of science (Heilbron 1999). Moreover, as with Protestantism, there was no single Catholic response to science, despite the authority exercised by the Vatican. In general terms, Catholic scientists in France and Italy have been far freer to pursue science than those in Spain and South America. Recent work on Catholic responses to evolution not only has emphasized these national variations, but also has pointed out that, except in the area of human evolution, Catholic opposition to Darwin has been fairly muted (Artigas *et al.* 2006).

Much has been written about such medieval Jewish writers as Maimonides and Gersonides, who avidly encompassed the science of their day, albeit critically. Within Judaism there is a strong tradition of respect for learning and also a tradition of questioning received wisdom; these help explain why there has been relatively little Jewish opposition to evolution (Cantor and Swetlitz 2006). Some have also argued that these pro-science attitudes within traditional Judaism account for the large numbers of Jews who pursued scientific careers in twentieth-century America and Europe. However, as Noah Efron has shown, many of these Jews were attracted to science precisely because it offered a way of distancing themselves from their Jewish background and of entering the secular world (Efron 2007). The study

of science and religion needs to encompass not only the positive interactions of the two, but also how science has been used to create non-religious identities.

There is currently much interest in the history of Islamic science, which possessed its own strong scientific tradition from the middle ages to about the sixteenth century, by which time it entered a period of decline. Historians of Islamic science are deeply divided over how to understand modern science in relation to this earlier period, especially as modern science is a Western export to Muslim countries, thus raising significant issues about the politics of colonialism. Some commentators have used history to justify the superiority of Islam, arguing that early Muslim scientists made scientific discoveries that were rediscovered by the West only many centuries later. Other historians have sought to identify a tradition of uniquely Islamic thought running through history. Others still have used the critical historical method. It will be interesting to see how historical scholarship develops in this controversial area over the next few years and in its relation to Islamic engagements with modern science.

Finally, historians of science and religion should not ignore how science has been deployed in the service of atheism and agnosticism. Not only are such uses a significant part of the study of science and religion, but it is often necessary to understand them in order to appreciate responses by religious writers. Thus, for example, Thomas Henry Huxley provoked a flurry of books defending the link between Christianity and science, while in our own day numerous works have been published in response to Richard Dawkins' alignment of science with atheism.

References

- Artigas, M., T.F. Glick and R.A. Martinez (2006) *Negotiating Darwin: The Vatican Confronts Evolution, 1877–1902*, Baltimore, MD: Johns Hopkins University Press.
- Brooke, John Hedley (1991) *Science and Religion: Some Historical Perspectives*, Cambridge: Cambridge University Press.
- Brooke, John Hedley and Geoffrey Cantor (1998) *Reconstructing Nature: The Engagement of Science and Religion. The 1995–1996 Gifford Lectures at Glasgow*, Edinburgh: T&T Clark.
- Brooke, John Hedley and Ronald L. Numbers (eds) (2011) *Science and Religion around the World*, New York: Oxford University Press.
- Cantor, Geoffrey (1991) *Michael Faraday: Sandemanian and Scientist*, London: Macmillan.
- Cantor, Geoffrey and Marc Swetlitz (eds) (2006) *Jewish Tradition and the Challenge of Darwinism*, Chicago, IL: University of Chicago Press.
- Dixon, Thomas, Geoffrey Cantor and Stephen Pumfrey (eds) (2009) *Science and Religion: New Historical Perspectives*, Cambridge: Cambridge University Press.
- Efron, Noah J. (2007) *Judaism and Science: A Historical Introduction*, Westport, CT: Greenwood Press.
- Fyfe, Aileen (2004) *Science and Salvation: Evangelical Popular Science Publishing in Victorian Britain*, Chicago, IL: University of Chicago Press.
- Harrison, Peter (2006) "'Science' and 'Religion': Constructing the Boundaries," *Journal of Religion* 86: 81–106.
- Heilbron, John L. (1999) *The Sun in the Church: Cathedrals as Solar Observatories*, Cambridge, MA: Harvard University Press.

- Lightman, Bernard (2007) *Victorian Popularizers of Science: Designing Nature for New Audiences*, Chicago, IL: University of Chicago Press.
- Numbers, Ronald L. (2006) *The Creationists: From Scientific Creationism to Intelligent Design*, 2nd edn, Cambridge, MA: Harvard University Press.
- Osler, Margaret J. (2009) "Religion and the Changing Historiography of the Scientific Revolution," in Dixon *et al.*, *Science and Religion*, *op. cit.*
- Shapiro, Adam R. (2009) "The Scopes Trial – Beyond Science and Religion," in Dixon *et al.*, *Science and Religion*, *op. cit.*
- Stanley, Matthew (2007) *Practical Mystic: Religion, Science, and A.S. Eddington*, Chicago, IL: University of Chicago Press.
- Topham, Jonathan R. (2009) "Science, Religion, and the History of the Book," in Dixon *et al.*, *Science and Religion*, *op. cit.*
- Turner, Frank M. (1974) *Between Science and Religion: The Reaction to Scientific Naturalism in Late Victorian England*, New Haven, CT: Yale University Press.
- (1978) "The Victorian Conflict between Science and Religion: A Professional Dimension," *Isis* 49: 356–76.
- (2009) "The Late-Victorian Conflict of Science and Religion as an Event in Nineteenth-Century Intellectual and Cultural History" in Dixon *et al.*, *Science and Religion*, *op. cit.*

Further reading

Probably the best introductions to the topic are John Hedley Brooke's *Science and Religion* (cited above) and Thomas Dixon's *Science and Religion: A Very Short Introduction* (Oxford: Oxford University Press, 2008). The mythology surrounding science and religion is tackled in Ronald L. Numbers (ed.), *Galileo Goes to Jail and Other Myths about Science and Religion* (Cambridge, MA: Harvard University Press, 2009). There are several useful collections of historical essays, including John Hedley Brooke, Margaret J. Osler and Jitse van der Meer (eds), *Science in Theistic Contexts: Cognitive Dimensions* (Chicago, IL: University of Chicago Press, 2001); Thomas Dixon, Geoffrey Cantor and Stephen Pumfrey (eds), *Science and Religion* (cited above); David C. Lindberg and Ronald L. Numbers (eds), *God and Nature: Historical Essays on the Encounter between Christianity and Science* (Berkeley, CA: University of California Press, 1986); David C. Lindberg and Ronald L. Numbers (eds), *When Science and Christianity Meet* (Chicago, IL: University of Chicago Press, 2003); and James D. Proctor (ed.), *Science, Religion, and the Human Experience* (New York: Oxford University Press, 2005). For comparative perspectives, see John Hedley Brooke and Ronald L. Numbers (eds), *Science and Religion around the World* (New York: Oxford University Press, 2011) and Toby E. Huff, *The Rise of Early Modern Science: Islam, China, and the West* (Cambridge: Cambridge University Press, 1993). For Islamic perspectives, see Taner Edis, *An Illusion of Harmony: Science and Religion in Islam* (New York: Prometheus Books, 2007); for the role of Jews in science, see Noah J. Efron, *Judaism and Science: A Historical Introduction* (Westport, CT: Greenwood Press, 2007); on Roman Catholicism, see Don O'Leary, *Roman Catholicism and Modern Science: A History* (New York: Continuum, 2006) and Ernan McMullin (ed.), *The Church and Galileo* (Notre Dame, IN: University of Notre Dame Press, 2005).