

Conclusions

The scope of the Society has gradually widened, in accord with the requirements of the time, but with constant reference to the one purpose of connecting all topics of human interest with the principles and teaching of Christianity. Popular science has had a prominent place.

Samuel G. Green,
*The Story of the Religious Tract Society
for One Hundred Years* (1899)¹

The Religious Tract Society's mission was to affect individuals at a personal and spiritual level, using modern methods of industrial mass technology. This in itself was a problematic ambition.² The Bible Society, for instance, had decided that personal interaction through the 'Bible transaction' was the only way such an effect could be achieved. But the Tract Society wished to operate on a much larger scale than even the most extensive scheme of personal visits could hope to achieve, and it believed that there were some cases where a printed messenger would be more effective, because more subtle, than a personal visitor. In its tract work, it came to realise that tracts written for specific groups were more effective than those aimed at large swathes of the population, as the message could be more carefully targeted to its audience. The same realisation came to be made about the secular programme of publishing, but not immediately. In the 1840s, the RTS had not yet identified the different audiences for these works. Although the Monthly Series was aimed at artisans and educated families, and at children and adults, the same mass-produced work was assumed to be suitable for all. Later in the century, as the reading audiences changed, and became better understood, the Society's secular publishing became much more tightly targeted. This was the compromise between the large-

¹ Green, S.G., *The Story of the Religious Tract Society for One Hundred Years* (London, 1899), 125.

² Benjamin, W., 'The work of art in the age of mechanical reproduction' in *Illuminations* (1970): 219-53.

scale demands of industrial technology, and the individual needs of readers who could not simply be treated as a homogeneous mass.³

The new secular publishing programme of the 1840s did embody the Society's central mission of conversion to evangelical Christianity, but it also had a more specific aim. The committee of the RTS believed that too many of the new cheap works of profane non-fiction promoted a separation of the sciences from Christianity, by linking them either to secularism or outright atheism. This was a separation with which evangelicals could not agree, and the secular publishing programme was intended to demonstrate to its readers how harmony should be achieved. The evangelical emphasis meant that nature could not be privileged over revelation, as happened in natural theologies or in devotional works which borrowed their style. Thus, the call to conversion which was included in every work was based on the power of the story of Christ's sacrifice, not on a natural theological proof. The rest of the work demonstrated that there was nothing about the sciences which was contradictory to Christianity, when both were properly interpreted, and that there were times where a study of nature provided visible demonstrations of the tenets of religion, often through analogies. The sciences were presented as a useful part of a Christian education because they helped the reader both to learn more about the Creation, and to understand the scriptures, by identifying plants, animals or minerals mentioned by the inspired writers. In this latter sense, the sciences could be made part of scriptural studies, alongside histories of the Biblical civilisations and biographies of their kings and military commanders. However, most of these theological justifications for studying the sciences were not explicit in the works themselves. They were used by the RTS committee when justifying the new programme to its subscribers. In the works themselves, the theology was muted, being presented in the tone, rather than the explicit content.

Evangelical popular science works had to compete on an open market with other reading material targeted at the same audience. The name and reputation of the RTS

³ For the difference between the early nineteenth-century mass, perceived as a heterogeneous crowd, and the twentieth-century tendency to see the mass as homogeneous, compare Klancher, J.P., *The Making of English Reading Audiences, 1790-1832* (Madison, 1987), Ch.3 and Curran, J., and J. Seaton, *Power without Responsibility: the press and broadcasting in Britain* (4th ed. London, 1991), Ch.15.

would provide an entry for its works into most faithful households and organisations, so the challenge lay in getting the works into other places, particularly into the hands of the industrial working classes. The Society's fear was that these groups were reading secular and infidel works, although it seems more likely that fiction, especially in the cheap periodicals, was the reading material with which the RTS actually had to compete.⁴ In either case, the existing material presented risks to the reader's soul, whether by outright explication of infidel doctrine, or by the insidiously corrupting effects of secularism and immoral fiction. The RTS needed to replace one sort of reading material with another. Doing this through the marketplace depended upon the replacement being similar enough to be preferred over, or mistaken for, the existing material. Yet for the spiritual aims of the Society's works to have their effect, its works had to be distinctly different from those of its competitors. Out of the attempt to resolve this conundrum came the necessity of low prices, the small mass-produced format, and attempts to use non-middle-class channels for distribution, as well as the need to devise a style which was both typical of secular popular science works and yet Christian. The way this compromise worked out meant that the RTS works were likely to be more effective against the secular non-fiction in the middle and lower-middle classes than against either infidel non-fiction or immoral fiction amongst the working-classes. This is borne out by the sales figures, which were large, but nothing like large enough to have included a significant proportion of working-class readers.

One of the main problems with the flood of cheap publications lay in disciplining readers. When works were read in the middle-class home, in the parish library, or the Sunday school, there were existing systems of authority to ensure that readers interpreted the works 'correctly' – as well as censorship which would have kept out many potentially corrupting works in the first place. In such a setting, evangelical works provided a safe medium for reading about profane subjects, and relieved the

⁴ For attempts to discover what the common reader might actually have been reading, see Webb, R., *The British Working Class Reader, 1790-1848: literacy and social tension* (London, 1955); Altick, R.D., *The English Common Reader; a social history of the mass reading public, 1800-1900* (London, 1957); James, L., ed. *Print and the People 1819-1851* (Harmondsworth, 1976); Vincent, D., *Bread, Knowledge and Freedom: a study of nineteenth-century working class autobiography* (London, 1982).

reader from having to actively work to resist anti-Christian sentiments. Beyond such systems of authority, among the readers with whom evangelicals were most concerned, it was the Christian tone which had to try to control readers' interpretations. While it could not function as effectively as a teacher's supervision, it limited the range of interpretations open to the reader, by making it more difficult to read an infidel message against the Christian tone.⁵ What the reader would do with a 'correct' Christian reading of the sciences was not discussed. It was assumed that having once seen the proper way of viewing the sciences, it would be difficult or impossible to return to a non-Christian perspective. In other words, although the press could lend its power both to Good and Evil, when given a fair chance, Good would vanquish Evil.

As we have seen, the Society and its writers had to negotiate the tension between this spiritual mission and the commercial world of publishing, or between the spiritual and temporal worlds. The Society itself embodied both these facets in its structure, with the separate benevolent and publishing wings. As with the Bible Society, the subscribers generally saw, and were presented with, the benevolent activities.⁶ For them, the RTS was a religious organisation dedicated to evangelisation throughout Britain and the world. That it carried out this mission through a publishing business was secondary. For the committee and staff in Paternoster Row, the Society was a commercial publishing operation that had to respond to market demands and contemporary trends within the book trade, just like any other publisher. The committee members knew that the purpose of their organisation was evangelisation, and that they were stewards of the Lord's wealth, but they also believed that the best way to achieve their aims was by being careful businessmen, not enthusiastic amateurs. Yet although this attitude grounded their actions on the Society's behalf, the annual reports and the *Christian Spectator* hid the commercial reality behind the appearance of a religious society, in order to gain support from the evangelical community. The same tension can be seen with the writers, who were presented, by

⁵ On the creativity of readers, see Fish, S., *Is There a Text in This Class? the authority of interpretive communities* (London, 1980); on the constraints placed on readers, see Jauss, H.R., *Toward an Aesthetic of Reception* (Minneapolis, 1982); Eagleton, T., *Literary Theory: an introduction* (Oxford, 1983), Ch. 2.

⁶ Howsam, L., *Cheap Bibles: nineteenth-century publishing and the British and Foreign Bible Society* (Cambridge, 1991), 203-5.

both the RTS and themselves, as people with a spiritual vocation to write for Christ. This image hid the important role that such writing played in the domestic economy of the writers, and disguised the physical labour involved.

When the committee justified its new publishing programme, it played upon the threats posed by cheap publishing, and the theological aims of its own response. These explanations certainly had a basis in fact, but it is also the case that the new publications came at an opportune moment for the Society. Not only did its income recover from the slump of the late 1830s and early 1840s, but it entered a period of sustained growth, as Figure C.1 clearly shows. When the sales income peaked in 1885, it stood at over £180,000 a year. It had barely come close to £60,000 prior to 1850. Such a massive increase in sales was made possible by the new publishing programme, with its broader appeal particularly among the middle and lower-middle classes with spending power. The zenith of the programme was arguably the *Boy's Own* and *Girl's Own Papers*, launched in 1879 and 1880, which were voted the most popular periodicals among adolescents in 1888, and which boosted the sales income to heady heights.⁷ Although the benevolent income of the Society did double over the same period (to around £12,000 in 1885), it was still dwarfed by the sales income, and it was the latter which made possible the vastly expanded system of charitable grants to tract and Christian literature societies all over the world. The annual value of these grants grew from around £10,000 in the 1850s to over £40,000 in the 1880s. Over the course of this period, the RTS reformulated itself from a middle-class society evangelising the working-classes, to a national organisation bringing Christianity and literacy to the world. As before, the fact that the extensive overseas activities were substantially funded by the commercial success of the British publishing operation, was hidden behind the success of the mission.⁸

⁷ Salmon, E., *Juvenile Literature as It Is* (London, 1888), 15, 23. The stories of the papers are told in Cox, J., *Take a Cold Tub, Sir!: the story of the Boy's Own Paper* (Guildford, 1982), and Forrester, W., *Great-grandmama's Weekly: a celebration of the 'Girl's Own Paper', 1880-1901* (Guildford, 1980).

⁸ When sales incomes began to fall in the 1890s (and continued to do so into the twentieth century), the grant programme was threatened. The committee initially tried to get through what it thought was a brief bad spell by using funds from the capital reserves (e.g. RTS Report (1896): 2; (1897): 16), but by the early 1900s, it was forced to curtail the grant programme. It was tied much more closely to the benevolent income, with contributions from the trade fund when possible (as had been the case prior to the post-1850 expansion), and more attention was devoted to encouraging the auxiliaries in their fund-raising efforts (e.g. RTS Report (1910): 143-89, especially 181-9). The decline can be attributed in

The sciences made up almost a third of the titles in the Society's first venture into secular publishing, and they continued to appear in large numbers on its catalogues throughout the century, as my epigraph makes clear. This would provide another blow, were one needed, against the conflict thesis that has dominated the historiography of science and religion since the late nineteenth century.⁹ Studies of natural theology in the early nineteenth century have done much to show the inadequacy of the conflict thesis, as have studies of some of the alleged exemplars of conflict. For instance, Darwin has been shown to have lost his faith through family bereavement, not as a consequence of his evolutionary theory, and we now know that there was no single unified response to natural selection from 'religion', but rather, a whole host of individual responses, from theists just as from non-theists.¹⁰ What these studies have not, as yet, done, is help us understand the relations between science and faith in that large community of people who were experts in neither science nor theology. Given that the focus in history of science more generally has moved from elite to non-elite groups, and from theories and doctrines towards practices, it is time that our analyses of science and religion did likewise.

One of the problems has been identifying the groups and practices for study. This thesis has demonstrated that religious publishing can provide a suitable focus. Writing, publishing and reading about Christianised sciences were practical activities in both science and religion. Through them, we can see how an interest in the sciences interacted with faith on a practical, everyday level, rather than the theoretical, more intellectual level that is usually studied. Related studies of

part to increased competition consequent on the changes in the publishing trade in the 1890s (see Eliot, S., *Some Patterns and Trends in British Publishing 1800-1919* (London, 1994), 13-14), to the unquantifiable effects of secularisation (see Hewitt, G., *Let the People Read: a short history of the United Society for Christian Literature* (London, 1949), 73 and compare Chadwick, O., *The Secularization of the European Mind in the Nineteenth Century* (Cambridge, 1975)), and to the decline of evangelicalism as a major force in British religion (see Wolffe, J., ed. *Evangelical Faith and Public Zeal: evangelicals and society in Britain 1780-1980* (London, 1995), introduction). A brief history of the RTS, and its successors from 1935, the USCL and the Lutterworth Press, can be found in the celebratory brochure produced by the USCL (with Aileen Fyfe and Lutterworth Press), *Two Hundred Years of Christian Publishing* (1999), 13-20.

⁹ Draper, J.W., *History of the Conflict between Religion and Science* (London, 1875); White, A.D., *The Warfare of Science with Theology in Christendom, with a Preface by John Tyndall* (London, 1876).

¹⁰ Moore, J.R., 'Of love and death: why Darwin 'gave up Christianity'' in *History, Humanity and Evolution*, ed. J. Moore (Cambridge, 1989): 195-230; Moore, J.R., *The Post-Darwinian Controversies: a study of the Protestant struggle to come to terms with Darwin in Great Britain and America, 1870-1900* (Cambridge, 1979).

missionaries who collected natural history specimens, or of ministers who combined pastoral visiting with agricultural observations, would also contribute to such an effort. In addition, the publications recommended to their readers a practical way of approaching the natural world, by suggesting that it be considered a source of analogies for the spiritual world, as well as evidence for divine benevolence and foresight.

As subjects for study, the committee, staff and writers of the RTS form a fairly homogenous group, characterised by their middle-class, usually professional or commercial, backgrounds and their evangelical Christianity. They were all sufficiently motivated by their faith to actively get involved in evangelism. They also represent a subset of a much larger body, for these seventy or so people could stand for the 3,600 subscribers of the Tract Society, and indeed for a substantial proportion of the members of the much larger Bible Society. There are few names among them that are still well-known, but in their day, committee members (in particular) of the big pan-evangelical societies were notable figures in the social milieu of evangelicalism. These people were also enormously influential. Their publishing programme was intended to change the lives of its readers, to make some into evangelicals, and to provide existing evangelicals with ways of thinking about contemporary issues which reflected the beliefs of the writers and committee. Examining their publishing, therefore, tells us not only about the ways in which those particular evangelicals combined faith and the sciences, but about how all their readers were encouraged to think about the issue.

My thesis has not addressed the question of how successful evangelicals were in their conversion attempts, but this does not undermine my argument. It does not matter whether readers of the Monthly Series were instantly converted to evangelicalism. Probably, few were. More may have been convinced by its argument against the separation of science and faith. But for many more readers, that Series was influential for being the cheapest, most widely distributed source of introductory treatises on the sciences (and other profane knowledge) available in the 1840s and 1850s. It therefore reached places and readers that other series did not, and presented them with a particular version of Christian natural knowledge. As modern studies of media effects reveal, the press may not affect its readers as directly as writers or publishers might

wish, but it does affect what they know and how they think about it.¹¹ Thus readers of evangelical popular science did not have to accept its messages wholeheartedly, but its mere presence, as one of few sources of information on the sciences, made its particular presentation influential.

Surviving copies of Monthly Volumes occasionally bear evidence that they were used. In 1852, 'I. Henderson, Esq, with J. Burton' were given a copy of *Money*, with 'sincere regards', which came from the shop of one G. Lovejoy, 'bookseller and publisher'. Someone else bought a copy of *Successful Men of Modern Times* from G. Hope, 'stationer and dealer in paper hangings' of York. Both these booksellers had marked the books with their stamps. A copy of the double-volume of the *Solar System* seems to have been intended for the circulating library of Robert Peddie, for which it bears a label, although the volume's identification number was never filled in. Once the books were sold or borrowed, readers frequently marked them. The Rev. S.J. Austwinter, of the Scottish Church in Pimlico, clearly read his copy of *The Task* with a pencil in hand, under-lining the text, and adding crosses and words in the margin. However, he appears to have stopped reading at page 120.¹² Evereld Hustler of Acklew Hall was given a copy of *Ancient Jerusalem* by 'her affectionate cousin, George Pollard Mills' in March 1849, and she too added lines to mark particular passages.¹³ The reader of an early copy of *Animal Structure*, which ended up in the Co-operative Stores, Harden, in the mid-1880s, paid particular attention to the illustrations, adding labels to the diagram illustrating the spinal column of quadrupeds, and re-drawing the cross-section of a bird spinal column to demonstrate its flexibility, as discussed in the accompanying text.¹⁴

Of course, not all the copies were so fortunate. Most of those in Leeds University library were bound in pairs in marbled boards, with leather spines and corners, and gilt detail. The edges of the pages were decorated with a speckled red pattern, and look as if the Rev. Dr. V. Kenna, B.A Litt.D., never opened them.¹⁵ One of the

¹¹ Curran and Seaton, *Power without responsibility*, 263.

¹² Copies in private collection.

¹³ Copy in Special Collection at Leeds University, at shelf-mark 'Geog 4-3.KIT'.

¹⁴ Copy in private collection. The marked illustrations are the ones at pp.127 and 151.

¹⁵ He owned (at least) 34 volumes of the Series. They are in the Special Collection at Leeds University, at shelf-mark 'Early Education REL'.

problems of trying to write histories of actual readings is that records are more likely to be left by educated readers than by the semi-educated working class readers who would be of particular interest. So, we know that William Buckland, the Oxford geologist, was a keen reader of the *Leisure Hour*, but he can hardly be said to have needed its call for harmonising the sciences with faith.¹⁶ However, a Welsh labourer, John Jones, found a copy of the Welsh translation of Dick's *Solar System* in his preacher's library, and recollected that, 'It was comparatively easy to understand'. Its writer and publishers would have been pleased to know that it gave him 'many a sublime thought', and that he later bought his own copy.¹⁷

The role of print in conveying information and affecting attitudes about the sciences has become increasingly clear in recent historical studies of science, and historians of science have turned to the new field of book history for inspiration. Recent and forthcoming publications testifying to this interest include Adrian Johns's *The Nature of the Book* (1998), James Secord's *Victorian Sensation* (2000), Marina Frasca-Spada and Nicholas Jardine's edited volume *Books and the Sciences in History* (2000), a special 'book history' issue of the *British Journal for the History of Science* (summer 2000), and essay reviews of the field by Adrian Johns and Jonathan Topham.¹⁸ Johns has written that, 'The history of the book is consequential because it addresses the conditions in which knowledge has been made and utilized. All of its further implications may be derived from this.'¹⁹ In noting the importance of books in securing acceptance for novel facts about nature, Johns draws upon sociologically-inspired historical studies of the sciences, such as those of Steven Shapin and Simon Schaffer, which have placed communicative practices at the heart of histories of

¹⁶ Gordon, Mrs, *The Life and Correspondence of William Buckland, DD FRS* (London, 1894), 269.

¹⁷ Quoted in Astore, W.J., 'Observing God: Thomas Dick (1774-1857), evangelicalism and popular science in Victorian Britain and Antebellum America' (D.Phil., University of Oxford, 1995), 231, and from information from Anne Secord.

¹⁸ Johns, A., *The Nature of the Book: print and knowledge in the making*, (Chicago, 1998); Secord, J.A., *Victorian Sensation: the extraordinary publication, reception and secret authorship of Vestiges of the Natural History of Creation* (Chicago, 2000); Frasca-Spada, M., and N. Jardine, eds. *Books and the Sciences in History* (Cambridge, 2000); *BJHS* 33 (2000:ii); Johns, A., 'Science and the book in modern cultural historiography' *Studies in History and Philosophy of Science* 29 (1998): 167-94; Topham, J.R., 'Scientific publishing and the reading of science in early nineteenth-century Britain: an historiographical survey and guide to sources' *Studies in History and Philosophy of Science* (2000).

¹⁹ Johns, *Nature of the book*, 623.

science because of their role in moving knowledge beyond the site in which it was first made.²⁰

This suggests that popularisation ought to be a central aspect of such histories.²¹ In his recent *Making Natural Knowledge* (1998), Jan Golinski mentions popularisation several times, as, for instance, when discussing Ludwik Fleck, he writes, ‘As facts are translated from the language in which they are represented among specialists to language appropriate for a lay audience, they become consolidated as knowledge.’²² But although Golinski includes several other tantalising references, he takes the issue no further. The recent sociological work has been important in undermining the still-dominant ‘diffusion’ model, by making popularisation part of the construction of knowledge, rather than the diffusion of an already-constructed knowledge.²³ But despite this, most studies have remained focused on scientific practitioners as popularisers and on relatively small communities. Analyses of popular science need to be freed from these artefacts of the study of expert science, to examine the activities of other sorts of popularisers, and enormous audiences.²⁴ The present focus means that the activities of science journalists and professional popularisers are considered primarily in the light of their assistance in the making of knowledge fashioned by the scientific community, and that the possibility of other sources of knowledge for society at large are not considered. Despite the lip-service paid to popularisation, both the historical studies of seventeenth-century natural philosophy

²⁰ Shapin, S., ‘Pump and circumstance: Robert Boyle’s literary technology’ *Social Studies of Science* **14** (1984): 481-520; Shapin, S., and S. Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle and the experimental life* (Princeton, 1985); Schaffer, S., ‘Natural philosophy and public spectacle in the eighteenth century’ *History of Science* **21** (1983): 1-43; Schaffer, S., ‘On astronomical drawing’ in *Picturing Science, Producing Art*, eds. C.A. Jones and P. Galison (London, 1998): 441-74.

²¹ Cooter, R., and S. Pumfrey, ‘Separate spheres and public places: reflections on the history of science popularisation and science in popular culture’ *History of Science* **32** (1994): 237-67, at 240-44, discuss the effect on sociological histories of science on popular science and popularisation.

²² Golinski, J., *Making Natural Knowledge: constructivism and the history of science* (Cambridge, 1998), 34. See also 122, 169. Fleck, L., *Genesis and Development of a Scientific Fact* (1935; Chicago, 1979), 111-16.

²³ For instance, Schaffer, ‘Astronomical Drawing’. On the weaknesses of the diffusion model (but not for an alternative model), see Hilgartner, S., ‘The dominant view of popularization: conceptual problems, political uses’ *Social Studies of Science* **20** (1990): 519-39. Golinski still uses the term ‘diffusion’, for example, Golinski, *Making natural knowledge*, 169.

²⁴ Although Latour could be said to have done part of this, by studying an entire country, the restriction of his focus to Pasteur and his followers privileges the scientific laboratory, Latour, B., *The Pasteurization of France* (Cambridge MA, 1988). This would still have been true had he paid equal attention to Koch, as Schaffer has recommended, Schaffer, S., ‘The eighteenth brumaire of Bruno Latour’ *Studies in History and Philosophy of Science* **22** (1991): 174-92.

and the sociological studies of twentieth-century science continue to imply that it is only the knowledge made in and by the scientific community which matters.

This is in contrast to another recent growth area in history of science, which might be called ‘science in popular culture’.²⁵ Studies in this area are more concerned with studying science from below, by examining how groups of artisans, for instance, actually practised science, and how *their* natural knowledge was constructed. Sometimes this involves an overlap with the knowledge of the scientific community, but it is not necessarily straight-forward assimilation.²⁶ Adrian Desmond and Anne Secord have both shown that artisans could appropriate elite knowledge for their own political or social purposes.²⁷ This suggests that the construction of natural knowledge in non-elite groups (which need not only mean working-class groups, but may equally include middle-class groups) needs to be more carefully studied for its own benefit, rather than as an adjunct to studies of elite science. It also means that studies of popularisation need to become more complex. It is not just that constructivist histories point to the importance of popularisation in making knowledge, but have yet to investigate this beyond a few small-scale privileged sites. We need to take more seriously the dialectical struggle involved in popularisation, and the creativity with which readers or auditors may interpret the ‘facts’ presented to them. We also need to remember that scientific practitioners are not the only agents involved in popularisation, and that their presentations compete with others. This transforms the study of popularisation from the investigation of the apparently passive diffusion of natural knowledge from the scientific community to ‘the public’, into a dynamic study of several purveyors of ‘knowledge’ struggling to grab the attention and understanding of their audience, while all the time the myriad groups within the audience interpret and appropriate selectively for their own ends.

²⁵ This is the sense of ‘popular science’ that Cooter and Pumfrey seem most interested in, Cooter and Pumfrey, ‘Separate spheres’, 247-53.

²⁶ On the struggle between ‘popular’ and ‘dominant’ culture, see Bourdieu, P., ‘The uses of the people,’ in *In Other Words: essays towards a reflexive sociology* (Cambridge, 1990): 150-5.

²⁷ Desmond, A., ‘Artisan resistance and evolution in Britain 1819-1848’ *Osiris* **ns 3** (1987): 72-110; Secord, A., ‘Science in the pub: artisan botanists in early nineteenth century Lancashire’ *History of Science* **32** (1994): 269-315; Secord, A., ‘Corresponding interests: artisans and gentlemen in nineteenth-century natural history’ *British Journal for the History of Science* **27** (1994): 383-408.

Given the complexity of popularisation, and the lack of control exercised over it by the scientific community, we should not expect the historiography of popular science to follow that of professional science. One of the most obvious ways in which this is true is with respect to the relations between the natural sciences and religion. In the 1840s, the cheap popular press provided opportunities for secular and infidel presentations of the sciences, as well as the more typical Christian presentations. But while secularising professionals gained the upper-hand in the scientific community over the next few decades, they did not have the authority nor the organisational resources to influence popular science publishing. Evangelicals did have relevant organisations and a certain authority, and used them to defend the links between science and faith. These links remained intact well into the late nineteenth century.²⁸

My study has used evangelical popular science publishers to illustrate the extremely active engagement involved in popularisation, by focusing on the manipulation of physical strategies of production, marketing and distribution as well as rhetorical strategies for controlling interpretations. Evangelicals were particularly keen to reach working-class readers, but most of their practices were typical of the commercial houses. No matter whether the publisher was philanthropic or purely commercial, few were publishing popular science with the sole aim of improving the public understanding of the knowledge made in scientific laboratories or museums. Although expert men of science could have been employed as writers, in general they were not. The ones who were, particularly from the late nineteenth century onwards, tended to write for the educated middle classes, rather than the enormous working-class audiences.²⁹ In order to secure widespread assent for their version of natural knowledge, men of science would have had to learn the same techniques as the religious publishing societies, which already knew how to use the press to promote their own version of knowledge.

²⁸ The Lutterworth Press, the descendent of the RTS, published the works of the astronomer Patrick Moore and the natural history writer David Attenborough in the mid-twentieth century.

²⁹ For example, the late nineteenth-century International Scientific Series was written by men of science, see MacLeod, R.M., 'Evolutionism, internationalism and commercial enterprise in Victorian Britain: the International Scientific Series 1871-1910' in *The Development of Science Publishing in Europe*, ed. A.J. Meadows, (Amsterdam, 1980): 63-93.

Now that scientists have become particularly concerned with the issue of public understanding of science, by virtue of its presumed link with public approval and hence government funding of science, they are starting to become aware of the importance of these issues. As one science ‘scare’ after another hits the headlines, scientists worry that the public will be unable to interpret the information correctly, and that unauthorised speculations will prove too influential. The organisations set up to promote the public understanding of science are, despite their claims, just as much interested parties as were the evangelicals I have been discussing. With all the resources and experience the nineteenth-century publishers possessed, they were only partially successful in reaching the audience they sought, let alone in convincing them. Whether the modern popularisers will have any more success remains to be seen.