

The Boy's Own Paper and late-Victorian juvenile magazines

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In his 1888 study of children's reading habits, the late-Victorian journalist Edward Salmon presented results of a questionnaire inviting children from selected schools to identify their favourite authors, books, and magazines. Among the most striking revelations were boys' voracious appetite for fiction in books and magazines, and the fact that one of the most common ways in which such readers absorbed 'information' on 'historical, or scientific, or naturalistic subjects' was through the *Boy's Own Paper* (*BOP*) (fig. 6.1).¹ This penny weekly had been launched in January 1879 from the offices of the *Leisure Hour*, itself a hugely successful family weekly issued by one of the leading British publishers of evangelical tracts and periodicals, the Religious Tract Society (RTS). Salmon's evidence was clearly designed to support a pre-existing argument for the desirability of 'healthy' alternatives to the cheap and pernicious 'penny dreadfuls' for which children clamoured each week. Nevertheless, his questionnaire is consistent with the astonishing circulation figures achieved by the *BOP* in its first decades: in early 1880 it was boasting weekly sales of 200,000 copies and was sustaining this figure in the late 1890s.² Even if we allow for the *BOP*'s exaggeration of its achievement, it was among the most successful juvenile serials of the late-Victorian period, enjoying a circulation comparable to such prominent general periodicals as the *Daily Telegraph*, being much imitated by later juvenile serials, and offering the strongest competition to such downmarket rivals as *Boys of England*.³ A substantial portion of the juvenile reading public would have taken the *BOP*, including some of the subsequent movers and shakers in Edwardian Britain.⁴

Scholars have long recognized the importance of mass-circulation juvenile periodicals such as the *BOP* in shaping the young minds of the late-Victorians and early Edwardians. These serials promulgated ideas about empire, race, masculinity, and war, and as John Mackenzie argues, turned the world into a 'vast adventure playground in which Anglo-Saxon superiority could be repeatedly demonstrated *vis-à-vis* all other races, most of whom

were depicted as treacherous or evil', and made 'violence, boisterousness, and cruelty' acceptable because 'they could be depicted as necessary adjuncts to the spread of civilisation, Christianity, and Just Rule'.⁵ Although historians recognize that many of these values were expressed in the context of scientific discussion – for instance, practical advice on killing insects or stories of heroic British explorers – there remain few systematic analyses of scientific material in nineteenth-century juvenile periodicals.⁶ Current scholarship on science and juvenile literature *per se*, however, suggests different ways in which we can approach science in journals for boys and girls, from analysis of the literary forms in which science was re-presented to the young, to the role of those dominant producers of nineteenth-century children's literature – the religious presses – in controlling how youths read and used scientific material.⁷

The significant amount of scientific material in the *BOP*, and the high status of its contributors, make it an important case study for understanding mass consumption of the sciences. Recent bibliometric work by David Reed has shown that of fourteen leading popular magazines published in Britain and America in the 1890s, the *BOP* contained one of the highest percentages (approximately 6 per cent) of material on topics relating to science, technology, nature, and health.⁸ Moreover, the authors of this material included such important Victorian popularizers of science as the Revd John George Wood and John Scoffern. As Bernard Lightman suggests, these practitioners 'may very well have been more important than the professionals in shaping the public image of science'.⁹ The *BOP* was launched in the period when non-specialist reading audiences were increasingly turning to such writers as Wood and Scoffern for the moral and religious teachings of the sciences – elements that once constituted common ground between elite scientists and their audiences but which the former were now expunging from the domain of professional science.

This chapter offers the first systematic analysis of the scientific material in the initial five years of the *BOP*, where 'scientific' is used as convenient shorthand for science, technology, and medicine. In the following section, I examine the foundation and ancestors of the *BOP*. I suggest that the *BOP* was unoriginal in attempting to provide children with healthier alternatives to 'demoralizing serials' and aimed to achieve its goal by combining elements of several successful juvenile periodical genres of the mid-Victorian period, from the expensive monthly magazine for boys to the cheap and racier boys' weekly paper. One of these elements was scientific material which, I argue, constituted an important part of the *BOP*'s strategy of producing a entertaining and wholesome serial that would please middle-class

boys and their high-minded parents and teachers. The remainder of this chapter demonstrates the insights afforded by an analysis of the scientific, medical, and technological references in the *totality* of *BOP* material – not simply articles dedicated to such topics. I begin this task by surveying the periodical's scientific contents, charting the backgrounds of principal 'scientific' contributors, and examining the types of sciences represented and in which genres these subjects most frequently appeared. This approach is then complemented in an analysis of the way scientific material worked in different genres, a task showing that what was being communicated was not just scientific knowledge but Christian and Anglo-Saxon notions of morality and racial superiority that were more explicitly presented elsewhere in the periodical. The chapter concludes by suggesting some of the ways in which the lessons of this chapter can help us develop a fuller picture of the quantity and functions of science in some of the most widely read publications for juveniles.

'READABLE AND HEALTHFUL, ENTERTAINING
AND INSTRUCTIVE'

In January 1879 the *Publisher's Circular* carried an advertisement for a 'journal for boys . . . comprising tales, sports, pastimes, travel, adventure and a variety of amusement and instruction'. The new journal was the *BOP* and the authors of the advertisement believed the periodical would satisfactorily answer the question of whether anything could be done to 'provide a Magazine that shall be at once readable and healthful, entertaining and instructive; or, are the demoralising serials now so widely disseminated to have it all their own way?'¹⁰ Many readers would have understood that the *BOP* was addressing an increasing middle-class concern about juvenile and especially boys' reading habits. The 1870 Education Act and rising disposable incomes had boosted the already growing market for juvenile literature.¹¹ By the time the *BOP* was founded, publishers had long been exploiting the gradual rise in juvenile literacy and taste for reading with books, serials, and other publications containing fiction and non-fiction for children of different gender, age, and class. Many parents, teachers, clergymen, and journalists such as Edward Salmon feared, however, that this growing market was being dominated by producers of the 'penny dreadful' rather than the more reputable publishing houses.¹² As John Springhall has shown, 'penny dreadful' was a pejorative and misleading term coined in the early 1870s by middle-class journalists to 'amplify social anxiety or "moral panic"' over the growing number of cheap juvenile periodicals that were

believed to poison young readers' minds.¹³ With sensational titles like *Wild Boys of London* (fl. 1864–77) and *Tyburn Dick, the Boy King of the Highwaymen* (fl. 1878), these excitingly written and luridly illustrated stories of adventure and crime commanded enormous readerships which often reached an estimated 1 million.¹⁴ The Religions Tract Society (RTS) knew that representing the *BOP* as the antidote to these publications would win the approval of the affluent and respectable middle classes. But the architects of the *BOP* and its even more successful sister periodical, the *Girl's Own Paper*, recognized that in order to displace the 'penny dreadful' the new periodical would have to ape some aspects of these lower publications.¹⁵ The problem was articulated by RTS member, James Bennett, who in 1882 told an annual meeting of the Society that 'It was absolutely necessary that the publications be of a kind that boys and girls who had been accustomed to buying these abominable publications would be attracted by and induced to purchase.'¹⁶ Parents, teachers, and educationists recognized that children would not be drawn from 'penny dreadfuls' with the heavily religious and dreary didactic material that filled the *Child's Companion*, the *Youth's Magazine* and other early nineteenth-century juvenile periodicals: it had to be achieved with a more appealing diet of exciting but wholesome stories and illustrations about things that interested children. The *BOP*'s first editor, George Hutchison, was acutely aware of this problem and had to persuade the conservative clergymen and evangelical social reformers who formed the RTS General Committee that a periodical 'having articles on common subjects, written with a decidedly Christian tone' rather than 'articles on religious subjects' would be one of the ways of adapting the Society's evangelical mission to juvenile readers of the 1880s.¹⁷

The *BOP* was, however, an unoriginal solution to an existing concern about mass literacy. As we saw in the introduction, the 1850s was the beginning of a boom in children's literature *per se*, and religious and secular publishers alike exploited both the falling costs of producing and distributing periodicals and growing juvenile literacy to launch a plethora of cheap illustrated weeklies and monthly magazines designed to displace pernicious juvenile reading matter.¹⁸ These included Samuel Beeton's *Boy's Own Magazine* (founded 1855), W. H. G. Kingston's *Magazine for Boys* (founded 1859), and *Aunt Judy's Magazine* (founded 1866) and other journals that catered to juvenile readers increasingly differentiated according to gender, age, and religious denomination.¹⁹ One of the major differences between these serials and most early nineteenth-century children's magazines was the emphasis on fiction, entertainment, and secular instruction and the reduced amount of material on religion. Scientific material constituted a

small but significant part of the new periodicals' blend of wholesome instruction and entertainment, typically appearing in the context of articles on nature study, pet care, and domestic scientific experiments, and in stories of fictional adventurers or accounts of virtuous scientists.²⁰ This material built on established traditions in religious and secular literature for children in which scientific subjects were used in a variety of ways, from supporting a theology of nature and providing the basis for rational amusement, to furnishing material for inculcating mental discipline and satisfying children's taste for facts.²¹

The shifting focus of children's periodicals to more secular material reflected a more general development in secular *and* religious publishing. For example, from the mid-1840s, the RTS began issuing cheap books and periodicals containing secular material written in a Christian tone, publications designed to draw mainly working-class readers away from immoral literature. As Fyfe has shown, the most successful of these publications, the *Leisure Hour*, a family weekly launched in 1852, represented an important new direction for the Society because unlike most of its juvenile books and serials of the early nineteenth century, the journal included fiction, albeit written in a moral tone, and contained far fewer statements of the atonement and other Christian doctrines.²² To achieve a similar success in the mid-Victorian market for male juvenile periodicals, the RTS had to compete with high-quality serials such as *Boy's Own Magazine*, but more importantly, the flurry of cheap illustrated boys' periodicals issued from the mid-1860s by fierce publishing rivals Edwin Brett, William Emmett, and John Allingham. These astonishingly successful serials, of which Brett's *Boys of England* (founded 1866) was the most widely read, offered more fiction and far less pedagogical and factual material than *Boy's Own Magazine* and similar journals, and although explicitly launched to counter the effects of 'penny dreadfuls', included a large proportion of the sensational material that parents and teachers abhorred.²³

One of the editors of the *Leisure Hour* was James Macaulay, a journalist who rose to the powerful position of the RTS's general editor.²⁴ In the late 1870s he played a central role in the RTS's agonizing attempt to establish a new cheap boys' periodical that would counteract the effect of 'demoralising serials'. In mid-1878 the RTS began its protracted debates on the content of the journal and commissioned a specimen number from George Hutchison, the editor of several religious and philanthropic journals and a campaigner for charitable organizations.²⁵ The content of the journal proved to be a major headache for Hutchison before and after its launch because what he believed boys really wanted to read did not always square with what the RTS

thought they should read. With Macaulay's warm support, the RTS General Committee reluctantly accepted Hutchison's final specimen number for what would be called the *BOP*, on the condition that its evangelical tone be increased once steady sales had been secured. Owing to his greater reputation within the RTS, Macaulay was chosen over Hutchison as the *BOP*'s official editor, but Macaulay, laden with other journalistic work, gave most of the editorial duties to Hutchison, the journal's sub-editor.

The format and content of the *BOP* suggest that Hutchison's solution to the problems of satisfying the conservative RTS and readers of 'penny dreadfuls' was a compromise between many of the juvenile and family journals launched since the 1850s: the expensive, high-quality monthly boys' magazine (for example, the *Boy's Own Magazine*); the cheap, high-quality family weekly containing an even balance between moralizing fiction, essays, and instructional articles (for instance, the *Leisure Hour*); and the cheap weekly containing a greater proportion of fiction and other sensational material (for example, the *Boys of England*). Comparisons between the *BOP* and the RTS's *Leisure Hour* are instructive and reveal many of the ingredients of the *BOP*'s success. For a penny, *Leisure Hour* readers had sixteen double-column pages comprising approximately six long articles, including serialized fiction, biographies of virtuous men and women, essays, poetry, a column of miscellaneous extracts, and between five and six illustrations. Like the *Leisure Hour*, the *BOP* opened with its leading serialized novel, but for the same price and number of pages as the older periodical *BOP* readers got larger pages containing three columns of smaller print. These carried over twice the number of articles, which comprised all the genres appearing in the *Leisure Hour*, and several more including editorial replies to correspondents, competitions, coloured plates, appeals for charitable causes, music scores, and puzzles.²⁶ It also included a regular column, 'Our Note Book', which more than most genres, set the moral tone of the periodical with its frequent descriptions of individuals whose lives exemplified such moral qualities as courage, honesty, piety, self-sacrifice, and teetotalism. The more eye-catching appearance of the *BOP* was created by its illustrations which were not only more numerous than the *Leisure Hour*'s, but usually more dramatic in order to serve the periodical's racier stories of adventure and articles giving instructions on scientific and other hobbies. The latter set the *BOP* apart from the *Leisure Hour* and put it closer to Beeton's *Boy's Own Magazine* and several other mid-Victorian boys' magazines, although the *BOP* supplied instructions that were less encumbered with the technical details that had deterred many readers of Beeton's publication.²⁷ The commercial success of the *BOP* depended on

its sheer variety, the exciting stories, the high-quality illustrations, but also the stature of its contributors: besides the Revd J. G. Wood, and Dr John Scoffern, it boasted the evangelical fiction writers W. H. G. Kingston and R. M. Ballantyne, and the leading French writer of scientific romances and adventures, Jules Verne.

In several ways, the *BOP* continued the shift to secular publishing begun by the RTS in the 1840s. Compared with RTS publications of the early Victorian period, the *BOP* represented far broader notions of the literary genres and subjects that were considered suitable for establishing the Christian tone of a periodical: it included even fewer references to religious doctrines than the *Leisure Hour*, its RTS provenance was harder to spot, and it boasted even more fiction.²⁸ Hutchison's plans for the fictional content of the *BOP* did not always meet with the approval of the RTS who believed 'excessive' amounts of the material diverted the journal from its evangelical purpose.²⁹ But judging by the frequency with which he published praise of the *BOP* from parents, teachers, and clergymen, Hutchison was keen to demonstrate that his formula for fighting 'pernicious trash' was achieving its desired effect.³⁰

Like all periodicals, the *BOP* exploited the serial format – in fiction and non-fiction – to entice readers into buying subsequent issues. The format gave writers and illustrators chances to try something different each week, and it was this change that proved a major attraction. Such was certainly the perception of one reader who reminisced that "The "B.O.P." came quite early into our home, where I was the third of three boys, and it was a scramble to get the first read of the serial story, or the first attempt to solve some new problem, or the excitement to start some new hobby."³¹ As we shall see later, many of these new problems and hobbies were scientific, and it was precisely by instructing readers on these tasks on a week-by-week basis that the *BOP* sought to make science a more appealing aspect of juvenile leisure culture.

Implicit in articles on scientific hobbies was the expectation that any boy could become a participant in science.³² But the contents of the periodical suggest a more limited readership. True, most boys would have savoured the periodical's engravings and colour plates, but the text assumed a level of literacy that would have put the journal beyond the range of boys below the age of ten. The *BOP* appears to have envisioned readers aged from under sixteen to twenty-three, but from the age of entrants to *BOP* competitions it is clear that the periodical was read mainly by teenagers.³³ Neither would the *BOP* have been appreciated by many plebeian youths. Very little of the *BOP* deals with working-class lives and much of its fiction concerns public

schools and middle-class homes. More affluent readers would have been better placed to appreciate the scientific material. Typically, their parents would also have been able to afford the requisite resources for following the *BOP*'s scientific protocols, and they would have attended the better public and grammar schools where, unlike most secondary schools in mid- to late-Victorian Britain, the cultivation of scientific skills was beginning to be part of the curriculum.³⁴

PRODUCERS AND TYPES OF *BOP* SCIENCE

Who was responsible for the scientific material in this, one of the most successful of all late-Victorian juvenile magazines? The writers were generally individuals who were already admired by juvenile audiences for other pursuits, whether as writers of textbooks, novelists, popular lecturers, or contributors to other juvenile periodicals. Most were British males, many were retired scientists, technicians, or medical practitioners, some were clergymen, several were military officers, explorers, and sporting personalities, and many were journalists and writers of novels and children's books. By far the most prominent were the Revd John George Wood, Gordon Stables, Jules Verne, Theodore Wood, and Dr John Scoffern. As Lightman has shown, Wood's career embraced many clerical and academic appointments but he was best known to Victorian reading audiences for his books and articles on natural historical topics. He was just as energetic for the *BOP*, contributing (often in collaboration with his son Theodore) a plethora of serialized articles on botany, entomology, and other branches of natural history, articles that continued Wood's preoccupation with showing how the wisdom and existence of God was revealed in amateur studies of the natural world.³⁵

Stables may have lacked Wood's experience as a popularizer of science, but he was no less successful at presenting *BOP* readers with material for developing their understanding of animal life. In the 1870s, after a career embracing service on a whaling ship, work as a naval surgeon, and exploration, Stables developed a strong interest in domestic pets and animal welfare and his vast number of contributions to the *BOP* reflect his diverse experiences: serialized stories of land and sea adventure (frequently dealing with themes of hunting) and regular columns giving advice on caring for domestic animals.³⁶ By the time Stables began writing his adventure stories, Jules Verne had already won an international reputation for his contributions to the genre. He had also established himself among male juvenile readers as the author of a string of serialized scientific romances, many of

which reached British reading audiences for the first time in the *BOP*.³⁷ Like Wood, Scoffern had combined careers in teaching and popular science writing, holding a chair of chemistry at the Aldersgate School of Medicine and publishing technical works on industrial chemistry and chemistry texts for the young. He was responsible for much of the physical science content of the *BOP*, producing many series on the application of chemistry and optics to the creation of wholesome indoor entertainments.³⁸

Admired as the *BOP* was for including the serialized fiction of W. H. G. Kingston, Robert M. Ballantyne, Talbot Baines Reed, and Ascott R. Hope, these famous authors only occasionally engaged directly with scientific topics in the *BOP*. There were many other authors, however, who made much more substantial contributions in this direction, and who were clearly favoured by Hutchison because of their achievements in other fields. These included Thomas Millington, an Anglican vicar who wrote school and adventure stories, as well as fictional dialogues in which a boy and schoolmaster discuss the mechanical principles illustrated by such juvenile amusements as spinning tops, swings, and balloons; J. Harrington Keene, an angling expert whose serials on fishing and fish-breeding contained detailed discussion of the behaviour and anatomy of fishes; A. A. Wood, a London optician who wrote several articles explaining the scientific principles of magic lanterns and weather forecasting; and W. G. Grace, the famous cricketer whose series on his own sport included extensive discussion of the healthy lifestyle needed to succeed in the game. Whatever their speciality, contributors to the *BOP*'s scientific material seem to have shared a fundamental belief that they were pedagogues, moral guides, and entertainers. They tried to avoid what Gordon Stables called the 'break-jaw Latin' words and other details that would remind readers of the class-book and schoolroom, and developed other textual strategies for showing that learning about and practising science would improve their knowledge, character, and leisure time.³⁹ As far as scientific illustrations were concerned, many woodcuts were executed by artists such as Alfred Pearse and Warne Browne, although the *BOP* did enjoy the services of more established artists such as George Willis, John Sachs, and William Dickes, and the Kronheim firm of engravers. To save on production costs, the *BOP* reused much of the graphic material that originally appeared in the *Leisure Hour* and secured the rights to the work of L. Poyet and Gaston Tissandier, the leading artists of the French popular science weekly *La Nature*.

Scientific topics were to be found in almost all the periodical genres of the *BOP*, notably serialized pedagogical articles, essays, editorial replies to correspondents, serialized fiction, regular columns of miscellaneous

extracts and news items, travelogues, biographies, and the colour plates or woodcuts that often enriched other genres. The scientific topics covered in these genres were extensive and as Dixon suggests this material was 'less academic and more varied than in the boys' magazines of the 1860s'.⁴⁰ This does not mean that the *BOP* trivialized scientific material: on the contrary, many *BOP* contributors took very seriously their role as educators and supplied such intellectual matter as the Latin names of insects suitable for private menageries, explanations of physical principles governing toys, and facts relating to geographical features encountered by protagonists of an adventure story. As in many nineteenth-century juvenile periodicals, there is a large proportion of material on natural history, especially in connection with collecting and exhibiting specimens, and an equally significant coverage of geography and topography, much of which is discussed in the context of the wonders of the natural world or the heroic accomplishments of explorers. Even more prominent is the discussion and representation of animal behaviour and animal development – especially in relation to hunting wild species in distant countries, and the health, hygiene, and breeding of domestic animals. While this material was largely non-technical, it clearly played an important part in enhancing readers' understanding of animals in near and distant lands. Of the physical sciences, it is chemistry, optics, and electricity that dominate in the *BOP*, not least as subjects enabling the production of spectacular visual phenomena. Discussion of technology, engineering, and inventions is less prominent but features in a variety of contexts, including biographies of engineers, historical essays on balloon flight and ironclads, and instructions on building yachts and model steam engines. In general, medical topics have a lower profile than scientific subjects and tend to be limited to serialized fiction – notably, the representations of physicians' regular columns on the health of pets, and correspondence columns giving boys suggestions on managing their own health.

The *BOP*'s choice of scientific material reflects the strategy of the editor and contributors to make intellectual topics more interesting by associating them with juvenile hobbies or other leisure activities. This association was implicit in the frequent juxtaposition of scientific topics with those on sport, adventure, and other pastimes. This association is more explicit in the frontispiece of the *Boy's Own Annual* (the annual reissue of the year's *Boy's Own Papers*) which contains several vignettes, some showing such leisure activities as horse riding and yachting, and one depicting a microscope, an electrostatic machine, and a Leyden jar (fig. 6.1). The science–entertainment mixture was articulated most clearly by John Scoffern at the beginning of

his series on indoor chemistry amusements. 'It has been suggested to me', he reported,

that boy students of chemistry like nothing so well as coloured fires, bangs, abominable smells, and any chemical teacher who aims at satisfying his young folk must oblige them in this matter. Very good! I bend to the pressure of opinion; but in doing so, I shall not be content except my coloured fires, bangs and evil odours bring forth some product of instruction.⁴¹

For Scoffern, this way of giving instruction was far preferable to 'chalking [chemical] symbols on a blackboard' because it 'brings into play a number of faculties that would not otherwise be exercised'.⁴² Scoffern largely practised what he preached, for in the course of describing how to make such chemical spectacles as a lead fire-shower, he provided instructions on building elementary chemical apparatus and gave basic outlines of inorganic chemical reactions.

Scientific topics also played important roles in creating the sheer variety and aesthetic appeal of the periodical. In early volumes instructions for displaying insects or building steam engines provided a contrast to school stories and historical essays, while woodcuts of optical toys and colour plates of British birds, fishes, anemones, and other species gave lustre to pages of text (figs. 6.2 and 6.3). Equally significant, scientific material played an important role in creating the evangelical and nationalistic tone of the periodical. Indeed, scientific material lent itself to the very genres that the RTS believed fulfilled its purposes – accounts of real exploration, essays, and biographies of the virtuous. Throughout 1880, for instance, a range of different periodical genres featured scientific material conveying Christian messages of various weight. Verne's serialized story 'The Giant Raft' contained long passages describing the beauty and wonder of the Amazon, and its lavish engravings by Leon Benett helped articulate the narrator's belief that the Amazonian forests were 'a magnificent sermon'.⁴³ A subtly different lesson from the Amazon was drawn months later when an anonymous writer argued that although Amazonian insects caused him to 'shudder' every one had been 'created by the all-wise God for some specific beneficent purpose'.⁴⁴ Weightiest of all were a series of hagiographies of scientific practitioners whose lives and works were interpreted to illustrate Christian virtues (fig. 6.4). In keeping with the *BOP's* nationalistic tone, these were typically *British* practitioners and stories of their heroic rise from humble boys to accomplished adults fulfilled the same ideological function as the myriad pedagogical articles on *British* animals and fictional tales of plucky *British* explorers in foreign climes.

PEDAGOGY, MORALITY, AND RACIAL SUPERIORITY

Theologies of nature and nationalism were two of many 'non-scientific' themes that the *BOP* aimed to promulgate in its scientific material. In this concluding section I shall look in more detail at the ways in which other non-scientific lessons were conveyed in the different literary genres of the juvenile periodical. We shall see that scientific material helped the *BOP* fulfil its evangelical mission by spreading factual information about the natural world and that such information was underpinned by Christian and Anglo-Saxon notions of masculinity, morality, and racial superiority which featured more explicitly in articles on those common *BOP* subjects of sport, history, warfare, and adventure.

A significant proportion of the *BOP*'s scientific content appears in essays and pedagogical articles. Of the essays featuring scientific content, many were straightforward surveys of a narrow scientific topic (for example, precious stones and electrical machines), and several were written with a strong historical and autobiographical perspective, including histories of arctic exploration and military weapons, and first-hand accounts of trips to such sites of scientific and technological interest as the Amazon and a London sewage works. These articles tended to be more descriptive and narrative-driven, and in general had less technical detail than the more common location for science: the serialized pedagogical article. Most of these articles comprised protocols for conducting experiments or collecting specimens, detailed descriptions of different types of natural object, and in many cases, explanations of scientific principles underlying the topic. By catering to boys' interests in practical hobbies, adventure, and knowledge, *BOP* authors felt they were in a good position to introduce more abstract matters of theory. They believed that it was while pursuing hobbies, walking in the countryside, and playing games, that boys were in a prime position to consider scientific principles and participate in scientific investigation.

Pedagogical articles frequently reminded readers that practical science was not only a source of entertainment and instruction, but also a manly and moral activity. Take, for example, J. G. Wood's introduction to his series on 'Shore Hunting'. He began by describing the type of boy who, wanting to fill his own aquarium with marine animals, visits a shoreline and after merely observing that there are no animals suitable for his collection gives up his search. Believing *BOP* readers to exclude such 'lazy' people who 'expect to gather a harvest without taking any trouble about it', Wood advised that the good shore-hunter manfully roughed it for the cause of science, wearing old clothes and realising that he '*must* get wet'. Wood

had little time for the weaklings who protested that “this shore-hunting interferes with meal-times”, replying that:

Of course it does, but what of that? People ought not to go to the seaside to carry on the regularity of their town hours . . . the genuine shore-hunter troubles himself very little about regular meals, and if he should find himself very hungry while hard at work in the low water, he can make a very good luncheon on the limpets and mussels which cling to almost every rock.⁴⁵

Wood was one of many *BOP* authors who used the conduct of ‘genuine’ young scientific practitioners to promulgate Christian morality. Few issues revealed this strategy more prominently than cruelty to animals. Like all Victorian juvenile literature, the *BOP*’s attitude towards the treatment of animals was ambiguous, displaying what Mackenzie has called ‘a striking sentimentality towards domestic animals while describing in lurid detail the agonies and death throes of wild ones’.⁴⁶ This tension is especially noticeable in the periodical format of the *BOP* where, for example, Stables’s 1881 series on building a pigeon loft presents a much more humane approach to animals than the same author’s ‘The Cruise of the Snowbird’, a serialized story of adventure and hunting that ran parallel to the pigeon-loft articles. By the time the *BOP* was launched, however, the campaigns of anti-vivisectionists such as Frances Power Cobbe had made the treatment of animals a much more prominent topic of public debate.⁴⁷

The *BOP* generally tried to avoid ‘party politics in any shape or form’ but it did not evade discussion of vivisection.⁴⁸ On the contrary, this topic represents one of the most striking ways in which the early *BOP* used a controversial topic to define Christian morality in the context of scientific pursuits. One of the first *BOP* contributors to raise the issue was J. G. Wood in his 1879 pedagogical series ‘On Killing, Setting, and Preserving Insects’, which included detailed descriptions of the anatomy of various insects and protocols for dissecting them. He began, however, by rebutting objections that entomologists have ‘no right to destroy life needlessly’ and that killing insects ‘involves cruelty’. To the first objection he insisted that entomology fulfilled important theological needs, emphasizing that: ‘We cannot employ our minds on a higher subject than that which is afforded by the works of the Creator, and it is impossible to do so thoroughly without destroying life.’ Having ‘no sympathy with “sport” as exhibited by shooting creatures merely for the sake of killing them or displaying skill’, Wood defended ‘killing animals for the sake of natural knowledge’ or for the purposes of clothing and eating, and added that Christian objections to slaughtering animals for food were vanquished by the ‘recorded fact’ that Jesus Christ

ate cooked fish after the Resurrection. To the claim that entomology was cruel, Wood responded by insisting that 'An entomologist is never cruel' and never inflicts pain needlessly. He explained that even if the practitioner does inflict pain, 'insects do not suffer pain as mankind does' owing to their different 'nervous organisation'.⁴⁹

The *BOP*'s editor, however, evidently felt that Wood had not sufficiently distinguished entomology from cruel animal sports and added a note explaining that Wood's 'facts do not diminish the guilt of wanton cruelty or the needless destruction of life'.⁵⁰ The *BOP* often defined morality through appropriate attitudes to animals in parables, reminiscences, pedagogical articles on pet breeding, and in stories of adventure, but was not always successful in making hunting a topic that could simultaneously carry a moral message and make for exciting reading matter. In 1884, for example, the *BOP* published a story involving a reprehensible character who baits badgers for fun, but this so offended the RTS General Committee that they condemned the periodical's implicit 'approval of the practice of persons for their amusement baiting animals' and felt they needed to have greater control over editorial decisions by urging 'more direct communication' between the Committee and the *BOP*'s editor.⁵¹

The RTS General Committee had no problems with the *BOP*'s representations of British scientific practitioners and inventors. Telling scientific lives could inculcate national pride and, as in many evangelical periodicals (see chapters 3 and 9), Christian virtues. Typically, the *BOP* imparted basic technical information but implicitly suggested that industry, benevolence, perseverance, courage, and piety, led to greatness in science, engineering, and other fields of endeavour. Thus, the industrialist Josiah Wedgwood was praised for his 'incessant' industry and love of truth 'in everything, great or small', while the baker-geologist Robert Dick was valorized for pursuing scientific interests despite adverse social and financial circumstances, and for learning 'to look from Nature up to Nature's God'.⁵² The *BOP* tended to look to long-dead British figures for examples of the 'wise and the good', but the careers of living scientists could be represented to promulgate virtuous behaviour. In one of its rare explicit discussions of Charles Darwin, for example, the *BOP* echoed many evangelical reactions to Darwinian theories of man's origins in opining that: 'Without adopting the Darwinian theory of "evolution" or the development of all creatures from lower forms of life (man included), we cannot but admire [his] shrewd powers of observation and patient industry.'⁵³

In many ways, *BOP* hagiographies were in tension with the representations of scientific practitioners elsewhere in the periodical. Much of the

fiction promulgates the image of young scientific practitioners whose eccentric habits often land them in trouble. Jules Verne's 'Boy Captain', for instance, features a dishevelled 'observer and collector of insects' whose pursuit of an elusive 'hexapod' in the African jungle is thwarted by the actions of savage natives who have captured him and his friends.⁵⁴ A more positive gloss is given to the story of 'Billy Bungler' whose dangerous classroom chemistry experiments prove almost fatal to himself and to his school friends, but who is made to illustrate the virtues of patience and perseverance drawn from the lives of actual scientific practitioners: 'Don't despair if you are a duffer' it advised, 'for you may cure yourself of it, if only you will think and take your time.'⁵⁵ These contrasting representations of scientific practice highlight the different forms of didacticism operating within *BOP* fiction. The stories by Ballantyne, Reid, and Hope rarely pause to impart factual information while those by Verne, Stables, and Millington, developing the factual narrative of adventure and travel, sometimes resemble pedagogical articles, complete with footnotes.⁵⁶ Verne's 'Boy Captain', for example, includes a history of Western exploration of Africa while Thomas Millington's story of a boys' summer adventure included descriptions of kinematical experiments and refers to the author's *BOP* series on the mechanical principles governing the behaviour of toys.⁵⁷

Verne's 'Boy Captain' may have projected a less than positive image of scientific practitioners but it was still a far cry from the hostile way that this story, like most Victorian juvenile serialized fiction, represented non-English and non-Christian races. As several historians have shown, this literature enforced sharp racial contrasts between Anglo-Saxons and 'others': British explorers, missionaries, and game-hunters were generally heroic and right-thinking individuals on the side of God, progress, and civilization, but natives of Africa, China, and other distant climes were invariably caricatured as barbaric, ignorant, grotesque, and generally inferior individuals who were hostile to the spread of God's word, British values and, as illustrated in Verne's story, scientific progress.⁵⁸ The *BOP*'s fictional representations of race were confirmed in the travelogues, essays, and other non-fictional articles contributed to the periodical by RTS missionaries, explorers, and military officers – articles that conspicuously avoided linking racial difference to sophisticated theories of biological development but whose sober and detailed descriptions of the customs, habits, and appearances of 'other' races gave ethnographic plausibility to the periodical's adventure stories.

One of most potent strategies for enticing *BOP* readers to buy subsequent issues of the periodical was its column of editorial replies to correspondents,

which often included extracts from letters sent in by (mainly older) boys.⁵⁹ In giving greater voice to readers, the *BOP* was typical of late-Victorian juvenile periodicals which, compared with their mid-Victorian ancestors, provided many more opportunities for readers to engage with contributors and to become authors themselves. Scientific material occupied a prominent role in the dialogue between readers and contributors that took place in the *BOP*'s correspondence columns. Common topics included the identity of natural historical specimens that readers had sent in to the journal, methods of caring for domestic animals, advice on scientific textbooks, suggestions on buying and building simple scientific instruments, and technical information about geography, astronomy, and other topics. The tone of replies also varied, from the enthusiastic (as when boys sent in rare fossils) to the downright haughty, as when the *BOP* severely chastised one correspondent for not knowing one of the 'best-known facts' concerning pneumatics.⁶⁰ Even in the small space of the editorial reply, the *BOP* sought to impart knowledge as well as inculcate such virtues as perseverance and industry more fully explored in longer articles. Thus, in reply to one correspondent's specific question about chemical filtration and ways of studying chemistry, the *BOP* presented a technical explanation of filtration and then counselled:

persevere with the science, and work hard at it from the very first, no matter what your age may be. You never know what little time you have to spare in the future, and cannot do wrong in making good use of the present. Get some good text-books on Chemistry of recent date – say Roscoe's – first the primer and then the manual, and work out all the experiments therein, noting failures and queer appearances, and clearing up all your difficulties as you go.⁶¹

Given the immense popularity of the *BOP* it is likely that more readers than the correspondent himself would have read this lesson in chemical practice, perseverance, and humility. Of all genres in the *BOP*, the correspondence column was the place one was most likely to find the more abstruse information on the sciences. But by placing this column at the back of the periodical and by printing it in small type, Hutchison was able to maintain the distance of his periodical from the unpalatable style of the textbook and to propagate the dominant image of his periodical as a welcome blend of entertainment and instruction.

CONCLUSION

This chapter has highlighted some of the ways in which one of the most popular of all late-Victorian boys' weeklies continued the shift begun in

the 1850s by many secular and religious publishers towards publishing children's periodicals that responded to changing juvenile tastes by becoming less didactic and more entertaining, less dreary and more colourful, and which accordingly sought to redefine how periodicals could most effectively conduct their pedagogical and moral missions. I have also shown that we can obtain a much better picture of how these missions were conducted by exploring the *totality* of material in the periodical. By this method we not only find that there is far more material on science, technology, and medicine than suggested by merely counting straightforwardly 'scientific' articles, but that this material was frequently entangled with, and helped bolster, such fundamental issues as morality and racial superiority.

Although the *BOP* prided itself on such contributors as Verne whose works were already admired by boys and their parents, it also depended on the writing and artistic skills of myriad other contributors, such as Dr Scoffern, who have now disappeared into obscurity. Many of these writers and artists, however unfamiliar to us now, contributed to the scientific content of one of the most widely read juvenile periodicals of the late-Victorian period. As historians are increasingly recognizing, these scientific popularizers shaped the public's understanding of science more than professional savants, and it is therefore essential that we know more about their backgrounds and roles in the print cultures representing the sciences.

The *BOP* was far from being the only periodical from which late-Victorian juvenile readers would have absorbed scientific knowledge. It had fierce rivals such as *Boys of England* and in the 1890s its market position was challenged by a plethora of imitators and by the flood of cheap halfpenny boys' periodicals issued by Alfred Harmsworth, Cyril Pearson, George Newnes, and similar publishers.⁶² We still know very little about how these very different periodicals appropriated and represented science to their readers, and this chapter has suggested some of the key elements of a thorough systematic and comparative study of juvenile periodicals that will force us to revise our notions of how publishing forms that look so very different from the class-book contributed in no small measure to the scientific interests and skills of the late-Victorians.

6. THE BOY'S OWN PAPER, SCIENCE, AND LATE-VICTORIAN
JUVENILE MAGAZINES

I would like to thank Aileen Fyfe for her help in preparation of this chapter. For permission to quote from unpublished material in their collections I would like to thank the United Society for Christian Literature.

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9. Lightman, "'The Voices of Nature"', p. 191.
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16. Bennett cited in Dunae, 'Boy's Own Paper', 136.
17. Hutchison cited in Dunae 'Boy's Own Paper', 132. Hutchison was here paraphrasing the eminent nineteenth-century educationist and clergyman, Thomas Arnold: Fyfe, 'Industrialised Conversion', p. 86.
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19. Diana Dixon, 'Children and the Press, 1866–1914', in Michael Harris and Alan Lee (eds.), *The Press in English Society from the Seventeenth to Nineteenth Centuries* (Rutherford: Fairleigh Dickinson Press, 1986), pp. 133–48 (133).
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23. Drotner, *English Children*, 75.
24. For Macaulay, see Dunae, 'Boy's Own Paper', 130. For the *Leisure Hour* see Fyfe, 'Periodicals'.
25. For Hutchison see Cox, *Take a Cold Tub*, pp. 76–81; Dunae, 'Boy's Own Paper', 129–32.
26. Many of the biographies appearing in the *BOP* were expanded versions of articles appearing in the *Leisure Hour*. See, for example, [anon.], 'Some Boys who Became Famous. George and Robert Stephenson', *BOP* 3 (1880–81), 579–80, 595–6, which was based on [anon.], 'Robert Stephenson', *Leisure Hour* (1860), 711–14, 722–7.
27. Dixon, 'Children's Fiction', 233.
28. One of the few statements on atonement is in [anon.], 'Why I am Not a Christian', *BOP* 5 (1883–84), 795.
29. Dunae, 'Boy's Own Paper', 145.
30. [G. A. Hutchinson?], 'Correspondence', *BOP* 4 (1882–3), 824.
31. John Macbeath, 'Where the "Boy's Own Paper" Began', *BOP* 51 (1929–31), 224.
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33. Cox, *Take a Cold Tub*, p. 12.
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35. For J. G. Wood, see Theodore Wood, *The Rev. J. G. Wood* (London: Cassell, 1890); Lightman, "'Voices of Nature'", pp. 200–3; Lightman, 'The Visual Theology of Victorian Popularizers of Science: From Reverent Eye to Chemical Retina', *Isis* 91 (2000), 651–80.
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37. For Verne and the *BOP* reprints of his works see Brian Taves and Stephen Michaluk Jr (eds.), *The Jules Verne Encyclopaedia* (Lanham, Md: Scarecrow Press, 1996), *passim*.

38. For Scoffern see Cox, *Take a Cold Tub!*, p. 55; J[ohn] Scoffern, *A Manual of Chemical Analysis for the Young* (London: Office of the National Illustrated Library; W. S. Orr, [1854]).
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40. Dixon, 'Children's Magazines', 232.
41. Dr Scoffern, 'Indoor Amusements. Chemical Odds and Ends. How to Make a Shower of Fire', *BOP* 2 (1879–80), 757–8 (757).
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45. Revd. J. G. Wood, 'Shore-Hunting', *BOP* 2 (1879–80), 3–4 (3). Wood's italics.
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54. Jules Verne, 'The Boy Captain: A Tale of Adventure by Land and Sea', *BOP* 2 (1879–80), 12–14 (14).
55. [Anon.], 'Boys We Have Known – The Duffer', *BOP* 2 (1879–80), 502–3, 503.
56. Bratton, *Impact*, 103.
57. Verne, 'Boy Captain', *BOP* 2 (1879–80), 604–6 (606); T. S. Millington, 'Our Holiday Tramp', *BOP* 2 (1879–80), 598–601 (599).
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60. [Anon.], 'Correspondence', *BOP* 5 (1882–3), 752.
61. [Anon.], 'Correspondence', *BOP* 3 (1880–1), 775. The works referred to are Henry E. Roscoe, *Chemistry* (London: Macmillan, 1872) and Roscoe, *A Treatise on Chemistry*, 2 vols. (London: Macmillan, 1877–9).

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