CHAPTER 2

The Mirror of Literature, Amusement and Instruction and cheap miscellanies in early nineteenth-century Britain

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When, in the autumn of 1820, the Monthly Repository listed the twenty leading secular reviews and magazines, their average subscription was 2s per month.1 Within three years, however, there had appeared dozens of weekly miscellanies selling for a third of that price, the most successful being the Mirror of Literature, Amusement and Instruction (1822–49). Since the recently imposed 'taxes on knowledge' had effectively gagged the cheap radical press, the only other cheap periodicals of the 1820s were the populist religious monthlies discussed in chapter 3. Appearing at a time when new publications were more expensive than ever before, the most successful of these 2d weeklies rapidly achieved sales numbering in the tens of thousands. Within a decade similar journals priced 1d or ½d were selling as many as 200,000 copies.2 The cheap miscellany became a primary means of structuring a new 'mass' reading audience, as both commercial and ideologically motivated publishers began to appreciate not only the vast increase in readers but also the potential of emerging technologies of book production.3

The appearance of these first mass-circulation periodicals marked a key moment in the histories of both science and literature. In both fields, the profound changes in reading audiences between the French Revolution and the first Reform Bill contributed significantly to redefining cultural roles. In particular, the emergence of a radical working-class audience from the 1790s has been emphasized by historians of science, and scholars have detailed the manner in which the dominant sciences of the period took shape in the face of continual anxiety about the readings to which they might be submitted by such an audience. In this context, the production of mass journals like the Penny Magazine of the Society for the Diffusion of Useful Knowledge (SDUK) has been seen as part of a campaign to discipline potentially revolutionary working-class readers, using highly objecified scientific material in an attempt to quell their interpretative dissidence.4
In literary history, too, the emergence of mass journals has been related to the concern of contemporary writers with proliferating reading audiences. As Jon Klanche argues in his imposing study, The Making of English Reading Audiences, English writers of this period were the first to become ‘radically uncertain of their readers’, facing ‘the task Wordsworth called “creating the taste” by which the writer is comprehended’. According to Klanche, Wordsworth and Coleridge’s worst fears’ were realized in the new cheap journals of the 1820s. Such journals, he argues, sought to shape a mass audience by representing the previously undifferentiated crowd as comprising a typology of all social classes. This allowed them to ‘sidestep both class conflict and cultural alienation’ by ‘making the crowd a metonymy for personal and national togetherness’. To become an audience, however, the crowd had to be ‘quieted, the dialogic murmer of its innumerable voices displaced by [the] proxy of the mass writer himself’. In the ‘unique discursive space’ of cheap miscellanies ‘the mass reader never becomes the interlocutor of political or philosophical argument’. Like historians of science, Klanche associates the cheap miscellany with attempts to create a mass audience which consumes representations generated elsewhere.

In this literature, the focus on the mass writer’s attempts to render working-class readers submissive consumers of bourgeois culture is combined with a conviction that working-class readers were not so easily converted. Radical artisans seeking to mould a distinctively working-class audience conspicuously resisted the attempts of SDUK activists to – as they put it – stop our mouths with kangaroos. Yet, the primary focus on the self-consciously ideological conflict of such parties tends to oversimplify the role of cheap miscellanies in the development of reading audiences for science. As Susan Sheats-Pyenson has argued, several of the cheap miscellanies of this period were explicitly intended to involve artisanal readers in the production of scientific and technical knowledge – to engage, as she puts it, in a form of ‘low’ scientific culture in which the object was not the popularization of ‘high’ science. More generally, however, the developing genre of the cheap miscellany cannot be viewed simply as an ideologically motivated product aimed at and read by the working classes. As this chapter demonstrates, the cheap miscellany developed in a highly contingent manner in response to the shifting commercial demands of the post-war book trade, and the early miscellanies were neither primarily intended for, nor mainly read by, working-class readers. Moreover, while some prominent later offerings, such as the Penny Magazine and the Saturday Magazine, were avowedly more narrowly aimed, they succeeded in reaching a petit bourgeois rather than a working-class readership. The Penny and Saturday Magazines even formed the ‘chief reading’ in such haute bourgeoisie households as that of the Darwins.

In this chapter, I seek to explore how science, technology, and medicine were represented in one leading cheap miscellany of the 1820s and 1830s. I focus particularly on how these representations reflected the distinctive features of the genre as they developed in response to the commercial pressures and opportunities of the literary marketplace, as well as to shifting political and cultural concerns. In the first section, I briefly explore the emergence of the cheap miscellany in relation to the high-price post-war book market of the 1820s. I then examine the scientific content of the Mirror under its first editor, reflecting on how it was structured by the journal’s eclectic format. In the final section, I briefly consider changes in the scientific content of the Mirror under its second major editor, particularly in the light of the specialization of the periodical marketplace which took place during the 1820s.

CREATING THE CHEAP MISCELLANY

Evolution has been defined as the ‘origination of species by development from earlier forms’; and in nothing is this more apparent than in the periodical press of this country. In various histories of newspapers it is common to read of claims to originality, of new departures, of landmarks, and so forth; but in nearly every one of these it will be found that what is claimed as new is largely a development – not the entirely original idea of one man or a group of men, but the improvement on many experiments.

W. Roberts, Chamber’s Journal (1936)

As Adrian Johns has argued in the case of the Philosophical Transactions, successful periodicals tend to naturalize themselves, effacing by their success the traces of their uncertain origins. In particular, historians of mass-market periodicals have focused on the period from 1832, when the founding of Chambers’s Edinburgh Journal, the Penny Magazine, and the Saturday Magazine represented the inception of a recognizable Victorian genre of cheap miscellany: they were written increasingly by paid contributors whose original work was kept to high standards by an editorial staff, and produced using the latest techniques of stereotyping and steam printing. The producers of these new journals emphasized the novelty of their enterprise, which they contrasted with the cheap miscellanies they sought to supplant. Moreover, at 1d and 1½d, they radically undercut the 2d and 3d publications of the preceding decade (though not the cheap political weeklies that had sprung up during the Reform Crisis). As commentators were quick to
point out, however, many of the existing cheap weeklies had been offering similar unobjectionable fare for a decade. Indeed, the Athenaum actively campaigned against what it saw as an attempt by the SDUK to destroy valuable existing miscellanies by using charitable subscriptions to establish a 'huge monopoly'. The better-known miscellanies of the 1830s, for all their novelty, thus drew heavily on the experimental cheap periodical publishing of the previous decade.

The Mirror of Literature, arguably the most important of the earlier miscellanies, was itself by no means original. Started by the London publisher, bookseller, and stationer John Limbird (1796–1883) on 2 November 1822, the Mirror was an obvious imitation of the Hive; or, Weekly Entertaining Register (1822–4), begun the preceding August. Both combined in sixteen closely printed octavo pages a mixture of original articles together with a large mass of extracted material from contemporary books and periodicals. However, Limbird's miscellany, edited by the hack journalist Thomas Byerley (1788–1826), improved on the Hive by adding one or two wood engravings per number. These were a significant attraction, which the Hive quickly emulated, and regular sales of the Mirror soon exceeded 10,000 copies. The unprecedented success of the Mirror led Byerley to claim to have 'created a new era in the history of periodical literature', by alerting literary entrepreneurs to the market for such cheap periodicals and providing them with a model for their productions. The spate of such journals contributed significantly to a rapid expansion of periodical titles in the early to mid-1820s, which was similar to that occurring in the early 1830s (Fig. 1.1).

The early cheap weeklies should be interpreted as commercial ventures in the competitive literary market of the early 1820s, rather than being read as precursors of the later 'useful knowledge' movement. This was a pivotal moment in the history of the British book trade. With the prices of new books at a peak, as a result both of the war with France (which had increased the cost of both paper and labour) and the conservative practices of the trade, middle-class readers struggled to purchase fashionable reading matter. While standard works could be obtained in cheap reprint editions, new works of fiction, poetry, and travel, had never commanded higher prices. Like the circulating libraries, reviews in the periodical press provided important – if limited – access to such literature, but, as we have seen, most periodicals were also prohibitively priced. Moreover, the hallmark of the new and dominant Edinburgh and Quarterly reviews (and to an increasing extent of the monthly magazines) was their selectivity and discrimination in reviewing new works. The new weekly literary journals, commencing in 1817 with the Literary Gazette, largely took over the extensive and synoptic reviewing associated with the standard eighteenth-century monthly reviews; however, these were also far from cheap. In such a market, a cheap miscellany providing extracts from highly priced books and periodicals clearly had commercial potential.

The new cheap miscellanies were not directed only to a middle-class market. William Cobbett's immensely successful experiment in 1816 with a 2d abridgement of his Weekly Political Register indicated that a working-class reading audience of great size now existed. With the growth of literacy in the wake of increasing elementary education, Cobbett found that his 'vile two-penny trash' could sell 40,000–50,000 copies, or perhaps as many as 70,000 copies a week. As a result, while repressive taxation soon curtailed the cheap radical weeklies, the existence of a sizeable working-class reading audience was now widely recognized. To some, this seemed to offer a commercial opening; to others a dangerous threat. Thus, both the Chambers brothers and the later editor of the Penny Magazine, Charles Knight, commenced cheap periodicals at this period in order to supplant radical publications with more anodyne reading matter, although neither attempt achieved lasting success.

As Knight later recognized, the mechanization of many aspects of book manufacture was critical in the development of cheap periodicals. In this regard the 1820s was a transitional decade. The introduction of machine-manufactured paper, of stereotype, and of steam presses were at this period only beginning to bring the great cost savings to periodical publishing on which later cheap journals depended. Paper accounted for between half and two-thirds of the cost of journal production, while paper prices decreased with the end of war-time restrictions on rag imports, only gradually did the effects of machine manufacture reduce them further. The impact of stereotypes was certainly beginning to be felt, and their use in printing journals like the Mirror reduced costs by allowing small numbers of copies to be reprinted. Steam presses also began to be used: in January 1818, for instance, the Literary Gazette claimed to be the first weekly paper to be printed by steam, and by the mid-1820s such 3d weeklies as the Mechanics' Magazine and Lancer were also apparently machine-printed. Yet the full potential of these technologies only gradually came to be exploited.

Starting out as a small-time publisher in the late Regency period, Limbird drew heavily on the practices and personnel of existing journals produced by his neighbours in the Strand to create his successful weekly miscellany. His experience as publisher of two 6d weekly literary journals – both undercutting the 1s Literary Gazette – and of a 2d essay periodical modelled on Leigh Hunt's successful weekly, the Indicator (1819–21), helped him
to chart what Knight later called the ‘perilous sea’ of cheap publishing.21 These ventures also enabled Limbird to develop the distinctive production and distribution techniques necessary in cheap journalism and to acquire suitably skilled editorial staff and illustrators. Most strikingly, Limbird, like many of the early mass publishers, came from a background in radical journalism, starting out as a close associate of the noted radical bookseller and publisher of Cobbett’s Register, Thomas Dolby. With the market for cheap political publications crushed by repressive legislation after 1819, Limbird (like Dolby and numerous others) adopted the double-column, sixteen-page octavo format of the Register in producing cheap apolitical papers.

Had the Mirror included topical political matters, it would have incurred the same 4½d newspaper stamp tax which after 1819 made Cobbett’s Register a 6d journal. Instead, Limbird refused to engage directly in political debate, thus avoiding the tax. An editorial note to the second number observed: ‘We feel much obliged to C. H. S. for his friendly hints, but to adopt them would subject the Mirror to a stamp duty of double its present price.’22 As a later commentator observed, the Mirror’s apolitical tone was essential at a time when ‘the Castlereagh administration watched with great jealousy every publication of a popular tendency’. Yet, while the Mirror gave ‘no offence’ to the government, it was also avowedly ‘bound to no party’.23 The Mirror’s studiously apolitical tone and ‘its strict moral character’ (articles were rejected that were ‘coarse, vulgar, and indecent’) enabled it to reach an inclusive audience.24 This was all the more necessary since Limbird’s involvement in the literary underworld of cheap publishing (he had connections with both radical and immoral literature) marginalized him in the wider London book-trade.

The Mirror’s political quiescence was thus partly a matter of commercial expediency. However, to publish cheap literature at all during the 1820s was implicitly to engage the charged public debate concerning the education of the people, the possible extension of political representation, and government repression of working-class radicalism. Certainly, Henry Brougham considered the publication of the Mirror a significant intervention. Both in the House of Commons, and in his seminal Practical Observations on the Education of the People, Brougham cited it in his campaign for popular education, observing that its ‘great circulation must prove highly beneficial to the bulk of the people’.25 This kind of publicity was welcomed by the Mirror,26 and while it is not clear to what extent Limbird and Byerley shared Brougham’s political outlook, their rhetoric bears obvious similarities to his.

From his earliest involvement in cheap journalism – as publisher of the Literary Journal and General Miscellany (1818–19) – Limbird had been associated with attempts to address the ‘people’, conceived broadly to include both middle and working classes, rather than the more pejorative ‘ populace’ or ‘masses’.27 As later with Brougham, the rhetoric was that of bourgeoisie social rapprochement, in which the ‘prince’ and the ‘artisan’ could be addressed using the ‘same language’.28 The Mirror continued this inclusive idiom. The second preface welcomed the great advance in elementary literacy achieved by ‘our public institutions’, but argued that this had made it necessary ‘to give to the public at large a journal which, while it embraced the most ample range over the vast domain of English literature, should be published at a price that would place it within the reach of all’.29 The journal claimed that it circulated among all classes of society: ‘it is to be found in the cottage of the peasant, on the loom of the manufacturer, in the counting-house of the merchant, in the parlour windows of the affluent, and in the carriages of the nobility’.30

Of course, the actual readership of the Mirror is far less easy to determine. Reviewers certainly considered that it formed an amazing ‘annual library’ not only for ‘the poor man’s fireside’ but also for ‘higher ranks’.31 Moreover, it was reputedly ‘patronised very largely by the middle and upper classes’ and ‘a great favourite with the clergy and the respectable classes’.32 This view is confirmed by the concern expressed by the established trade that the Mirror undercut the market for high-priced publications, which resulted both in a refusal to stock Limbird’s works and in legal action for copyright infringement. At the same time, Limbird’s unorthodox distribution techniques – developing his own agency system and advertising using both posting and hand bills (fig. 2.1) – probably increased the number of working- and lower-middle-class readers.33

Conceived in the hack world of metropolitan journalism, and constrained by the political repression of the years after 1819, the Mirror was a fundamentally commercial venture, albeit occasionally underpinned by a moderately reformist rhetoric of social rapprochement and educational progress. In its vision of a ‘vast commercial audience’ it was undoubtedly, as Klancher assumed, ‘inspired by Cobbett’ and the other late Regency radical journalists.34 At the same time, however, it sought a far wider audience priced out of the literary marketplace by the unprecedented cost of fashionable literature. Its blend of ‘Literature, Amusement, and Instruction’ was thus intended to maximize its market, rather than to accomplish an ideological objective. It was – in Klancher’s phrase – as shopkeepers ‘gazing out [of] a window at the crowd of possible buyers’ that Limbird and
Byerley conceived the *Mirror*. The new ‘mass’ audience inscribed in the *Mirror* was thus undoubtedly a socially typologized crowd of customers, as Klancher suggests. As we shall see, however, the extent to which it was a ‘quieted’ crowd was rather more limited than Klancher implies.

‘LITERATURE, AMUSEMENT, AND INSTRUCTION’: NATURAL KNOWLEDGE IN THE MIRROR

The *Mirror* was not simply – as the later rhetoric had it – a ‘useful knowledge’ miscellany. Its professed objects were to ‘afford the greatest quantity of “Amusement and Instruction” at the lowest possible expense, and to enable readers in the humblest circumstances to become acquainted with the current and expensive literature of the day’. According to Limbird’s initial advertisement, the *Mirror* was to comprise:

1. The Spirit of the most expensive Works connected with Literature, the Arts and Manufactures, the Drama, Public Exhibitions, Life, Manners, &c.
2. The Spirit of the Public Journals, useful Domestic Hints, Fugitive Poetry, Anecdotes, Bon-mots, the Wit of the Day, &c. &c.

In this miscellaneous format, references to natural knowledge of diverse kinds appeared in many forms, extending from articles that were self-consciously instructive to amusing sketches, anecdotes, poetry, and topical reports of public sensations, exhibitions, and discoveries.

Although its structure became increasingly fluid, the *Mirror* continued to retain certain common structural features established in the early numbers. Each issue generally began with several editorial and contributed articles, the first one usually being illustrated. Two core sections appeared in the central portion of each issue: ‘Spirit of the Public Journals’, containing extracts from contemporary magazines, and (from the third volume) ‘The Selector; or, Choice Extracts from New Works’. Towards the end an assemblage of anecdotes and epigrams usually appeared under the section heading ‘The Gatherer’ and the journal generally concluded with responses to correspondents. However, with an increasing range of other section headings and intermittently employed and with numbered occasional features continually being added (e.g. ‘The Novelist’, ‘Peter Pindarics’, and ‘The Sketch Book’) the journal had a somewhat irregular and unpredictable appearance. Such generic freedom reflected not only the *Mirror’s* attempt to remain amusingly miscellaneous but also its physical format: since each issue extended only to sixteen pages, readers were not dependent on a rigid structure, nor was it practical to commence each section on a new page. The *Mirror* thus
adopted and amplified the looser structure of the weekly literary journal (Byerley had already for several years edited Limbird's *Literary Chronicle*), rather than the regular sections of the traditional magazine. In comparison with other types of periodical, therefore, the weekly miscellany presented many different kinds of scientific allusion in close proximity.

**Science and the learned miscellany**

In its blend of original contributions and choice extracts, the *Mirror* was clearly reflecting the traditional gentlemanly miscellany typified by the *Gentleman's Magazine*. The octavo format, with text in double columns, was typical of such monthly magazines, as well as of the radical weeklies. Moreover, like traditional miscellanies, the early *Mirror* contained increasing numbers of articles by largely pseudonymous and apparently unpaid contributors, although these were generally shorter and less substantial than those typical of the monthlies. Byerley's literary apprenticeship had been served writing such articles for the *Monthly Magazine*, when, as a Yorkshire carpenter's son whose talent had earned him a grammar-school education, he first came to London. He was keen to encourage similar contributions in the *Mirror*, as the repeated acknowledgements in prefaces indicate.

The identities of the *Mirror*'s correspondents remain largely unknown. Although Byerley presented them as a community of all classes, many were evidently of social standing. The one known contributor from Byerley's editorship was Peter Thomas Westcott, who wrote frequently for the journal under the acronym 'PTW'. According to the *Mirror*'s later editor, John Timbs, Westcott was a 'gentleman of independent property, who, in his ubiquitous career of utility, did "good by stealth", and carried "the twopenny", as he called the "Mirror", into public institutions and intellectual resorts of a description most calculated to extend its circulation'. Nevertheless, the fiction of a classless community of contributors allowed readers to conceive of themselves as equal interlocutors. Moreover, contributors referred to each other in terms which implied a sense of community, and Byerley would sometimes respond to correspondents with substantial advice on their contributions. However, while contributed articles often referred to each other, Byerley rarely allowed, and certainly did not encourage contributors to engage in controversy.

Many of the *Mirror*'s original articles intended for 'amusement and instruction' resembled the content of the traditional monthly miscellanies, ranging widely over the field of learning and including many scientific topics. Such pieces extended from brief paragraphs and sets of instructions to histories, biographies, and essays. Under Byerley, natural philosophy, natural history, and the practical arts were treated as part of a wider learned culture, and the articles written on such subjects -- which were largely penned either by Byerley or, increasingly, by his central core of contributors -- were written in the manner of learned gentlemen. Moreover, these articles typically drew on similar library-based resources to the antiquarian and historical articles that were commonplace in the *Mirror*, and, indeed, often included observations on the history of science. They gave the impression that scientific knowledge was permanent and cumulative.

This notion of the sciences was well illustrated when, in February 1826, Byerley began an occasional feature under the title 'The Encyclopaedist; or, The Circle of the Sciences'. Byerley completed only one subject under this heading, a four-part examination of 'Architecture'. This was later supplemented by a philological article on the 'English Language' and a contributed article on 'Electricity' and, after Byerley's death, by 'Geometry'. The editor considered, however, that in a systematic arrangement 'Agriculture' should probably have begun the series as 'the first of the arts'. Byerley drew on older encyclopaedic approaches in his emphasis on recording the historical accumulation of learning. He reported that he intended to 'give in almost every number an account of some branch of science or art', but not to teach it in detail, as this would be beyond the limits of the publication and the 'great diversity' of its readers. The object was to 'trace the history of a science, and explain or develop the theory of it', rather than to 'teach its practice'. This approach, it was hoped, would excite interest 'not only in the artisan', who might be 'more immediately concerned with [a] particular branch of science or art', but also in the 'general reader'. The order of subjects was not to be systematic, however, since it was hoped that correspondents would contribute extensively.

This was typical of the learned approach taken to the 'arts and sciences' in many of the instructive and amusing articles in the *Mirror*. One frequent contributor, for instance, contributed four linked articles on the history of arithmetic, book-keeping, logarithms, and algebra. Here, mathematical principles were introduced within the historical narrative, but to become active in the field, the articles suggested, one had to master a library of references, many of which were in Latin. Other articles were less systematic and more eclectic. The short piece entitled, 'The Rose of Jericho', written by Peter Westcott ('PTW') in response to another reader's inquiry, encompassed, in a couple of hundred words, an account of the plant's natural range, its introduction by John Tradescant into the Royal Botanic Gardens, Kew, the superstitious origin of one of its common names, the *Rosa*
Maria, the peculiarities of its physiology, advice on its propagation using hot-beds, the significance of its Latin name, and suggestions for further reading in two standard sources from the previous century – Abraham Rees’s *Cyclopaedia* and Philip Miller’s *Gardener’s Dictionary*.

Other articles drew self-consciously on the flotsam and jetsam of learned reading both in brief anecdotes and in more extended form, such as the ‘Mulrum in Parvo’ submitted by several contributors at various times. The latter were remarkable for their cacophony of references:

Æsculapius invented the probe. By means of aether, water can be made to freeze in summer… Chemical names of metals were first given to the heavenly bodies. There has been an instance of an elephant that walked upon a rope (see Suetonius). Fuller’s earth was used by the ancients for washing.

Some articles were more self-consciously literary than learned. Essays – like that by ‘ABC’ on marriage – often contained discussions of natural knowledge. Ranging widely over the subject – from the universal adoption of marriage by all nations to the dangers of match-making – the writer devoted a few sentences to criticizing Francis Place’s advocacy of contraception. Similarly, literary articles on natural phenomena blended poetic and other imagery with more scientific approaches. Westcott (“PTW”) was particularly adept at such articles, and his piece ‘On the Splendid Beauties of the Fire-Fly’ combined detail from Maria Merian’s *Metamorphosis Insectorum Surinamensium* (1705), Friedrich Lessor’s *Theologie des Insecten* (1742), and observations from Nehemiah Grew, with quotations from Thomson’s *Seasons*, Anna Barbauld, and Erasmus Darwin.

Other contributors sent poetry which represented nature in scientific ways, or which, as in the case of ‘Lucubrations in an Apothecary’s Shop’ by ‘DS’, took scientific or medical practice as the subject.

From the second volume, the *Mirror*’s title-page detailed its miscellaneous contents in a lengthy subtitle which included ‘Discoveries in the Arts and Sciences’ alongside ‘The Spirit of the Public Journals’. The implication was that the arts and sciences were progressive, open-ended, and as pertinent to the well-read person as was the latest new work of literature. This notion was in keeping with the practice of the established monthly miscellanies, which reported scientific or technical developments in a regular section, often including accounts of the proceedings of learned societies. The *Mirror*, however, had no such section; instead, it carried brief paragraphs, often comprising extracts from new books or recent periodicals and newspapers. Sometimes these were evidently justified by their extraction from sources which readers were unlikely to access directly, as when ‘TAC’ extracted articles on the invention of ‘River Spectacles’ from ‘an American Paper’, and on a possible treatment for ‘hydrophobia’ from the *Hamburg Correspondent*. At other times, extracts were combined with a commentary. When ‘WP’ sent extracts from William Bullock’s *Six Months’ Residence and Travels in Mexico* (1824), he included a covering letter describing the recent sale of Bullock’s *London Museum*, a popular attraction at the Egyptian Hall in Piccadilly. However, there was no systematic attempt to record the leading scientific discoveries of the age.

While most scientific articles in the *Mirror* were not of a practical cast, a significant minority were deliberately so. The ‘Useful Domestic Hints’ which the magazine included from its inception frequently contained advice (often from contributors) on health, domestic economy, and horticulture. This might range in a single issue from ‘Medicinal Properties of the Wild Valerian’ to the management of cauliflower plants to secure winter produce, and from an old lady’s specific for the treatment of impure water to the use of copper sulphate in the treatment of crops. Another regular feature went under the title ‘Scientific Amusements’, and included simple experiments which required either basic scientific equipment or familiar household materials. In one such article, for instance, ‘TL’ gave instructions (with no theoretical explanations) for ‘obtaining flowers of different colours on the same stem’ by planting different seeds in the pith of an elder twig, for making ‘Phosphorus Match Bottles’, for melting iron using a ‘roll of sulphur’, for extracting the silver out of a gilt ring using *aqua fortis*, and for writing on paper using gum-arabic and gold leaf.

The *Mirror* was clearly neither a magazine of the practical arts emphasizing artisanal innovation like its imitator, the *Mechanics’ Magazine* (1823–72), nor a ‘useful knowledge’ miscellany offering instruction rather than amusement, in the later sense of the *Penny Magazine*. An unlearned reader would have struggled to derive from it any systematic or useful knowledge of the arts and sciences. However, in its openness to contributed articles, the *Mirror* followed the long-established miscellanies in portraying its readers as potential contributors. In this regard it is important to reflect that the *Mirror* provided the inspiration for the *Mechanics’ Magazine* – edited by Byerley’s friend and literary collaborator, the patent agent Joseph Clinton Robertson (1788–1832) – with its provision of an open forum for artisanal debate.

**Science and fashionable literature**

In addition to its original contributions, the *Mirror*’s success was also evidently due to the access it provided to fashionable literature. It sought to
secure the ‘essence of new works, however expensive’ as soon as they were published, notably giving each new novel of Walter Scott extensive coverage. A surviving advertising placard indicates that such material received top billing (fig. 2.2). The Mirror offered its extracts ‘unmixed with the cant of criticism’, and its manner of extracting and abstracting new works clearly drew on the journalistic mores of the weekly literary journal. As editor of the Literary Chronicle, Byerley had prided himself on his synoptic reviews that put readers ‘in possession of such an abstract as [would], in some measure, enable them to form their own opinion of the merits of the work under consideration’. These representations of fashionable literature were replete with scientific references. Prominent among the fashionable works of the 1820s, for instance, were travel narratives, often written by military men on half pay whose frequently dangerous explorations were the subject of intense public interest. Fashionable memoirs were also popular and often alluded to scientific themes. For example, an extract from The Private Journal of Madame Campan (1825) provided detailed observations of Franz Anton Mesmer’s practice in Paris. Other works, like Edward Baines’s History, Directory, and Gazetteer, of the County Palatine of Lancaster (1824–5), detailed the mechanical and commercial triumphs of the age, such as the power loom.

Outnumbering the extracts from new books, however, were the regular excerpts taken from the fashionable magazines of the 1820s. We have already seen that the Mirror drew heavily on the format of the traditional miscellany in its reliance on contributed articles. However, following the emergence of the new, more self-consciously literary magazines, which relied on increasingly highly paid ‘literary’ (rather than hack) writers, the Gentleman’s and Monthly magazines had soon begun to appear rather dated. It was from the new arbiters of middle-class taste – Blackwood’s Edinburgh Magazine (1817–1908), the New Monthly Magazine (1814–84), and the London Magazine (1820–9) – that the Mirror drew most heavily. Moreover, while some of the extracts were sober factual articles and essays, the great majority were the distinctively literary forms which gave the fashionable magazines their cachet – notably fiction and poetry. These fictional and poetic extracts contain some of the most imaginatively powerful scientific references in the Mirror. Moreover, since these references were commonly to contemporary mores, inventions, and discoveries, they conveyed a more progressive, open-ended, and contentious perspective on the arts and sciences.

Humorous verse particularly relied on current events. A couple of stanzas from William Maginn’s anonymous Blackwood’s poem entitled...
Science in the Nineteenth-Century Periodical

'A Twist-imony in Favour of Gin-Twist,' for instance, alluded to geological controversy in contemporary Edinburgh:

Geologists all, great, middling, and small,
Whether fiery Plutonian or wet Neptunist,
Most gladly, it seems, seek proofs for their schemes,
In the water, or spirit, of a jug of gin-twist.

These grubbers of ground (whom God may confound!)
Forgetting transition, trap, hornblende, or schist.
And all other sorts, think only of quartz,
I mean of the quarts in a jug of gin-twist.\textsuperscript{19}

Maginn's introductory note to the poem cited Bacon as a literary authority, reporting that he had 'been lately be-scoped and tendenced by Macvey Napier, Esq.' – a reference to a paper recently published in the Transactions of the Royal Society of Edinburgh. Such topical allusions were also common in humorous verse written by the Mirror's own contributors. For instance, a poem by JB of Orchard-Street, Hackney, on the balloon-ascent of aeronautical pioneer George Graham, appeared in print within a month of the event.\textsuperscript{50}

The often-rambling fictional sketches popular in the fashionable magazines also relied heavily on passing events and perceptions. 'The Night Walker in London,' again from Blackwood's, drew on the introduction of gas lighting for its narrative colour. 'Multitudinous avocations' banished rest from the streets, the narrator reflected, just as 'the broad glare of gas' drove 'darkness even from our alleys'. Medical practitioners formed part of the metropolitan backdrop: between midnight and two o'clock, the coffee-houses in the vicinity of Fleet Street and the Strand were 'beset by habitual idlers, or late-stirring "professional people"', including 'medical students guilless of physic'. The medical allusion then took a more sinister turn:

This is the very 'witching time,' par excellence, of night,
'When graves yield up their dead!
(because resurrection-men will have it so).\textsuperscript{64}

Such broadly scientific references were commonplace in the fictional sketches extracted in the Mirror, and the sobriety of the factual articles was thus tempered with more topical representations of technological innovation, of medical and scientific practitioners, and of theoretical controversy.

Science and metropolitan spectacle

As Marilyn Butler has shown, the 'sense of place' of the new fashionable monthly of the late Regency period was one of its most striking features.\textsuperscript{65} Blackwood's, the London, and the New Monthly magazines revelled in the distinctive characteristics of the cities in which they were produced, providing 'thick', almost ethnographic descriptions of urban scenes and characters. Significantly, Limbird's earlier short-lived 2d weekly, The Londoner (1820), had taken this as its guiding principle, framing its essays around the scenes and incidents of life in the city. The Mirror adopted a similar emphasis. Produced in the Strand, at the heart of journalistic London, the journal reflected a city that was the commercial and cultural heart of the world's first industrial nation, and the hub of a great and growing empire.

Topicality was another quality that Byerly explicitly emphasized in the Mirror, telling impatient correspondents on more than one occasion that 'articles on temporary subjects, or subjects that excite interest at the time' took 'precedence over those of a general nature'.\textsuperscript{63} The inception of the weekly literary journals—like the Literary Chronicle which Byerly also edited—had certainly changed expectations. As Thomas Dibdin observed in 1825, the 'reading man' now looked for his weekly Journal, or Register, or Chronicle, with the same eagerness and certainty that he used to anticipate monthly supplies of mental food.\textsuperscript{64} Indeed, as several authors have shown, this also applied to the reporting of scientific news, which in the weekly literary journals was so much more immediate than it had been a decade earlier.\textsuperscript{65} While the Mirror tended not to furnish the earnest reports of scientific news found in the weekly literary journals, its immediacy in responding to the scientific spectacles of London and elsewhere was striking.

The Mirror made its scientific and technical themes more topical by its innovative use of illustration. In the early nineteenth century, the re-introduction of end-grain wood engraving by Thomas Bewick made possible the integration of high-quality images and printed text at a modest cost. By the end of the 1810s some of the traditional monthlies—like the Gentleman's and Monthly magazines—were beginning to experiment with wood engravings to illustrate articles.\textsuperscript{64} Wood engravings were also occasionally used by some of the new weekly literary journals, including Limbird's Literary Journal, and from about 1820 the Observer and other newspapers occasionally included woodcut illustrations of sensational news events.\textsuperscript{67} The Mirror's use of a regular leading half-page engraving was modelled directly on a similar experiment made by the Monthly Magazine from July 1821, and the same engraver, Matthew Urlwin Sears (fl. 1826–59), was employed (figs. 2.3 and 2.4). The Mirror's illustrations proved so popular that issues increasingly included a second, usually smaller, illustration, often at the mid-point.
Newton's House in London.

The house in which Sir Isaac Newton resided, is still in perfect preservation in St. Martin's Street, Leicester Fields. He removed here from Hatfield house, where he had resided sixteen years, that the whole of that which he had written, and all the exhibits of his talents, were still in perfect preservation. He was the last of the ancient eminence, he removed to the more fashionable and secure residence of Leicester Square. Here, therefore, he enjoyed his honours, and passed the last years of his life. Afterwards, it was his last residence and place of celebrity, and, lastly, it has been converted into a national or parish school.

To the Editor of the Monthly Magazine.

Sir,

I take the liberty of troubling you with some reflections on the late death of Sir Isaac Newton. I am not disposed to enter into the discussion of his merits, whether he was a man of genius or not; but I am disposed to say that he was a man of genius, and that his death was a great loss to humanity. I am, etc.

J. W...

April 5th, 1822.

Monthly Mag. No. 390.

What is the best of government?

Port-Royal.

What are its faults?

A Senate, composed of thirty members; and a House of Representatives, composed of two from each county, to be elected by the people every five years. It is necessary that the elections should be open to all, and that the people should have a free voice in the choice of their representatives. The possession of property, although desirable, is not necessary to a man's eligibility for office. The President should be an able and eloquent man, who is not afraid to express his opinions, and who is willing to be held responsible for his conduct.

Who is the President of the United States?

Washington.

What is the pace of life outside the city?

In London, the pace of life is much slower than in the country. The streets are narrower, the houses are smaller, and the people are more polite. However, there are many pleasures in London, such as visiting the theatres, concerts, and museums. One can also find good food and drink in the many pubs and restaurants.

Who are the other chief men?

General

Figure 2.3. 'Newton's House in London', *Monthly Magazine* 53 (1822), 481. The magazine announced in July 1822 that 'nearly every number' was to begin with a half-page wood engraving of a 'view of some house, building, or site, consecrated by some name dear to Poetry and Philosophy, or by some event deeply interesting to the feelings or curiosity of Englishmen and mankind'. Reproduced by kind permission of the Leeds Library.

Sir Isaac Newton's House.

In France, there is nothing to be regretted in the modern improvements of the English system of education. It is the practice of the French to instruct the children of the poor, and to educate the children of the rich. Many of them, however, remain, and some of them, the children of the great, are sent to the best of schools, Sir Isaac Newton, of whose house we now speak, is one of them. He was educated in the famous school of St. John's, and it was here that he became acquainted with the great and learned Newton, which was later to be an inspiration for his own education.

Figure 2.4. 'Sir Isaac Newton's House', *Mirror of Literature* 6 (1824), 193. The Mirror's early illustrations not only shared their engraver with those in the Monthly Magazine, but they even sometimes depicted the same scenes. Reproduced by kind permission of the Sheffield Central Library.
As a cheap journal which made a prominent weekly feature of its relatively sophisticated wood engravings, the Mirror set illustrated journalism on a new track. Compared to the cheap religious literature, chapbooks, and broadsides which had previously provided most people with their visual experiences in print, the Mirror's illustrations were striking for their quality. Moreover, they were 'expressly engraved for the work' rather than being the generic images common in cheap literature, and they were executed with considerable accuracy. Many of the illustrations were consciously topical, representing scenes which related to contemporary events, spectacles, or publications – 'nine-day wonders' as John Timbs observed. Like the satirical engravings sold to the wealthy, or viewed in print shop windows, the Mirror's illustrations thus brought contemporary characters and sights into the visual field. At the same time, however, the Mirror's illustrations were placed in direct juxtaposition to printed text. In this regard, they represented a development on which the illustrated newspapers and comic journals of the 1840s were to build.

The early numbers of the Mirror exemplify how its illustrations incorporated scientific, technical, and medical themes. The first issue began with an illustrated article on 'The Tread-Mill at Brixton', which had 'excited so much attention' that 'a correct view and description of it' was considered to be a sure inducement. The second opened with an illustration of an alleged mermaid – 'the great source of attraction in the British metropolis' which 'three to four hundred people' were daily paying a shilling to see. Succeeding numbers illustrated the splendid mansion of the former industrial chemist John Farquhar – the sale of which had captured the public imagination – and the recent eruption of Mount Vesuvius. Illustrations of each of these sights also appeared variously in the monthly magazines, weekly literary journals, and in topical prints, but the Mirror made them available to a far wider range of readers.

As a weekly which published original illustrations, the Mirror could exploit the huge public interest in the contemporary events of the metropolis. A city of unparalleled size, wealth, and global power, London provided unprecedented opportunity for such reportage. Moreover, in the early decades of the nineteenth century, an increasing proportion of its sensational events related to natural and technical phenomena. New metropolitan extravaganzas ranged from the fashionable scientific demonstrations at the Royal Institution (f. 1799) and the exotic specimens of the Zoological Society's gardens (f. 1828) to the fantastical machines displayed at the National Gallery of Practical Science in Adelaide Street (f. 1832). These supplemented the more familiar round of menageries, exhibitions, and shows to provide a vibrant and constantly changing assortment of natural and technical spectacles. The Mirror's offices in the Strand – initially next to Exeter Royal Exchange, with its noted menagerie, then across the road next to Somerset House (home not only to the Royal Academy but also to many of the learned societies) – placed it at the centre of one of London's busiest and most visually spectacular thoroughfares (fig. 2.5). Thus, like the new weekly literary journals, it was well placed to respond to the city's changing sensations, making the months seem lumbering by comparison.

In its desire for topicality, the Mirror sometimes reported on newsworthy events – such as the death and funeral of George IV – at great length. More commonly, however, articles responding to metropolitan sensations had a less transient cast than that common in newspaper reportage, relating the events of the passing moment to larger themes. This reflected the journal's multiple format: it was sold not only in weekly numbers and monthly parts,
but also in bound bi-annual volumes. For the last of these formats to appeal to readers, events of a specific moment had to be endowed with a more lasting relevance. Thus, while the Mirror was not primarily motivated by an educational agenda, articles on natural or technical spectacles were given enduring appeal by the incorporation of scientific discussion.

A good example of this is provided by the three articles published in December 1822, relating to William Bullock's exhibition at the Egyptian Hall in Piccadilly. For over a decade, Bullock's miscellaneous but substantial exhibits had been one of the most popular resorts of fashionable London. In 1822, Bullock returned from a scientific excursion in Norway with a family of Laplanders and a dozen reindeer whom he employed to perform a tableau in his exhibition. The high-profile North Polar expeditions of Ross and Parry had made the Arctic highly topical and Bullock's shilling exhibition attracted 58,000 visitors in the first season. For those unable to visit, or who wanted a keepsake, the leading print-seller Rudolph Ackermann, whose shop in the Strand was just a few doors from the Mirror office, published a print of the tableau by Thomas Rowlandson. Such views were, however, prohibitively expensive, and the Mirror was ideally placed to capitalize on the demand. Early in the social season of 1822-3, successive issues carried leading illustrated articles on the 'Wapeti' or 'Gigantic Elks of the Missouri' and 'Laplanders and Rein-Deer', giving representations of the relevant exhibits at the Egyptian Hall. The accompanying text, however, was written in an instructive manner. Anxious to keep our promise with the public, the first article began, 'in rendering our little work a "MIRROR of Literature, Amusement, and Instruction", we shall occasionally give engravings of some of the most remarkable subjects of natural history, accompanied by accurate descriptions'. The article's relatively untechnical account of the history and habits of the wapeti was presented as the first in this occasional series. Moreover, while the following week's description of the Laplanders and reindeer related more closely to Bullock's exhibit, general information on the Laplanders 'derived from various authentic sources' was provided in the next number.77

A further particularly striking instance of the Mirror's exploitation of the interest in topical events was the death in March 1826 of 'Chuny', the elephant at Edward Cross's famous menagerie at Exeter Royal Exchange. The menagerie, described by the Mirror as 'an exhibition with which every Londoner is, and every countryman longs to be, acquainted', was one of the leading shows of London.78 A prime attraction, Chuny had become a celebrity with whom many Londoners and provincial visitors had a strong sense of affinity. He had been brought to England in 1809 but had become increasingly unmanageable with each successive mating season. Faced by a five-ton elephant — situated in a confined space on an upper floor — which it seemed impossible to restrain, the menagerie's owner was finally forced to call in 'some of the Foot Guards from Somerset-house' to put down the animal — for which he had once been offered £1,000. This event excited 'universal interest'. Within a few hours Limbird had procured a drawing of it and within forty he had published a coloured print. This was, the Mirror noted, 'a proof of the celerity with which works of art [were] now executed', and it also indicates the importance of the topical print in recording and enhancing the celebrity of public characters.79 By contrast, it took ten days for the Mirror to publish its account of the event — longer by far than the newspapers. However, by combining the reportage of the newspaper with the visual material of the topical print and the more learned and literary effusions of the monthlies, the Mirror provided a distinctive commentary on topical events (fig. 2.6).

The commentary was, moreover, replete with scientific reference. Such events, the Mirror believed, would interest lovers of natural history, as well as 'every one acquainted with this menagerie'. Important actors in the initial drama were comparative anatomists Joshua Brookes and William Clift, who, 'perfectly acquainted with the anatomy of the animal', had 'pointed out those parts where he was most vulnerable'. The Mirror related in great detail the skilful dissection of the elephant, which was attended by a multitude of prominent surgeons and veterinarians, as well as by 'a great number of medical students and other persons'.80 Further editorial articles discussed the eating of elephant flesh (in which several of those present at the dissection partook), related anecdotes of Chuny, and gave a brief account of the Indian elephant — largely extracted from Johann Friedrich Blumenbach's recently translated Manual of the Elements of Natural History (1825). In addition, Peter Westcott ('PTW') contributed an article relating anecdotes of elephants from a range of sources, including works by Buffon, Thomas Bewick, and John Ray, and the Philosophical Transactions.81 Over succeeding weeks seven more articles relating to elephants appeared, ranging from original and extracted articles about animal behaviour and menageries to sentimental poetry and extracts from travel books.82

If the shows and exhibitions of London were increasingly spectacular, they were no more so than the massive architectural and engineering projects which were transforming the city's appearance, the runaway industrial expansion that was underpinning its wealth, and the technological innovation that was transforming transport, communication, and daily living. These developments were frequently used in the Mirror as objects
of fashionable wonder and interest. Their visually striking qualities made them particularly suitable for illustration, and they cohered with the established traditions of antiquarian, topographical, architectural, and technical illustration which the Mirror took from the traditional miscellanies. Many numbers of the Mirror thus began with illustrated accounts of new bridges, public buildings, and mechanical inventions, and while their subjects were by no means limited to London, the large-scale remodelling of the capital loomed large. These articles were chiefly descriptive and celebratory, often giving considerable technical detail and emphasizing national progress. Such newsworthy achievements, indeed, often gave rise to more general accounts. Regular correspondent 'F R — y', for instance, took the recent 'aerial excursions' and the death of André Jacques Garnerin as the pretext for a history of aeronautics. More triumphantly, an extract from the New Times took the occasion of the departure from London of the steamship Enterprise, the first to sail for India, to reflect on the 'wonders of the age' as being hardly more chimerical than the extravagant romances of the Scriblerians.

The positive tone of these articles was, however, juxtaposed with the more ambiguous cast of others. In poetry and fiction — both original and extracted — the technological 'improvements' of the age were often used to comic effect. One source of humour lay in the overblown technological utopianism and commercial ambition which characterized the 1820s. The headlong drive to exploit the power of steam in joint-stock companies became a particular target for humour. Here, as articles ridiculed existing schemes and invented others only slightly more ridiculous, the debt to the Scriblerian tradition was obvious.

In a climate where speculators could hardly find sufficient schemes in which to invest their surplus capital, 'John Bubble' submitted to the Mirror his prospectus for 'The Intellect Company', the projects of which had 'discovered an ingredient of inestimable qualities... which being enclosed in a fillet, and fastened round the pericarpium, imparts to the wearer... a qualification to fill every station in life with honour to himself, and benefit to the community'.

At times, however, the humour turned to more serious concerns, highlighting the inconveniences, dangers, or undesirability of technological change. One common subject of humorous complaint was the 'improvement' of London's roads following Parliament's adoption of John McAdam's road-stone scheme in 1823. In a poem extracted from the New Monthly, for instance, 'Old Thames' droolly raised his complaint against the dirt and dust caused by the road works in Bridge Street, Blackfriars and the increased likelihood of accidents. Pollution and
accidents were also associated with the growing use of steam engines, and these became the objects of more barbed humour. A letter extracted from the *Birmingham Gazette*, for instance, urged the editor to ‘thwart the designs of the ‘iron-hearted’ railway speculators ‘by advice, by entreaty, by warnings, by ridicule, by any thing’. While such articles rarely engaged with the technicalities of the subject, they clearly subverted the more celebratory reportage of technological change with which they were juxtaposed.

The *Mirror*’s generic eclecticism has been well captured by Brian Maidment, who wrote that the journal ‘sought to extend the eighteenth century gentlemanly tradition of miscellany journalism to a wider public through the introduction of topical woodcut illustration and the development of more topical, more anecdotal, less antiquarian features’. Thomas Byerley, drawing on his own wide experience as a hack writer, combined elements from numerous existing genres to produce a magazine accessible to a wide range of readers at a time when other journals were becoming more highbrow, expensive, and exclusive. Some of these elements – such as the learned original articles of an instructive and amusing variety – tended to place the arts and sciences within the rather sedate learned culture of the eighteenth-century miscellany. Others – notably the sometimes racy extracts from the new fashionable monthlies and the illustrated articles on topics of the day – emphasized novel, spectacular, or controversial aspects of the arts and sciences and their practitioners.

Under Byerley, the *Mirror* presented readers with the possibility of engaging directly with its contents, scientific or otherwise, as potential contributors. It did not provide the same large discursive domain which the monthly miscellanies had presented to their bourgeois readers in the late eighteenth century. Moreover, the rise of the professionally written fashionable monthlies of the late Regency period increasingly placed it in the position of representing middle-class culture at second hand. Nevertheless Byerley’s *Mirror* was strikingly different in its openness to readily intervent from such cheap miscellanies of the 1830s as the *Penny Magazine*. In part, of course, the shift resulted from the resurgence of the cheap political press with the inception of the ‘war of the unstamped’ in 1831. Many of the producers of the new cheap miscellanies of the early 1830s were consequently concerned with a perceived problem of controlling unruly working-class readers. However, there had been significant developments in the intervening years, and in the final section I sketch how these were manifested in the *Mirror*’s representation of the sciences.

Even under Byerley, the *Mirror* was by no means static, but following his untimely death in July 1826 the rate of change accelerated. This was not merely a matter of editorial style. The literary marketplace underwent significant change during the 1820s. In the years after the financial crisis of 1825–6, a number of publishers began to issue new or recent literature at much lower prices, ranging from the 6d and 1s numbers of the SDUK’s *Library of Useful Knowledge* (1827–46) and *Constable’s Miscellany* (1827–35) to the 5s and 6s volumes of the collected edition of Scott’s *Works* (1829–33) and John Murray’s fashionable *Family Library* (1829–34). These changes might arguably have blunted the edge of the *Mirror*’s appeal to reasonably wealthy readers. In addition, the *Mirror* clearly reflected transformations in the periodical market during the 1820s, as the process of specialization that had been in train for some time reached a critical point. As the fashionable monthlies progressively turned their backs on the traditional format of the miscellany, with its contributed articles on a wide range of subjects, and its attempt to provide a repository of information, the range and number of scientific monthlies radically increased.

At the end of the war there had been around a dozen commercial scientific, medical, technical, and natural historical journals; by the end of the 1820s the number had more than trebled. This process of literary specialization quickly became reflected in the *Mirror*.

One reason for relating the changes in the *Mirror* to the wider context in which the journal appeared is the fact that Byerley’s successor as editor (after the brief abortive editorship of an unidentified ‘Mr. Ray’) was another hack writer, John Timbs, with whom he had much in common. Apprenticed to a printer and druggist, Timbs, like Byerley, cut his literary teeth as a contributor to the *Monthly Magazine*. The magazine’s proprietor, Sir Richard Phillips, was a political radical and educational publisher whose ‘chief importance’ was significantly identified by the *Dictionary of National Biography* (DNB) as being as a ‘purchaser of cheap miscellaneous literature designed for popular instruction, and as the legitimate predecessor of the brothers Chambers and of Charles Knight’. Timbs became Phillips’s amanuensis in 1821, before beginning to edit the *Mirror* in the autumn of 1827. Like Byerley, his own interests were primarily antiquarian (he was elected FSA in 1854), and when he later became sub-editor of the *Illustrated London News* in 1842 he was responsible for the antiquarian and topographical departments.
Despite his similarity in outlook to Byerley, the *Mirror* under Timbs sidelined the contributions of readers. Shortly after Byerley’s death, replies to correspondents were repositioned from the end of the weekly numbers to the wrappers of the monthly parts, effectively removing them from the reach of many (especially the poorer) readers. In addition, Timbs allowed little scope for controversy. Following an anonymous article on the ‘History of Gas-Lighting’ in December 1827, T. Hatchard wrote to the journal claiming priority in the use of coal-gas for illumination. Hatchard’s claims were roundly rebutted in a letter from John Davy, almost certainly the brother of Humphry. However, Timbs declined to include another letter on the subject, this time by ‘Verax’, observing that Davy’s article had been included in full ‘on account of the record’ he had ‘copied from the “Philosophical Transactions”, which, whether considered in connexion with the origin of gas-lighting, or as an interesting experimental research’ would ‘be acceptable to the reader’. The implication of this – that science came in extracts from expert sources, not in letters from correspondents – was also exhibited elsewhere in the *Mirror*.

Soon after the commencement of his editorship, on 6 January 1827, Timbs introduced a new section called ‘Arts and Sciences’, which consisted primarily of extracts from learned transactions and commercial scientific journals. After running for eight months, this was replaced in October 1827 by a section headed ‘Arcana of Science; or, Remarkable Facts and Discoveries in Natural History, Meteorology, Chemistry, Mineralogy, Geology, Botany, Zoology, Practical Mechanics, Statistics, and the Useful Arts’. Timbs explained that the object of the section was to ‘assemble all new and remarkable facts in the several branches of science’ selected ‘from the Philosophical Journals of the day, the Transactions of Public Societies, and the various Continental Journals’. He continued:

The advantages of such a division in accordance with the high and enlightened character of the present age, must be obvious to every reader of our miscellany. At the same time it will be our object to concentrate or condense from all other authentic sources such new facts in science as are connected with the arts of social life, and which from being scattered through elaborate and expensive works, might thereby be lost to some portion of our readers. In short, popular discoveries in science, or such new facts as bear on the happiness of society will be the objects of our choice; neither perplexing our readers with abstract research, nor verging into the puerile amusements of a certain ingenious but almost useless class of reasoners; it not being our object to “ring changes” on words.

Under the designation ‘popular discoveries in science’ Timbs introduced a new form of journalistic practice. Scientific information was to be culled from specialist sources and presented in gobbets to readers, who might use or be amused by it, but were in no position to engage critically with it. As a reviewer of the magazine put it, the *Mirror* did not ‘pretend to critical or philosophical accuracy’ but was rather ‘a record of passing matters, not sitting in judgement’. Within a year, Timbs was using the phrase ‘popular science’ in his preface, writing:

The arrangement of the present volume, generally, accords with those of its successful predecessors. Fact and fancy, sentiment, poetry, and popular science; anecdote and art; love of nature and knowledge of the world – alternate in its columns. In these several departments popular reading has been our study.

The development of this notion of ‘popular science’ clearly reflected the changing journalistic context. Where Byerley had emulated the Gentleman’s and Monthly Magazines in allowing learned contributors to submit articles on the arts and sciences, drawing on their own scholarly resources, Timbs now found himself in a situation in which even the Monthly Magazine had become a perceptibly more literary magazine under its new publisher and editor, and the Gentleman’s Magazine increasingly presented science in extracts from specialist sources rather than in readers’ contributions. The role of reporting original scientific findings in letters from correspondents had now become increasingly the province of the commercial scientific journals. This was something which Timbs clearly recognized. In March 1828, evidently buoyed by the success of the ‘Arcana’ in the *Mirror*, Timbs and Limbird published a separate duodecimo volume priced 4s 6d and entitled *Arcana of Science and Art*. Timbs’s preface is worth quoting at length:

The object of the following pages is to supply the public with an Abstract of Popular Science, or such a volume as may not inaptly be termed an Annual Register of the Useful Arts. At the present moment, there are published in London, six Periodical Works devoted to Science and Art generally; besides double that number appropriated to their exclusive branches; in addition to which are the Transactions of Public Societies. It should, however, be recollected that many of these works contain but a small portion of what is called Popular Science, their pages being frequently occupied with Correspondence on Discoveries in the higher walks of science – valuable and important, it is true, but not immediately interesting, in detail, to the general reader. In these considerations originated the preparation of the present work.

Timbs reported that he had consulted ‘upwards of five-and-thirty’ periodicals in compiling the *Arcana*. 
A key question, of course, was for whom such 'popular science' was intended. Rather like Byerley some years before, Timbs anticipated a mixed mass readership, writing:

it is not... unreasonable to anticipate the popularity of the 'Arcana of Science', in the engine-room of the mechanic; the laboratory of the chemical student; the museum of the naturalist; the library of the gardener; the workshop of the manufacturer; the studio of the artist; and at the firesides of all classes. Hence, in the selection of his materials, the Editor has kept in view only such new facts as relate to the Arts of Life and Society; whilst household convenience has been remembered in every department of Domestic economy.

Wide as this potential audience was, it appears that Timbs increasingly saw the interest in 'popular science' as distinct from the general literary culture of the Mirror. Starting with the following volume of the Mirror (volume 12, July–December 1828), the 'Arcana of Science' section was replaced by a new section entitled the 'Spirit of Discovery'. Moreover, over succeeding years this section, and the companion 'Naturalist' section, declined in importance within the Mirror. It is perhaps a sign of the increasingly literary emphasis of the Mirror that, when Timbs's first spell as editor ended in 1838, Limbird approached Dickens as his successor, and ultimately appointed John Heraud. This, indeed, was the long-term trajectory of the cheap miscellanies, as, by the 1840s, the 'useful knowledge' miscellanies of the previous decade were supplanted by fiction-based weeklies of a more self-consciously literary cast. Such periodicals continued, of course, to feature science, technology, and medicine in highly significant ways, but in ways quite distinct from the Enlightenment miscellanies whose ethos the early Mirror emulated.

The changes in the Mirror during the 1820s are clearly of wider significance. The startling specialization of periodical literature in the decade following the end of the war, with its co-production of increasingly authoritative literary and scientific magazines, remains to be studied. For the purposes of this chapter, however, it is clear that the process by which scientific and technical (and also literary) material became withdrawn from a wider learned culture in the monthly magazines led to an increasing perception that a separate journalistic form was necessary to convey such expert analysis to a wider audience. It is in this that Timbs's notion of 'popular science' has its origin. It has long been recognized that the explicitly ideological programme of the SDUK was an important part of the creation of such a self-consciously 'diffusionist' form of knowledge. What this chapter has shown, however, is that 'popular science' was also the product of commercial imperatives within the book trade.

CHAPTER 3

The Wesleyan-Methodist Magazine and religious monthlies in early nineteenth-century Britain

Jonathan R. Topham

Reviewing J. B. Mozley's Bampton Lectures on miracles in the Fortnightly Review for June 1867, the physicist John Tyndall found the High Churchman's illustrations of special providence curiously reminiscent of his childhood reading in Ireland in the 1820s:

The eminent lecturer's remarks on this head bring to my recollection certain narratives published in Methodist magazines, under the title, if I remember aright, 'The Providence of God asserted,' and which I used to read with avidity when a boy. In these chapters the most extraordinary and exciting escapes from peril were recounted and ascribed to prayer, while equally wonderful instances of calamity were adduced as illustrations of Divine retribution.¹

Tyndall's sketch contrasts sharply with the later recollections of his contemporary, the Yorkshire minister's son Benjamin Gregory:

An event looked forward to with delight was the arrival of the monthly book-parcel from City-road, bringing the Youth's Instructor, and the [Wesleyan-Methodist] Magazine, with a portrait of a minister... [T]here was a store of anecdotes and 'Accounts of Physical Phenomena,' travellers' wonders, and scientific experiments, thrilling Missionary intelligence, 'Facts of Natural History,' and 'Progress of Mechanical Invention.' It was in the Magazine, March 1824, that I heard the first puff of 'the steam-engine'.²

These two contrasting accounts of reading nicely encapsulate the ambiguous status of early nineteenth-century religious monthlies for the history of science. From the perspective of the scientific naturalist, Tyndall, the magazines' emphasis on the divine superintendence of mundane events was part of a religious culture whose epoch had been brought to a close by the advent of a new scientific ethos. Its implied datedness could be used to taint more modern theological writings by association. By contrast, the Methodist minister, Gregory — himself for many years editor of the Wesleyan-Methodist Magazine — emphasized the magazine's enormous