This paper investigates the finances of the Royal Society and its Philosophical Transactions, showing that in the late eighteenth and nineteenth centuries journal publishing was a drain on funds rather than a source of income. Even without any expectation of profit, the costs of producing Transactions nevertheless had to be covered, and the way in which this was done reflected the changing financial situation of the Society. An examination of the Society’s financial accounts and minute books reveals the tensions between the Society’s desire to promote the widespread communication of natural knowledge, and the ever-increasing cost of doing so, particularly by the late nineteenth century.

Keywords: Royal Society; publishing; journal profits; learned societies; finances; science journals

INTRODUCTION

In June 1895 the physicist J. W. Strutt, Lord Rayleigh, wrote a memorandum to the Treasury in which he noted ‘the scientific journals in this country ... are carried on with great difficulty and in some cases by private enterprise, and at a loss.’¹ His remark echoed that made by the printer Richard Taylor almost 60 years earlier:

Scientific journals in this country are supported with very great difficulty ... I have witnessed in my own recollection a failure of all the scientific journals almost that have been set on foot ... They have all of them failed from an inability to cover their expense.²

In fact, by the 1890s, as Rayleigh knew, there were some commercially viable scientific journals, Taylor’s own Philosophical Magazine and Macmillan’s Nature among them.³ But these journals mixed brief research communications with news and reviews. Rayleigh was concerned with the transactions, proceedings and memoirs of learned societies, whose principal contents were research papers.⁴ According to Rayleigh, scientific journals were unprofitable because ‘the expenses are so great’, with the complex typesetting required for

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tables and algebra easily offsetting the advantage gained by paying authors ‘nothing for their contributions’. Income from advertisements was ‘uncertain and insignificant’, and, unless news and debate was included, the number of potential purchasers was ‘so small’. Rayleigh claimed this was why publications dedicated to full-length research papers were usually produced by learned societies. But, he said, such publishing programmes now ‘exceeded their spending powers’.5

Rayleigh’s concerns arose from his experiences as one of the Secretaries of the Royal Society, a role that made him well aware of the costs of publishing Philosophical Transactions. Although Transactions had been founded by Henry Oldenburg in 1665, it was only in 1752 that the Royal Society had formally taken on the management.6 Noah Moxham shows elsewhere in this special issue that less changed in 1752 than might have been expected.7 However, there were three important changes: first, issuing Transactions became a statutory part of the Society’s activity; second, a standing Committee of Papers was charged with selecting papers for publication through a collective decision-making process that, it was hoped, would protect the Society’s reputation; and third, the financial aspects of publishing Transactions became the Society’s business. The new statutes acknowledged that ‘great Charge and Expence’ would be incurred, and it must be ‘defrayed out of the Stock or Fund of the Society’.8

Rayleigh was writing shortly after the Society’s Treasurer had conducted a review of the recent finances of Transactions. As had happened at every other such review (see table 1), it was found that production costs outstripped sales income. The Society’s Officers did not (apparently) have the longer perspective that we can recreate (see figure 1),9 but they were well aware that publishing was not a profitable enterprise. They also knew that its cost to the Society had become vastly greater in the late nineteenth century than it had been in the late eighteenth century. As table 2 shows, the cost was greater in real terms, and as a proportion of the Society’s annual income, and also if expressed per capita to allow for the size of the Fellowship.

However, the publication finances were not expected to balance: they were considered part of the general finances of the Society. Indeed, a surplus/deficit figure for the publications did not become part of the annual accounts until the twentieth century. From 1752 onwards, the Society’s Officers valued Transactions for its non-financial benefits: it enhanced reputation, functioned as a membership perquisite, and could be used as a gift in return for information, publications for the library, or services rendered. In the 1890s the Treasurer was not worried that costs outstripped sales income, but by the extent to which they did.

An analysis of the Royal Society and its Philosophical Transactions offers an insight into the historical relationship between learned societies, their journals, and money.10 Our
knowledge of the historical finances of journal publication owes much to the work of W. H. Brock on nineteenth-century commercial journals. Certain publishing societies have been well studied, particularly those religious and educational organizations that issued cheap tracts, Bibles and instructive-and-amusing magazines. But societies devoted to scholarly publishing—whether the learned scientific societies, or those editing and printing historical documents—have been less studied. How closely could—or should—learned societies engage with the commercial book trade? If a society ran its publishing programme for the sake of an ideological or philanthropic mission, how were the costs to be funded? The officers of a non-profit-making society could not afford to ignore finances. The costs of publishing could have implications for a society’s overall financial health and thus, potentially, for its activities, as the Royal Society’s support for Francis Willughby’s very expensive posthumous De historia piscium (1686) demonstrates. We must also ask how, in the nineteenth century, this calculation was affected by the growing professional significance of journal publication for men of science.

Table 2. Philosophical Transactions finances, as table 1, adjusted to allow for inflation, size of Fellowship and growth of Society income.

<table>
<thead>
<tr>
<th>period reviewed</th>
<th>average annual deficit (adjusted for inflation, to 1900£)</th>
<th>deficit per FRS (adjusted to 1900£)</th>
<th>deficit as a percentage of Society’s annual income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1754–65</td>
<td>160</td>
<td>0.3</td>
<td>9</td>
</tr>
<tr>
<td>1835–45</td>
<td>440</td>
<td>0.6</td>
<td>17</td>
</tr>
<tr>
<td>1841–45</td>
<td>458</td>
<td>0.6</td>
<td>13</td>
</tr>
<tr>
<td>1847–51</td>
<td>857</td>
<td>1.2</td>
<td>31</td>
</tr>
<tr>
<td>1886–92</td>
<td>1701</td>
<td>3.3</td>
<td>24</td>
</tr>
</tbody>
</table>

Figure 1. Production costs and sales income for Philosophical Transactions, 1752–1900 (adjusted for inflation, to 1900£). Production costs are shown in red, and sales income in blue. The trend lines are 10-year moving averages: red, production costs; grey, sales income.
This paper starts by situating *Philosophical Transactions* within the broader picture of Royal Society finances, before considering in turn the production and circulation of *Transactions*. We will see how the Society’s concerns about printing shifted from quality to cost, but its approach to distribution remained focused on free circulation rather than sales.

### The Finances of the Royal Society, 1750–1900

The Royal Society’s finances have yet to attract much attention from historians, although both Roy MacLeod and Marie Boas Hall have discussed the Society’s emergence as a grant-making body in the nineteenth century. The Treasurer was one of the statutory Officers of the Society at its foundation, and had ultimate responsibility for the funds, with assistance from the Clerk (later, Assistant Secretary). The Society frequently managed to appoint Fellows with substantial financial experience to act as Treasurer. For instance, James West (Treasurer 1736–68) held several political appointments in the 1740s and 1750s, including a period as joint secretary to the Treasury, and John William Lubbock (Treasurer 1830–35) was himself a banker. For the last three decades of the nineteenth century the Society’s Treasurers had links directly with the print trades: William Spottiswoode (Treasurer 1871–78) had rebuilt the fortunes of the printing firm Eyre & Spottiswoode, and John Evans (Treasurer 1878–98) was a partner in the Norwich paper-making firm of John Dickinson & Co.

A Finance Committee had been convened occasionally from at least the 1830s, and it became a full standing committee by the end of the century. The Finance Committee discussed matters that we might now term strategic: membership fees, the choice of printer, and the appropriate manner of treating the named funds (that is, those donated for a specific purpose). In the late 1840s the Finance Committee was actively developing an investment strategy and standard accounting procedures, and it asked wine merchant J. P. Gassiot to create a set of model ledgers for the Society in 1849.

The Society’s annual totals for income and expenditure were highly dependent on special projects, often externally funded, which ranged from transits of Venus to the cataloguing of the Society’s library and the massive bibliographical enterprise that was the *Catalogue of Scientific Papers* (1867–1925). The following discussion of finances focuses on those categories that can be tracked over the long term, namely income from membership, investments and publications; and expenditure on premises, staff and publications. These have been extracted from Council Minutes and, from 1833, the printed annual accounts, and are summarized in figures 2 and 3.

Between 1750 and 1900, both income and the expenditure in these categories had more than tripled in real terms. The size of the Fellowship, in contrast, was around 500 at the start and end of the period, but rose as high as 750 in the mid nineteenth century (figure 4).

In the eighteenth century, the main uncertainty in membership income had been the number of Fellows in arrears, some of whom had to be pursued by lawyers. By the nineteenth century, the process for receiving subscriptions and ejecting defaulters had become effective, and fee income depended on the size and composition of the membership. Income from membership rose as the Fellowship grew over the first half of the nineteenth century. Admitting new Fellows was more financially significant than retaining existing Fellows, because new Fellows paid a £10 admission fee. The regular subscriptions had historically been 1s. a week, but this was raised to £4 per annum in
Figure 2. Trends in Royal Society income, 1765–1900 (adjusted for inflation, to 1900£). Blue, fees; red, investments and rents; green, publication sales.

Figure 3. Trends in Royal Society expenditure, 1765–1900 (adjusted for inflation, to 1900£). Blue, establishments expenses; red, salaries, stipends and pensions; green, publication costs.

Figure 4. Size of the Royal Society Fellowship, 1765–1900.
In 1846–47, as part of a campaign to limit membership to those with scientific attainments, reforms were proposed that would result in no more than 15 new Fellows being admitted per year; the financial implications were carefully scrutinized. The challenge lay in estimating the proportion of new Fellows who would choose to ‘compound’ their annual fees by making a one-off payment of £60, how many would be eligible for a reduced fee (£3) in recognition of their published research, and what the death rate would be among the existing Fellowship. The reforms were passed in 1847, and the size of the Fellowship slowly reduced (see figure 4). In 1878, Joseph Hooker, as President, solicited donations from William Armstrong FRS, James Young FRS and Joseph Whitworth, among others, to create an endowed Fee Reduction Fund whose income would offset the effect of the growing proportion of Fellows paying the reduced rate.

Given that the Society was sufficiently sympathetic to the modest circumstances of its late nineteenth-century Fellows to create the Fee Reduction Fund, it is clear why there was no attempt to increase membership income by raising the fees further. It was fortunate, therefore, that over the nineteenth century, the Society’s investment income grew substantially. It came to dwarf both of the other income sources, providing 60% of the Society’s (then-increased) income by the 1890s. The 1846–47 financial review, chaired by Leonard Horner (the son of a successful linen merchant), had recommended that half of any future annual surpluses should be invested in funds to build up the portfolio and thus enhance the income from dividends. The growth of the Society’s investment income suggests that successive Treasurers did a good job of implementing this policy. The Society’s funds also benefited from occasional donations and bequests, and although many were intended for specific purposes, some were added to the general reserves of the Society.

Turning now to expenditure (figure 3), publication costs were a significant component of the increase. They included both the growing cost of Transactions (to be discussed in the next section) and a wider range of publication activity, with the launch of the monthly abstracts (later known as Proceedings of the Royal Society) and a variety of occasional reports and catalogues. Staffing costs grew partly because the honoraria paid to Officers were occasionally increased, but mostly because of the Society’s expanding support staff. In the 1890s the long-standing post of Assistant Secretary had been augmented by an assistant librarian, a clerk, and an office assistant and his junior; there was still a porter to look after the premises, but the daily charwoman had been replaced by the porter’s wife acting as housekeeper, with a third family member minding the furnace. The third recurring category of expenditure was the ‘establishment expenses’, which in 1833 included taxes and rates, fire insurance, postage and shipping, carpet-beating, window-cleaning, coal, soap, candles and ‘two moveable book stands’. This type of expenditure had been declining during the Society’s time in Somerset House (1780–1857), and even during its brief period in the north wing of Burlington House; however, the 1873 move into the newly built east wing of Burlington House clearly changed the nature of the Society’s commitments. As the Finance Committee remarked in 1877, ‘at the present day’ it was becoming more costly to maintain ‘an adequate staff and establishment’.

Both the Treasurer’s annual statement to Council, in the eighteenth century, and the printed annual accounts until the 1870s, routinely incorporated the funds carried forward at the start of the year into the figure for total receipts, suggesting that the Society cared more about having enough cash in hand than about evaluating the income and expenditure in that particular 12-month period. A year of high expenditure had often been preceded by one that had left a substantial carry-forward, but if the Treasurer’s cash box
proved insufficient, annuities could be sold, or wealthy Fellows solicited for donations. For instance, in 1765 the Treasurer sold £400 of ‘3 per Cents Bank Annuities’ to cover the repairs and redecoration of the Society’s Crane Court premises.\textsuperscript{33} It is possible to recreate the annual surplus/deficit figures, and they reveal that until the early nineteenth century the end-of-year balance was generally between plus and minus £400 (and usually less), but by the later nineteenth century, it could be anywhere between plus and minus £1500 (and occasionally more). The Society’s special projects were certainly a significant source of that increased variability, both because of their cost and because of the donations and grants received to fund them. Of the Society’s regular financial activities, the key uncertainty came from the cost of publishing \textit{Philosophical Transactions}.

The Royal Society was not the only voluntary society engaged in publishing during the eighteenth and nineteenth centuries, and the tract and bible societies demonstrated that a society structure was no bar to an efficient publishing enterprise.\textsuperscript{34} Like these evangelical societies, the Royal Society was run by an elected committee assisted by paid staff, and its publications were not issued for profit but for a mission (the circulation of scholarship, or of gospel truth). However, with its small, elite membership, the Royal Society could not emulate the extensive fund-raising activities of an organization such as the Religious Tract Society, which had more than 4000 members in its local branches. Nor were the Royal Society’s Officers willing to emulate the Religious Tract Society’s close engagement in the book trade. The Religious Tract Society employed an editorial staff to oversee the production of books and magazines that could be sold to the Christian middle classes of Britain to make money that could be ploughed back into tract publishing and distribution. The Royal Society’s publishing programme was limited to those publications that directly supported scientific research and its circulation. It had no paid editorial staff, relying on its secretarial staff (honorary and paid) and the Fellows who served on editorial committees or acted as referees. And those publications absorbed funds, rather than generating them. The Religious Tract Society celebrated (in its printed annual reports) both the sales of its books and magazines and the consequent circulation of its tracts. The Royal Society, in contrast, printed the list of institutions all over the world to which it sent \textit{Transactions}, but never mentioned sales figures in public. I have argued elsewhere that, although the Religious Tract Society had the structure of a voluntary society, it was in fact a well-run publishing house, closely integrated with the commercial book trade.\textsuperscript{35} That was not true of the Royal Society in either the eighteenth or nineteenth century.

\textbf{Producing \textit{Philosophical Transactions}}

The 1752 decision to take on the management of \textit{Philosophical Transactions} did not mean that the Fellows of the Royal Society intended to acquire a printing press and learn to use it. They would employ members of London’s flourishing print trades, as the secretary-editors had always done.\textsuperscript{36} From the 1750s to the 1780s, the Society’s key contact in the print trade was the bookseller: he was occasionally consulted by Council, and until 1775 it was his name (only) that appeared on the imprint of \textit{Transactions}. But in the period 1750–1900 overall, the names of printers appear far more frequently in Council Minutes, partly because of the way in which bills were recorded but also because the printer’s skill, and his costs, were, from time to time, matters of significant concern. From 1752, the Society’s Secretary was responsible for negotiating with the printer, choosing suitable...
paper and type, and agreeing the cost estimates. There are no records of how Transactions came to be printed by Samuel Richardson (of Clarissa fame) in the 1750s or, after his death in 1761, by William Bowyer, who was a well-regarded fine printer. Bowyer died in 1771 and was succeeded by his partner John Nichols, who had the dubious honour of being the first printer to leave a substantial trace in the archive.

During Nichols’s tenure, Council started to pay more attention to the printing of Transactions. In late 1779 there had been a remark about the need to ensure a good quality of paper; in 1781, Council mandated a change in type face because the previous face was ‘thought too small’. And then, in 1787, Charles Blagden, one of the Secretaries, ‘made a complaint of great negligence & irregularity on the part of Mr Nichols the Printer’, and Nichols was ordered to ‘make compensation’. Two years later, Blagden had further complaints, and a committee of investigation was appointed. As well as remarking on the ‘great irregularity’ of mislaying corrected proofs, the committee informed Nichols that his ink was ‘foul and of a bad colour’, and that his printing was so ‘ill executed’ that ‘foreigners’ believed Transactions to be ‘worse printed’ than those ‘of most of the other learned Societies of Europe’. Nichols ‘promised to use his utmost endeavours to prevent future complaints’. But in December 1791, even though Banks privately reassured Nichols that ‘no cause of dissatisfaction at that time existed’, Council decided nonetheless to move Transactions to William Bulmer. Banks told Nichols that Council wished Transactions to appear in a new typeface ‘which no one but Mr. Bulmer can execute’, although the Council minute itself merely notes the ‘avowed superiority’ of his printing. Bulmer, like Bowyer, was noted as a scholarly and learned printer. The episode illustrates how greatly the physical appearance, as well as the intellectual content, of Transactions mattered to its promoters.

William Nicol (no relation) became the printer of Transactions in the 1820s, having entered into a partnership with the elderly Bulmer just before his retirement in 1821. In January 1828, however, Nicol, too, faced an investigative committee, chaired by the President Davies Gilbert, and was informed that his printing had been found ‘greatly inferior’ to that of other printers with ‘analogous matter’. Although he was invited to participate in a competitive tendering process, Nicol chose to resign. The committee sought estimates and samples of printing from five printers. It then appointed Richard Taylor, who had substantial experience in printing scientific papers, both in his own Philosophical Magazine and in the transactions of several learned societies.

Gilbert and his investigative committee were clearly aware of the challenges of typesetting matter for Transactions, for they sent samples of meteorological tables and algebra, as well as prose text, and requested samples of printing, with an estimated cost for typesetting and printing 1000 copies, paper not included. They also asked: ‘What number of sheets could you furnish per week?’ and ‘What number of sheets could you allow to be set up at one and the same time?’ Such questions indicate some awareness of the practicalities of running a printing business, and of the specific requirements of Transactions. And the final decision to appoint Taylor, whose estimate was not the cheapest, reiterates the determination to have Transactions printed ‘in the manner most creditable to the Society’. Taylor’s track record of high-quality printing and accurate typesetting by an experienced staff was crucial.

When Horner and his Finance Committee undertook their extensive review of the Society’s finances for 1846–47, they believed that print costs were under control. In December 1846 they had instigated a re-tendering process, which had persuaded the
Society’s paper suppliers and printer to lower their prices. And they believed, with reason (included in table 1), that the cost of Transactions was falling. But just five years later, Edward Sabine would show that their confidence had been mistaken.

Sabine would eventually occupy every senior position in the Royal Society, but in 1852 he was serving as Treasurer. He reported to the Earl of Rosse, the President, that publishing costs were ‘much beyond what is usual’ and were now ‘more than the funds of the Society will admit’. The mid and later nineteenth century was a time of falling costs in the print trade in general, as a result of the uptake of technological innovations such as machine-made paper and steam-powered printing machines. The fact that Sabine was the first in a long line of Treasurers to worry seriously about the rising costs of Transactions suggests that the Royal Society did not feel the benefit of these innovations. This is partly to do with the nature of the printing required by the Society; however, Sabine astutely noted that the root of the problem lay not in the printer’s workshop but with the Society’s authors and its editorial process.

He analysed the number of papers submitted and published over the previous two years, noted that the number of papers published had risen, and concluded: ‘The remedy is obvious;—the selection of papers for Transactions should have reference to the pecuniary means at the disposal of Council, as well as to the merits of the several communications.’ Quite how he envisioned the Committee of Papers integrating a financial review with the evaluation of intellectual merit made by referees remained unclear, and was made no clearer in 1860, when T. H. Huxley (then a relatively new member of Council) got a similar resolution passed. As table 3 shows, the quantity of research printed in Transactions did rise through the later nineteenth century, particularly in the last two decades; the rise was actually even more substantial than table 3 shows, because typographical changes (in the 1790s and 1830s) meant that pages held more text later in the period. All this meant more paper, more work of typesetting and printing, and therefore more expense. And this growth in the printed bulk of Transactions was occurring even though a high proportion of the papers submitted to the Royal Society after the 1850s were being recorded only in abridged form in Proceedings.

Table 3. The changing size of Philosophical Transactions, 1750–1900.

<table>
<thead>
<tr>
<th>decade</th>
<th>pages per year</th>
<th>articles per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750s</td>
<td>496</td>
<td>70</td>
</tr>
<tr>
<td>1760s</td>
<td>370</td>
<td>47</td>
</tr>
<tr>
<td>1770s</td>
<td>605</td>
<td>41</td>
</tr>
<tr>
<td>1780s</td>
<td>485</td>
<td>34</td>
</tr>
<tr>
<td>1790s</td>
<td>475</td>
<td>25</td>
</tr>
<tr>
<td>1800s</td>
<td>462</td>
<td>22</td>
</tr>
<tr>
<td>1810s</td>
<td>422</td>
<td>27</td>
</tr>
<tr>
<td>1820s</td>
<td>461</td>
<td>30</td>
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<td>1860s</td>
<td>785</td>
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</tr>
<tr>
<td>1870s</td>
<td>780</td>
<td>28</td>
</tr>
<tr>
<td>1880s</td>
<td>981</td>
<td>26</td>
</tr>
<tr>
<td>1890s</td>
<td>1449</td>
<td>29</td>
</tr>
</tbody>
</table>
It is striking that the Society’s editorial processes did not contain the growth of Transactions. Unlike commercial journals or magazines, Transactions had no standard page length per issue, and therefore no standard price. Commercial publishers targeted their periodicals to particular markets, and chose a format and price to suit. A set cover price was thus a key element of the marketing strategy, to encourage regular subscriptions; however, it entailed a strict adherence to page limits. Transactions did not have a page limit, because the ambition was for the Committee of Papers to be able ‘to publish all the papers they wish to be contained in the volume of the year’. The size of Transactions was to reflect the quantity of worthy research presented each year, however much that happened to be. And thus the Society’s ambition deprived it of the simplest way of controlling costs.

In 1876, during William Spottiswoode’s treasurership, the Society tried again to reduce ‘the expense attendant on printing of the Society’s publications’ and moved to Harrison & Sons, who were specialist printers without their own publishing division. But without editorial action, it made little difference in the long term. Thus, in April 1894 the Treasurer, John Evans, reported that 1893 had been a terribly expensive year, and warned that it was ‘impossible to meet such expenditure out of current revenue.’ Whereas Sabine had been concerned about spending about £1500 per year, the increased investment income meant that Evans was willing to spend £1800 a year. What worried him was that the papers already accepted for 1894 were estimated to cost £2600, while another 10 papers (‘probably costing £300’) were still to be considered by the Committee of Papers.

Like Sabine, Evans called for a stricter editorial policy; he drew attention less to the number of papers accepted, and more to their length and illustrations. Comparing the 1893 figures with the average from the previous six years, he showed that in the period since the splitting of Transactions into two series, the number of pages printed had doubled. Given that the total number of articles published had barely increased (table 3), this reveals a significant increase in the average length of articles published in Transactions. Evans also pointed out that the number of plates of illustrations had gone up by a half. For almost a century, from the 1770s until the 1860s, many of the engravings (and, from the 1830s, lithographs) for Transactions had been created in the workshop of the Basire family, spanning three generations all called James Basire. The 1846–47 financial review had felt unable to run a tender process for engraving, because ‘so much difficulty attends the giving of estimates for works of that description’, and it had simply recommended having a pool of trusted engravers, and seeking ‘the most advantageous offer’ for each illustration. Engravings and lithographs were hand-crafted works of art rather than products of industrial mechanism, and as such were expected to be expensive. The only way to reduce their cost was to use fewer of them, but the increased length of papers clearly tempted authors to include more images.

Evans wanted to control both length and illustrations, and he recommended that, in future, ‘no paper be printed in the Phil Trans at greater length than 40 pages 4to., or with illustrations that will cost more than £35, without special authority.’ Council passed his resolution, and this seems to have been the first time that any formal efforts were made to constrain authors and to lay down format rules for editors and referees to enforce. As well as placing a burden on authors, Evans suggested that referees should comment explicitly on the illustrations and their ‘necessity’. And he also suggested that referees should consider whether papers submitted by authors who were not Fellows ‘might not be more advantageously communicated to some other Society’, thus hopefully shifting the
burden of publication elsewhere. In contrast with their eighteenth-century predecessors, men of science in the 1890s had plenty of options for publishing, and Evans was suggesting that the Royal Society could afford to be more selective. In December 1894 Council drafted a standard letter to referees setting out five questions along the lines proposed by Evans, and specifying that a paper suitable for Transactions should ‘seem to mark a distinct step in the advancement of Natural Knowledge’.

**CIRCULATING PHILOSOPHICAL TRANSACTIONS**

The 1752 statutes stated that under the new arrangements, ‘the Sole use and benefit’ of Transactions would be for ‘the Society, and the Fellows thereof.’ As events soon demonstrated, the ‘use and benefit’ was understood to be non-financial: as well as reputation, it included the free distribution of Transactions to Fellows, and its use as a gift. The free circulation clearly affected public sales, and the booksellers Davis & Reymers pointed out, in 1766, that demand was ‘very slow’, because of ‘three hundred philosophical readers [that is, Fellows of the Society] being supplied with the work, gratis’. Thus, in the 1890s, when John Evans calculated the cost of Transactions to the Society, he took for granted that the sales income should be seen as reducing the total liability; however, he also assumed that sales were naturally and inevitably low. The complete absence of any suggestion of a more aggressive marketing strategy to boost sales indicates how alien this was to the Royal Society’s benevolent approach to circulation.

When the members of Council in 1752 considered how the Society would cover ‘the said extraordinary Expence’ of Transactions, they felt it was ‘but reasonable’ that, in future, new Fellows ‘should contribute in some measure’; and they raised the admission fee of 2 guineas to 5 guineas. Levying a one-off charge on future Fellows to cover the recurring costs of a benefit to all Fellows was hardly a serious measure to cover the production costs, but it created a link between fees and Transactions. The perception of a causal link led the free copy to be seen as an absolute entitlement of Fellows. Thus, in 1798, Dr John Wilkinson insisted that the missing volume he sought was ‘my Property & cannot be withholden from me, but by an act of rigorous Injustice; which, I trust, in Honor, the Council will not condescend to commit.’ (Council invoked the statutory five-year limit on claims, and refused him.)

In the late eighteenth century, the print run of Transactions was divided roughly equally between the free copies for the Fellows and those for public sale: in the 1760s and 1770s, the Society usually took about 400 copies, leaving about 350 copies for sale through the trade. During the Napoleonic war, the run varied, rising to as high as 1000 copies between 1791 and 1808, but then being reduced once more. The print run was again increased to 1000 in 1828, when Taylor took over the printing, and remained there until the end of the century. Yet, although the rise might have been due to the growing Fellowship, keeping it at 1000 when the Fellowship shrank indicated not a growing public sale but the extent to which Transactions was being used in gift exchange.

Council’s use of Transactions as a gift predated 1752, but it became easier and more extensive once the Society had first call on all the copies printed. For a brief period in the 1680s the Society had a regular arrangement to purchase about 60 copies of each issue for its own use, but otherwise had to purchase them *ad hoc* from the bookseller-printer. Thus, in 1750, when the Society wished to reciprocate a gift from the Académie royale
des sciences of a complete set of its Mémoires, the Secretaries tried to purchase a complete set of Transactions. This proved sufficiently difficult that, almost three years later, the Earl of Macclesfield (the new President) donated his own personal set. One consequence of the takeover was that the Society had easier access to copies of subsequent volumes, starting with a retrospective volume covering 1750 and 1751. Thus, both the Jesuit missionaries in China, in 1753, and the Royal College of Physicians, in 1757, received gifts of the volumes from the time that ‘the Society took the publication of them into their own hands’. Some gifts were reciprocal, acknowledging observations or publications received; others were efforts to enhance the Society’s prestige, as with the regular donations to the British Museum, and the universities of Oxford and Cambridge instituted in the 1760s, as well as the long-standing gift to the king.

By the 1840s the Society was giving 20 or 30 copies each year as gifts to individuals. In addition, it sent another 60 or so copies to learned societies, observatories and academies, mostly in Britain and Europe, in return for copies of their own publications. During the nineteenth century such exchanges became an important way for learned societies to build their library holdings at minimal expense. In June 1875 the requests considered (and granted) by the Royal Society included those from the Royal Society of Edinburgh and the American Philosophical Society seeking volumes of Proceedings and Transactions to fill gaps in their library holdings, and from the Asiatic Society of Japan (Yokohama) and the public museum in Buenos Aires offering their publications in exchange for Proceedings. As this shows, the Royal Society’s network now extended well beyond Britain and Europe. By the end of the century, the number of institutions on the Society’s exchange list passed 460 and included institutions in the British dominions and colonies, the USA and South America. This largesse allowed the Society to build an unrivalled collection of scientific journals from all over the world, despite a relatively modest explicit library expenditure.

There was also a further way in which the Society supported the free circulation of Transactions: through the provision of ‘separate copies’ of individual papers (that is, offprints). From at least the 1770s, authors were allowed free copies of their papers, to circulate through their personal networks. Because they were usually printed off as soon as the paper had been approved, they might be available some weeks or months ahead of the volume to which they formally belonged and could create confusion about the date of ‘publication’. In 1802, for instance, authors were urged to ‘use their endeavour’ to ensure that separate copies were treated as private communications ‘till one Month after the publication’ of Transactions. Moreover, as Alex Csiszar has shown, the circulation of separate copies could lead to citations that were almost impossible to track down. In 1773 Council had limited the number of copies received by authors to 100; a century later, 50 copies had become standard, although authors could still request an additional 50 (or more, at a cost).

The extensive free circulation of Transactions benefited the very same scholars and institutions who might otherwise be purchasers. As well as Fellows and their correspondents, virtually all of the universities and university colleges were on the free list by the end of the nineteenth century. This explains why there was almost no discussion, after the 1760s, about the efficiency or effectiveness of arrangements for the public sale of Transactions. The Society had to work with paper merchants, binders and printers to get Transactions produced, but the growing free circulation meant that it was an increasingly moot point whether the Society needed booksellers or wholesalers.
Nonetheless, in 1752 Charles Davis, the Society’s bookseller, had been consulted by Council on the proposed takeover of Transactions, and continued to act as its distributor under the new management. As with its early printers, the Society’s booksellers tended to retain its business from one generation to another. Davis was replaced after his death in 1755 by his nephew Lockyer Davis, then in a partnership with Charles Reymers. The booksellers were allowed a commission (ranging from 15% to 40%) for managing the sales of Transactions on behalf of the Society. But in the summer of 1766 Davis & Reymers proposed a re-evaluation of the terms of business, offering to take full responsibility for arranging the printing and paying the bills, although they promised to take guidance from the Society ‘as to price, and all other matters’, presumably editorial, ‘as heretofore’. Such an arrangement, they argued, would enable Council members to ‘ exempt themselves of all trouble, expence, & risque’. The Society did not accept the offer, even though it would certainly have saved time and trouble, and probably money.

One consequence of keeping the risk of publishing was that the Society kept the ownership of the entire print run and therefore had to face the problem of managing the stock, including any copies not claimed by Fellows. In principle, such remainders could be used in gift exchange, or to make up sets later. But crates of apparently unwanted publications represented money wasted on paper and printing, and also a storage problem (and cost). This was what had prompted the offer from Davis & Reymers: in 1765 they had reported that they were storing more than 2600 volumes on behalf of the Society, some dating back more than a decade. For instance, they had 55 copies from 1751–52, and 250 copies of one of the parts for 1761–62. Davis & Reymers agreed to purchase this back stock for 500 guineas, despite claiming it might take 13 years to sell.

Davis remained the Society’s bookseller (with various partners) until his death in 1791, when his partner, Peter Elmsley, took over. On Elmsley’s retirement in 1802, with no junior partner available, the President, Joseph Banks, opted for George Nicol, ‘bookseller in ordinary’ to the king. Nicol had connections to the Society’s printer, Bulmer; his son, William, would become printer of Transactions in the 1820s. Unsold stock was a perennial problem: in 1824, for instance, G. & W. Nicol were asked to offer all the remaining pre-1810 volumes for sale at a 50% discount. In 1829, after both George Nicol’s retirement and his son’s forced resignation as printer, Council stopped employing a separate bookseller. For the rest of the century, copies could be bought either from the Society’s premises or from the printer. In 1902 the Secretaries were once again debating what to do with the ‘large stock of surplus copies of the Society’s publications that had accumulated’.

Given that most of the print run was reserved for the use of the Society (for Fellows, or for gifts), only a few hundred copies of Transactions were usually available for sale to casual purchasers or to those institutions (such as gentlemen’s clubs and professional libraries) that did not receive free copies. The only surviving set of sales figures so far discovered was a document apparently prepared for the 1846–47 financial review, which gives the sales each year, from 1835 to 1844, ranging between 130 and 160 copies. For earlier and later sales, we can attempt to extrapolate from sales income, but there are too many unknown variables for these figures to be anything other than suggestive: in the 1750s and 1760s, sales were unlikely to have been more than 280 copies, and in the 1860s they were probably somewhere between 80 and 200 copies. Although these sales seem low, they do in fact represent the sale of a sizeable proportion of the element of the print run not reserved by the Society for Fellows and gifts.
These sales figures, which indicate that most of the copies not reserved for the Society were being sold, suggest that the accumulating back stock was a consequence not particularly of the low sales (which were expected) but of the incomplete claiming of Fellows’ copies. An audit in the mid 1840s revealed that only about half of Fellows claimed their copies within two years after publication, rising to two-thirds within the five-year limit. This was why the Society had, on average, 200 copies of each volume left. The strength of the perceived link between membership fees and a free copy of Transactions presumably explains why Council did not feel able to reduce the print run by 200 copies (until 1898).

In his 1895 memorandum to the Treasury, Lord Rayleigh’s analysis of the financial position of learned society journals assumed that the market of possible purchasers had shrunk. He attributed this to wider social changes in the audience for scientific journals, rather than, say, to the practice of distributing free copies. He noted the disappearance of a class of wealthy individuals, ‘of great importance in former times’, who had ‘bought scientific publications in order to “add them to their library”, whether they read them or not’. In the late nineteenth century, Philosophical Transactions usually cost at least £3 a year, and sometimes more than £5. Although Rayleigh himself could have afforded this, he recognized that the new generations of scientific researchers typically came from less affluent backgrounds and worked in modestly paid jobs.

Rayleigh also noted, that, even though ‘the total number of persons engaged or interested in science . . . is increasing’, the specialization of scientific research meant that ‘the number of persons reading any particular paper or set of papers is small.’ This trend to specialization was why the Society had, in 1887, decided to split Transactions into two series, because few physicists were likely to read the biological papers, and vice versa. But even after the split, each series retained a relatively unusual breadth of coverage compared with, say, Chemical News.

One possible solution to both issues was the sale of ‘separate copies’, enabling researchers to purchase only those papers that they wished to read. In 1875 the Society decided that ‘separate copies’ would be sold through the trade (as well as provided to authors), and contracted with Nicholas Trübner, who already acted as agent for dozens of government departments and learned societies. The Royal Society’s experiment was not a great success: Trübner reported in 1883 that no more than 10 copies would be needed of future papers. Nonetheless, separate copies continued to be available for sale, at prices ranging from a couple of shillings to a massive 12s. for Charles Sherrington’s 120-page paper on spinal nerves (1893). The appointment of Trübner seems to be the Society’s first interaction with a retail or wholesale bookseller since 1829; however, it is notable that the Society did not ask Trübner to handle the volumes of Transactions. In its volume format, Transactions was arguably more suited for libraries than for individual researchers—and many of the libraries, of course, were receiving it free of charge.

**BALANCING COSTS AND MISSION**

From the 1850s onwards, the Society’s Treasurers had drawn attention to the difficulties of funding such a substantial publication for (primarily) free circulation. An evangelical society with a large membership could circulate millions of short tracts, but a scientific society with a small, restricted and not fabulously wealthy membership could not rely on membership
income to fund even 1000 copies of the expensive product that was Philosophical Transactions. How, then, were the costs to be supported? In 1894 Evans, as Treasurer, arranged for the sale of stock to cover the losses in the short term, and proposed a limitation on page length and illustrations as a longer-term measure. As adopted by Council, however, the limitation was open to special pleading, and this prevented it from being as effective as Evans would have liked. Transactions continued to have a highly variable volume length well into the twentieth century.

The Society’s strategy was to seek alternative sources of income. The previous two decades had been a fruitful period for Society fund-raising, as the Record of the Royal Society reveals. Donations were usually for special purposes—such as the £2000 donated in 1892 by Ludwig Mond FRS ‘to assist in carrying on the Catalogue of Scientific Papers’—but the Society’s Officers could be creative about finding ways to persuade donors to fund core activities, as the Fee Reduction Fund (1878) demonstrated. The publication of research might be a similarly attractive cause for donations.

There had been a short-lived Publication Fund from 1878, endowed (again) by James Young, but in the 1890s, rather than approaching private donors, the President, William Thomson, Lord Kelvin, authorized Rayleigh to write to the government. This was what occasioned his 1895 memorandum to the Treasury. The Society already administered the government grant for scientific research, and Rayleigh argued that a publication grant would enable better circulation of the results of research, which would in turn increase the likelihood of practical applications. Rayleigh acknowledged that ‘the public giving the money’ should know ‘exactly “what it gets for its money”’, and argued that the publication of completed research was a context in which ‘the exact use of every penny can be clearly ascertained’, in contrast to research funding, which was necessarily speculative. Rayleigh assured the government, ‘it need hardly be said that the Royal Society ... would do its very best to ensure that aid should be given only to that which was worthy of aid’. The Society thus presented itself as the appropriate body for adjudicating such claims of value and worth, willing ‘to take all possible pains to ensure that the money shall be spent in a manner most advantageous to science’. It had, of course, a track record in this role, both in its evaluation of applications for the government grant and in the editorial evaluation processes (namely refereeing) that it had developed at Transactions. Despite emphasizing the Royal Society’s special role, the Society’s Officers recognized the strategic value of asking, not for oneself, but on behalf of others. Rayleigh therefore proposed ‘not merely to assist their own publications’ but also to aid the publication of ‘scientific matters’ in ‘other channels’, as ‘demanded by the interests of science’.

In 1894 Rayleigh’s co-secretary, Michael Foster, had unsuccessfully sought an increase in the government research grant. However, Rayleigh’s 1895 letter to the Treasury was written as Lord Rosebery’s liberal government fell. Within a fortnight, Rayleigh’s brother-in-law, Arthur Balfour, was again First Lord of the Treasury, and the Royal Society had a promise of £1000 a year as a grant-in-aid of publications. Over the next three years, just over half the funds were granted to other learned societies, but the rest subsidized Royal Society publications. The government continued to support the publication of scientific research by learned societies into the twentieth century, even increasing the grant to £2500 in the 1920s. Rayleigh’s success would be no long-term solution, but in the medium term it enabled the Society to avoid a root-and-branch rethinking of its publishing activities.
By the end of the nineteenth century, the Royal Society’s Secretaries were receiving far more submissions of publishable research than their predecessors in the 1750s could have imagined. The wealthy gentlemen Fellows of 1752 had been perfectly willing to bear the cost of a publication that enhanced the reputation and honour of the Society, and their successors wanted to continue doing so. But the professionalization of science made this difficult, not just because of the increased research activity and the new career significance of publishing, but also because demographic changes to the scientific community meant that money was more of an issue than it had once been. The Society was fortunate indeed that the Treasurers and Finance Committee members of the post-1847 period did so well at developing its investments. One can only speculate what the Society might have done with those funds had they not been so effectively absorbed by the publishing programme.

Treasurers of the Royal Society—from Sabine to Evans—had recognized that the rising costs were a consequence of the Society’s editorial policy. Each paper was assessed entirely on its own merits, rather than considered as competing with others for a defined (and limited) amount of space in the journal. Indeed, since 1752 the Society had developed increasingly complex editorial processes for doing this, using committees and (since 1832) referees as a way of combining individual expertise with collective, institutional responsibility. One of the inadvertent consequences was a greater distance between editorial and commercial decisions. Throughout the period, the Assistant Secretary dealt with the printer, and the Treasurer kept an eye on finances, but neither was closely involved with the editorial processes. This contrasts with the running both of early nineteenth-century commercial journals, such as those of Nicholson, Tilloch and Taylor (all of whom had backgrounds in the print trade), and with the way in which Philosophical Transactions had originally been run by Oldenburg, in close contact with his bookseller-printers.

Rayleigh’s memorandum had depicted the business of late nineteenth-century scientific journal publishing as beset by the inevitably expensive complex printing requirements, and an equally inevitably tiny market. There was truth in this, but Rayleigh overplayed (for valid strategic reasons) the inevitability. At least in the case of the Royal Society itself, the unbearably high costs were a consequence of an editorial process that sought to publish all excellent papers, while the lack of paying purchasers resulted from the extensive free distribution to Fellows, their correspondents and academic institutions.

Thus, we fundamentally misunderstand the Royal Society’s publishing activities if we look at them from the perspective of modern learned societies, which often gain significant income from their publishing activities. Some other publishing societies might have relished their engagement with the commercial book trade, but the Royal Society in the eighteenth and nineteenth centuries is better described as a patron of scientific knowledge than as its retailer.

NOTES

1 Royal Society archives [hereafter RS], Council Minutes (Printed) [hereafter CMP] vol. 7, 20 June 1895.


RS CMP/7, 20 June 1895.


RS Council Minutes (Originals) [hereafter RS CMO], vol. 4, 19 March 1751/2.

The data underlying this graph are far from perfect. Figures have been extracted from Council Minutes until formal accounts were presented, from 1833 onwards. In the earlier period some figures are missing, and it is sometimes difficult to attribute bills or receipts to specific volumes of the journal with certainty. Cost data are much more complete than sales data. Moreover, for most of the post-1833 period, the sales income from Proceedings is inextricably combined with that from Transactions, and thus the deficit shown here for Transactions is an underestimate. Adjustment for inflation, using 1900 as a baseline, was made by using the real price comparator (RPI) at ‘Measuring Worth’, http://www.measuringworth.com (accessed 7 May 2015).


13 The standard histories of learned societies routinely include a section or chapter on the publications, but rarely discuss the actual commercial or editorial business involved. On the problems of printing historical documents, see C. Johnson, ‘The Camden Society, 1838–1938’, Trans. R. Hist. Soc. 22, 23–38 (1940).


20 Expenditure can be reconstructed nearly completely, because bills were always presented to Council for approval, and were therefore recorded in Council Minutes. Income was recorded in less detail; for the eighteenth century, often all that survives is the figure for total annual receipts given in the Treasurer’s anniversary day (30 November) report to Council. From 1833, accounts with standard headings, including some breakdown of income sources, were printed in Proceedings (from 1897 in the Year-book of the Royal Society).

21 For instance, RS CMO/3, 3 February 1729 and 9 May 1730.

22 The fees were set in the statutes; the historical statutes are discussed in Record, op. cit. (note 17), ch. 3.

23 Both the admission fees and the ‘compounding’ fees were treated as ordinary income, despite repeated entreaties from finance committees that some portion of the compounded fees be invested. Finance Committee, RS CMB/42/10 fos 58–60, January–February 1834.

24 RS CMP/2, 14 January 1847. The Finance Committee discussions are in RS CMB/86/A, 12 December 1846 to 11 January 1847. None of the ‘business astronomers’ discussed by Will Ashworth, some of whom had actuarial skills, were involved (Baily had died in 1844); W. J. Ashworth, ‘The calculating eye: Baily, Herschel, Babbage and the business of astronomy’, Br. J. Hist. Sci. 27, 409–441 (1994).

25 From 1878 the Society drew from the Fee Reduction Fund to replace the ‘missing’ £1. However, as the proportion of deserving Fellows grew (84% by 1908), the fund went into deficit. See Record, op. cit. (note 17), pp. 178–179.


27 Record, op. cit. (note 17), ch. 5.

28 The enormous and expensive Catalogue of Scientific Papers, however, was accounted separately.

29 Salaries were paid in November every year, and Council Minutes record names, roles and payments. For 1890s, see, for instance, 1 November 1894, RS CMP/7.


31 On the Society’s premises, see Record, op. cit. (note 17), p. 29.

32 Finance Committee report, recorded in Council Minutes 17 May 1877, RS CMP/4.

33 RS CMO/5, 14 February 1765.

34 Howsam, op. cit. (note 12); Fyfe, op. cit. (note 12).
Journals, learned societies and money


37 Printers’ names did not appear on the printed issue, but bills for payment, explicitly ‘for printing the Transactions’ appear in Council Minutes. Richardson printed *Transactions* from at least 10 May 1753 until 15 May 1760 (he died in 1761), RS CMO/4. William Bowyer was first recorded as printer of *Transactions* on 18 November 1762, RS CMO/4. Richardson and Bowyer are both in the *Oxford Dictionary of National Biography* [hereafter ODNB].

38 The ODNB entry on Nichols (in ‘Nichols family’) gives an overview of the literature on this well-known book trade figure.

39 RS CMO/7, 16 December 1779 and 1 February 1781.

40 RS CMO/7, 25 January 1787. Pages, and some title pages, had been omitted.

41 RS CMO/7, 25 June 1789.

42 RS CMO/7, 9 July 1789.


44 Committee for Printing Philosophical Transactions, 25 January 1828, RS CMB/1/24/1.

45 Committee for Printing Philosophical Transactions, 28 January 1828, RS CMB/1/24/1.

46 The printers involved were William Clowes, Richard Taylor, Priestley & Weal, James Moyes and R Watts. RS Domestic Manuscripts [hereafter RS DM] 1/95 Memorandum of printing estimates; RS DM/1/94 Memorandum of Watts’ printing estimates.


48 ‘Memorandum of questions to printers’, n.d. (late January 1828), RS DM/1/96 (an abbreviated version is at RS DM/1/91).


50 For the 1846 re-tendering (in which Taylor was successful), see RS CMB/86/A, 12, 14 and 17 December 1846; RS CMP/2, 17 December 1846.

51 Appendix I, Finance Committee report to Council, RS CMP/2, 14 January 1847. The committee compared the costs in 1835–40 with those in 1841–46, and because the 1840s costs were lower, it concluded that costs were falling. The volumes in the early 1840s were indeed shorter than their predecessors.


53 Sabine to Rosse, recorded in RS CMP/2, 19 February 1852.

54 *Ibid.* This seems to have been the only time in the nineteenth century when the submission and acceptance rates were analysed. Sabine regarded a 60% acceptance rate as typical.

55 RS CMP/3, 23 February 1860.

56 From the 1850s the Society’s Secretary kept a ‘Register of Papers’ (MS/421) that recorded all papers submitted and their progress (or not) through the process of being read, refereed, and approved for printing.
Finance Committee report to Council, RS CMP/2, 14 January 1847.

Harrison & Sons were appointed on 7 June 1877, RS CMP/4. Scant details of the tender process survive in the minutes of the Library Committee for 1876–77, RS CMB/47/3, supplemented by RS CMP/4, 26 October 1876. See also 30 November 1876. Among the unsuccessful were Taylor & Francis and Eyre & Spottiswoode.

Evans to Kelvin, 23 April 1894, recorded in RS CMP/7, 26 April 1894.

Ibid.

The Basire family are in ODNB. The third James Basire died in May 1869. He had been paid £75 for engraving and lithography on 15 April 1869, RS CMP/3.

RS CMB/47/3, 12 December 1846.

Evans reported, 26 April 1894, RS CMP/7.

Council approved, 6 December 1894, RS CMP/7.

RS CMP/7, 26 April 1894. This was to be done before the paper had been accepted for reading before the Society.

RS CMP/7, 6 December 1894.

RS CMO/4, 19 March 1751/2.

RS DM/1/112.

RS CMO/4 19 March 1751/2.

RS Miscellaneous Manuscripts [hereafter MM] MM/3 f.65, 30 November 1798. Wilkinson wanted the 1791 volume, having been abroad at the time. Council insisted that, even so, he had had plenty of time to claim within the five-year deadline, RS CMO/8, 20 December 1798.

RS CMO/5, 15 July 1767 (375 copies for bookseller, 375 for Society); RS CMO/6, 9 July 1772 (400 copies for Society); RS CMO/7, 11 March 1779 (350 copies for bookseller).

The print run was 750 copies in 1766 (RS DM/1/101, 10 July 1766) and RS DM/1/112, 18 July 1766), 850 copies in 1787 (RS CMO/7, 20 December 1787, p. 289), 1000 copies when Bulmer took over (RS CMO/8, 22 December 1791) and 750 copies in 1808 (RS CMO/8, 11 February 1808).

The print run was 1000 copies when Taylor took over (RS CMO/10, 28 February 1828) and was reduced to 800 in 1898 (RS CMP/7, 20 January 1898).

This arrangement lasted from 1682 to 1687. RS Account Books [hereafter AB] AB/1/1/2 (1682), and T. Birch, *The history of the Royal Society of London for improving of natural knowledge, from its first rise. In which... papers... hitherto not... published, are inserted in their proper order, as a supplement to the Philosophical Transactions by Thomas Birch* (A. Millar, London, 1756–57), vol. 4, pp. 170–171.

RS CMO/4, 4 July 1750 and 18 January 1753.

RS CMO/4, 17 November 1753 and 17 November 1757 (‘into their own hands’).

RS CMO/4, 25 June 1761 (BM, and the universities) and 12 December 1765 (the king). On earlier gifts to the king, see A. Johns, *The nature of the book*, op. cit. (note 6), p. 493.

Undated circulation figures [before 12 February 1846], RS CMB/86/A.

Finance Committee, RS CMB/86/A, ca. 1846.

RS CMB/47/3, 1 June 1875.

From 1897 the list of institutions was printed in the *Year-book of the Royal Society*.

The 1847 financial review set aside £250 a year for library purchases and a further £150 for binding, RS CMB/86/A, 4 January 1847. The annual accounts show that the library expenditure was actually below £300 a year until the end of the century. The Society’s library holdings enabled it to take the lead on the *Catalogue of Scientific Papers*.

RS CMO/8, 15 July 1802.


CMO/7, 11 February 1773; RS CMP/5, 21 March 1878.
Exceptions (from the 1908 *Year-book of the Royal Society*) include Durham, St Andrews, Maynooth and Edinburgh (several copies went to Edinburgh but not to the university).

RS CMO/4, 27 March 1751/2. In 1752, as well as a cut of sales, Davis also received a 20% commission for collating the printed sheets and stitching them into wrappers before delivery to the Society or sale. By 1772, but probably by the late 1760s, this had become part of the printer’s role, see RS CMO/6, 9 July 1772.

RS CMO/4, 11 December 1755, notes the appointment of Davis & Reymers as ‘Printers to this Society’ (even though they seem not to have been doing the printing).


The relevant documents are RS DM/1/101 (10 July 1766), which include an outline proposal from Davis, and RS DM/1/112 (18 July 1766), which is a more detailed proposal. Davis & Reymers proposed to offer the Society either 300 copies at a negotiated price per issue, or at a set price of 4s. 6d. regardless of length. The latter arrangement would have seen the Society paying £67 10s. for its copies; Council minutes in the early 1760s suggest that the Society was usually out of pocket on *Transactions* by at least £120 per volume.

Davis & Reymers account, 24 November 1765, RS DM/1/102.

RS DM/1/112. Davis & Reymers did buy the stock; the payment is recorded in RS AB/1/1/11.

RS CMO/8, 4 February 1802.

Fellows could have them for one-third of the retail price, RS CMO/10, 5 June 1824. There was a further disposal effort (down to 20 copies) in 1828, RS CMO/10, 24 April 1828.

G. Nicol retired in 1825 and died in 1828. His son continued the bookselling business as G. & W. Nicol, but he lost the printing contract in February 1828. Council decided to have no bookseller on 14 May 1829, RS CMO/11. No reason was stated.


RS CMP/8, 11 July 1902.

Undated circulation figures (before 12 February 1846), RS CMB/86/A.

‘Overview of Royal Society income from *Transactions* to 1765’ (covering 1752 to 1765), undated document, RS DM/1/105. The Society received £965 from the eight volumes published in these years. The average retail price was just over 10s., and the bookseller’s commission might have been 15%

The sales income from publications is given in the annual accounts (printed in *Proceedings* each November). Income from *Proceedings* is amalgamated with that for *Transactions*; it includes sales of all volumes during that year (not just the volume published in that year), which makes it non-trivial to divide by the known retail price of that year’s volume. The trade discount at the time is unknown.

Undated circulation figures (before 12 February 1846), RS CMB/86/A. The figures cover the years 1835–44, so they presumably date from 1845 or early 1846.

For instance, the parts of Philosophical Transactions for 1870 cost £3 8s. in total, and in 1871 £3 15s. (from The English Catalogue of Books (ed. S. Low) (Sampson Low, London, 1863–1914), vol. 2, p. 435).

The split was proposed on 18 March 1886, and was finally approved on 2 February 1887, RS CMP/6. The split was followed by a reorganization of the institutional distribution lists; see Report of Library Committee, recorded in RS CMP/6, 21 June 1888. Like individuals, many institutions wanted one series of Transactions but not both, and this may have enabled the print run to be reduced without significantly diminishing the number of beneficiaries; see RS CMP/7, 20 January 1898.


Trübner was allowed a 10% discount, RS CMP/4, 17 June 1875. On Trübner (later part of Kegan Paul), see L. Howsam, Kegan Paul, a Victorian imprint: publishers, books and cultural history (University of Toronto Press, 1999).

The Library Committee had originally proposed making 50 copies available for sale, RS CMP/4, 18 March 1875. English Catalogue of Books (Sampson Low, London, 1893), p. 103. In 1894, the separate copy business was transferred to Dulau; see RS CMP/7, 25 October 1894.

The Camden Society had a similar problem: all seemed well when it had a thousand members and a print run of just over a thousand, but things went much less well when membership fell to just a few hundred. See Johnson, op. cit. (note 13), especially pp. 35–37.

This was still true in the 1970s; see RS AB/2/20/3 Publications Account to 28 February 1977. Record, op. cit. (note 17), p. 197.

The Publication Fund was created in June 1878; see RS CMP/5, 27 June 1878. It does not feature in Record, op. cit. (note 17).

In 1930, just over £1500 was granted to other societies, and £1000 supported the Royal Society’s publications. See the financial statement in Year-book of the Royal Society (1930), p. 185.

The twentieth-century story of the Royal Society’s publishing finances will be the subject of a future paper.

The development of refereeing after 1832 is currently being investigated by both Alex Csiszar and Julie McDougall-Waters. I am grateful to them for letting me read their unpublished research, including A. Csiszar, The rise of the scientific journal in nineteenth-century France and Britain (in preparation). See also M. Baldwin, ‘Credibility, peer review, and Nature, 1945–1990’, Notes Rec. 69, 337–352 (2015) (http://dx.doi.org/10.1098/rsnr.2015.0029).


RS DM/1/105 (n.d.) records total expenditure over this 11-year period as £2209, and payments from booksellers as £965. This may be the document requested by Council in January 1765, CMO/5, 14 February 1765.


Sabine (Treasurer) to Rosse (President), 17 January 1852, recorded in RS CMP/2, 19 February 1852.

Evans (Treasurer) to Kelvin (President), 23 April 1894, recorded in RS CMP/7, 26 April 1894. This figure includes the costs and income of *Proceedings* as well as of *Transactions*; production costs were provided separately, but not income.

Calculated from data supplied by the Royal Society’s publishing division. The page counts are for text, not images; and the definition of an ‘article’ is sometimes inconsistent in the earlier period.