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# Creating the Royal Society's Sylvester Medal GEOFFREY CANTOR\*

Abstract. Following the death of James Joseph Sylvester in 1897, contributions were collected in order to mark his life and work by a suitable memorial. This initiative resulted in the Sylvester Medal, which is awarded triennially by the Royal Society for the encouragement of research into pure mathematics. Ironically the main advocate for initiating this medal was not a fellow mathematician but the chemist and naturalist Raphael Meldola. Religion, not mathematics, provided the link between Meldola and Sylvester; they were among the very few Jewish Fellows of the Royal Society. This paper focuses primarily on the politics of the Anglo-Jewish community and why it, together with a number of scientists and mathematicians, supported Meldola in creating the Sylvester Medal.

At the Anniversary Meeting of the Royal Society held on the afternoon of St Andrew's Day 1901, Henri Poincaré was awarded the Sylvester Medal, for his 'many contributions to mathematical science'. He received the medal cast in bronze, together with a monetary award. Later that day, at the well-attended Anniversary Dinner, the President, Sir William Huggins, reflected on the state of the society, mourned the passing of several Fellows and praised the achievements of Poincaré and the other eminent scientists who had received medals. Poincaré responded with a gracious speech in French in which he dilated on Sylvester's 'poetic spirit' and his 'firm grasp and concise exposition' of mathematical issues. This praise of James Joseph Sylvester, who had died in 1897, elicited an enthusiastic cheer from the assembled Fellows and other dignitaries. 'In Sylvester', Poincaré concluded, 'were combined a great heart and a powerful intellect'.<sup>1</sup>

Although similar scenes have been enacted at every Anniversary Meeting and Dinner, this was the first time that the Sylvester Medal had been awarded. For several of the Fellows present, the presentation to Poincaré marked the culmination of a four-year-long campaign to found this new medal specifically for achievements in mathematics. However, the main mover was not a mathematician, but a professor of chemistry. Raphael Meldola, who taught at Finsbury Technical College, had written primarily on chemistry and natural history and was an avid Darwinian.<sup>2</sup> Why, then, should Meldola

\* School of Philosophy, University of Leeds, Leeds, LS2 9JT, UK.

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1 The Times, 2 December 1901, 13.

2 On Meldola see James Marchant (ed.), *Raphael Meldola*, London, 1916; Hannah Gay, 'No "Heathen's Corner" here: the failed campaign to memorialize Herbert Spencer in Westminster Abbey', *BJHS* (1998), **31**, 41–54.

have been so active in founding a prestigious award in a scientific area in which he possessed little interest and no expertise? To answer this question we must examine the one biographical theme that links Meldola to Sylvester. Both were Jewish. Indeed, with the exception of Ludwig Mond, who was also present at the dinner, they were almost the only two well-known Jewish scientists in late Victorian Britain.<sup>3</sup> Although one can give a few disparate examples of Anglo-Jewish scientists – such as Emanuel Mendes da Costa in the eighteenth century and Sylvester and Meldola in the nineteenth – as a whole the Anglo-Jewish community lacked a viable tradition in science. Not surprisingly, then, historians of the Victorian period have concentrated on the relation between science and Christianity – both Anglican and Dissenting traditions – and have ignored the Jewish community.

To help address this lacuna we will examine the interaction between the scientific and the Jewish communities that resulted in the creation of the Sylvester Medal. In doing so it is important to note that during the closing decades of the nineteenth century the Jewish community was gaining in confidence and becoming more outward-looking. Thus, while Jews had traditionally been associated with commerce and trade, they were now taking greater advantage of the educational and professional opportunities available in the wider society and were slowly moving into the professions. A crucial indicator of this new social formation was the establishment of the Maccabæans.

#### The founding of the Maccabæans

Late in 1891 a number of eminent members of the Anglo-Jewish community formed the Maccabæans, an evocative name conjuring up a proud and successful band of ancient Jewish warriors. One contemporary source described the society's objective as 'bringing together Jews who are interested in literary, scientific, artistic or professional pursuits', while another publication stated that it was an 'Association of Jewish Professional men and others to promote the higher interests of the Jewish race'.<sup>4</sup> While there was some divergence over the society's aims, its founders were clearly concerned about assimilation and they intended the new society to represent, in the words of Israel Zangwill, 'a reaction against the centrifugal tendencies which have made the emancipated Jew anxious to sink his individuality in the high-hatted squadrons of civilisation'.<sup>5</sup> To counteract this tendency the founders sought a focus for professional and cultured Jews – particularly younger men – to enable them to socialize and discuss

3 Despite a fairly orthodox religious background Mond generally adopted an agnostic attitude towards religion and only returned to Judaism late in life. In the intervening period he had little contact with Anglo-Jewry. See J. M. Cohen, *The Life of Ludwig Mond*, London, 1956. Arthur Schuster had converted. Among the less scientifically active Anglo-Jewish Fellows were Sir Moses Montefiore (d. 1885), Benjamin Disraeli (who converted, d. 1881), George Jessel (d. 1883) and Henry de Worms (who dissociated himself from the Jewish community in 1886). The obsessive naturalist Walter Rothschild and the eminent electrical engineer David Salomon were not Fellows.

4 Jewish Chronicle, 27 November 1891, 6. (Hereafter JC.) The Jewish Year Book. An Annual Record of Matters Jewish. 5658 (ed. Joseph Jacobs), London, 1897, 60-1.

5 Quoted in the Maccabæans' current publicity brochure.

matters of mutual concern.<sup>6</sup> The early Maccabæans included literary figures (such as Zangwill), lawyers (including Arthur Cohen QC and Rufus Isaacs), scholars (Lucien Wolf and Joseph Jacobs), artists (Solomon J. Solomon and Frank Emanuel), musicians (Frederic Cowen and Charles Salaman), politicians (Sir Julian Goldsmid MP), rabbis, physicians and scientists. The Society specifically sought to attract professionals, as opposed to those who were 'merely moneyed men' but did not object 'to a man of culture merely because he has money'.<sup>7</sup> Thus the 1893 list of members, which includes more than 160 names, contains no Rothschilds and the Oxford-educated theological writer Claude G. Montefiore is the only representative of that financial dynasty.

Meldola, who was one of the few scientists to attend the inaugural meeting, was from a highly respected family in the Spanish and Portuguese (Sephardi) community which worshipped at the synagogue in Bevis Marks. His grandfather – also Raphael Meldola – had been its *haham* (rabbinic head) and a man of extensive scientific interests, who included the astronomer William Herschel among his friends.<sup>8</sup> The Jewish press frequently noted the younger Meldola's scientific successes as he proceeded through the Royal College of Chemistry, was elected to various learned societies including the Royal Society of London (1886) and gained other marks of distinction. When he was elected to the Council of the Royal Society in November 1896 he received a congratulatory letter from the synagogue elders.<sup>9</sup> By then he had established himself not only as a leading research chemist, working principally on synthetic dyes, but also as a capable naturalist and an enthusiastic supporter of Darwin's theory of evolution.

From the founding of the Maccabæans, Meldola became one of its active members, serving for many years on its organizing committee. He was elected vice-president and later president – from 1911 until his death in 1915. The zenith of his participation in the Maccabæans occurred in 1905 when he presided over a 'science dinner' for almost two hundred guests including eminent non-Jewish scientists and members of the Jewish community, together with a strong contingent from the press, who reported the proceedings. The universities and most of the leading metropolitan scientific societies sent representatives. Sir Archibald Geikie (representing the Royal Society) rubbed shoulders with Sir Henry Roscoe, Sir William Ramsay, the Chief Rabbi, Herbert Samuel (Under-Secretary for the Home Department) and William Macdonald Sinclair, the Archdeacon of London.<sup>10</sup>

Although the Maccabæans saw themselves as serving a small professional and cultured elite within the Jewish community, the society's existence should also be

8 Hebrew Observer (1853), 1, 115.

<sup>6</sup> Olga Somech Phillips, Solomon J. Solomon: A Memoir of Peace and War, London, 1933, 56–75; Margery and Norman Bentwich, Herbert Bentwich: The Pilgrim Father, Jerusalem, 1940, 100.

<sup>7</sup> University of Southampton, Hartley Library, Papers of the Ancient Order of Maccabæans [hereafter SMP], MS 126 AJ17/17, letter from H. J. Cohen to Philip Hartog, 10 November 1891.

<sup>9</sup> Imperial College, London, Meldola Correspondence [hereafter ICMC], MLDA00148, letter from Joseph Sebag Montefiore to Raphael Meldola, 12 November 1896.

<sup>10</sup> SMP, AJ17/1/1 and AJ17/2/1 includes seating plan. Much of Meldola's correspondence relating to the dinner is deposited in ICMC. See also *The Times*, 18 December 1905, 16. A significant proportion of those invited declined to attend, perhaps indicating their disinterest in Meldola's agenda.

understood within broader historical parameters.<sup>11</sup> The Jewish population of Britain – principally England - had grown steadily from about twenty thousand in 1830 to somewhat over fifty thousand in 1880, more than two-thirds of whom lived in London. The bulk of poor Jews, including recent immigrants, lived in the cramped and often insanitary conditions in the City of London and its neighbouring wards to the east. At the other end of the social spectrum were a number of wealthy Jewish families who formed a 'Jewish aristocracy', most of whom pursued careers in finance.<sup>12</sup> With few exceptions members of this elite were neither highly educated nor deeply immersed in secular learning. Especially in the years between the mid-century and the founding of the Maccabæans in 1891 the position of Jews in England changed significantly. The overall wealth of the community increased markedly, with many families moving into the middle classes, so that by the early 1880s more than half of London's Jewish population were classified as either 'middle' or 'upper' class.<sup>13</sup> Moreover, although Jews had previously been admitted to Cambridge, in the mid-1850s non-Anglicans were admitted to Oxford and were also permitted to take degrees at both ancient universities.<sup>14</sup> (Most of the mid-Victorian Jews to enter Oxbridge were children of the 'aristocracy'.) Political emancipation had been achieved in 1858 when Lionel de Rothschild took his seat in the House of Commons. While many of the traditional elite continued to be employed in finance, Jews began to occupy positions in public life and an increasing number entered such professions as law and medicine. On the religious front, the United Synagogue - the institutional locus of most Ashkenazi (German or Polish) Jews - was founded by Act of Parliament in 1870 and tended to model itself on the Anglican Church. Religious practices were also changing, with some traditional prayers and customs being abandoned as incompatible with the sought-after Englishness. In 1890 the United Synagogue adopted the 'Singer's prayerbook', which exemplified the spirit of compromise: the Hebrew text was printed on right-hand pages and an English translation on the facing pages.<sup>15</sup>

In 1891 the Anglo-Jewish community was generally prosperous, contented and well integrated into English society. However, during the previous decade the community

11 For historical accounts of Anglo-Jewry see V. D. Lipman, A History of the Jews in Britain since 1858, Leicester and London, 1990; Geoffrey Alderman, Modern British Jewry, 2nd edn, Oxford, 1992; Todd M. Endelman, Radical Assimilation in English Jewish History, 1656–1945, Bloomington and Indianapolis, 1990; idem, The Jews of Britain 1656–2000, Berkeley and Los Angeles, 2002.

12 See references in previous note but also David Englander, 'Anglicized not Anglican: Jews and Judaism in Victorian Britain', in *Religion in Victorian Britain: Volume 1, Traditions* (ed. Gerald Parsons), Manchester and New York, 1988, 235–73; Todd M. Endelman, 'Communal solidarity among the Jewish elite of Victorian London', *Victorian Studies* (1895), 28, 491–526.

13 Alderman, op. cit. (11), 103. These figures are based on Joseph Jacobs's 1882 analysis later reprinted in his *Jewish Statistics, Social, Vital and Anthropometric*, London, 1891.

14 Prior to the mid-nineteenth century a few Jews entered Cambridge but could not graduate. See Cecil Roth, 'The Jews in the English universities', *Miscellanies of the Jewish Historical Society of England* (1942), 4, 102–14.

15 The Authorised Daily Prayer Book of the United Hebrew Congregations of the British Empire, London, 1890. This was produced by Rabbi Simeon Singer, the father of Charles Singer the historian of medicine. See Geoffrey Cantor, 'Charles Singer and the founding of the British Society for the History of Science', *BJHS* (1997), **30**, 5–23.

had been shaken by events that affected all aspects of Jewish life in England and threatened the status quo. Although the Jewish community had been augmented by new arrivals from Germany and Eastern Europe during the middle decades of the century, after the assassination of Tsar Alexander II large cohorts of Jews fleeing the pogroms in Russia posed refugee problems of a far greater magnitude. Beginning in 1881, ships arriving from Europe were crammed with Jews, some of whom stayed only a short time in Britain before sailing to America. But those who stayed, either intentionally or because they could not afford the onward fare, were not only numerous – amounting to some 150,000 prior to the First World War – but were predominantly poor. These immigrants had fled persecution, and also the grinding economic hardship to which they had been subjected. The search for a better life placed them at the bottom of the English social ladder and many of them found employment in the sweatshops of Leeds, Manchester and the East End of London.<sup>16</sup>

The comfortably established Anglo-Jewish community was aghast. The newcomers were a drain on the community's finances and strained the existing charitable institutions almost to breaking point. Immigrants were also an embarrassment since most of them practised what was seen as an outmoded, 'orthodox' form of religion that English Jews had largely abandoned as inimical to their sense of Englishness. Worse still, these new arrivals – unwashed, poorly dressed, and Yiddish-speaking – threatened to undermine the position that assimilated Jews had fought so hard to attain in English society. For the latter, their preferred self-image of respectable Englishmen and women, who just happened to be Jewish, was thrown into question.

The Jewish press, which consisted principally of the Jewish Chronicle, now joined by the Jewish World (f. 1873), reflected these concerns as letters poured in suggesting how the situation could be alleviated. As David Cesarani has argued, Asher Myers, the editor of the Jewish Chronicle, was ambivalent about the new immigrants, on the one hand fearing that they might spark an anti-Semitic backlash, while on the other recognizing that these were fellow Jews requiring the community's urgent support.<sup>17</sup> Yet, despite this ambivalence, the Jewish Chronicle played a key role in alerting the public to the escalating pogroms in Russia by printing extensive reports – often forming a supplement aptly entitled 'Darkest Russia: a record of persecution' - and urging the assistance and intervention of influential individuals and organizations, including the British government. In addition to the need to accommodate the swelling number of immigrants, the Jewish community faced another threat. Anti-Semitism was gaining ground across Europe, its most prominent manifestation in the mid-1890s being the Dreyfus affair. Given the stream of invective issuing from some sections of the British press, Dreyfus's tribulations were watched closely by English Jews, many of whom were convinced, correctly, as it transpired, that he was the unfortunate victim of an anti-Semitic plot. Members of the Maccabæans 'followed every stage of [his] tragic

<sup>16</sup> Harold Pollins, Economic History of the Jews of England, London, 1982; J. A. Schmiechen, Sweated Industries and Sweated Labour: The London Clothing Trades 1860–1914, Beckenham, 1984.

<sup>17</sup> David Cesarani, The Jewish Chronicle and Anglo-Jewry, 1841-1991, Cambridge, 1994, 67-82.

persecution with poignant sympathy for [him] in [his] martyrdom, and with unswerving faith in [his] innocence, loyalty, and honour'.<sup>18</sup>

In the light of these events the Maccabæans should be viewed not only as offering a locus for professional Jews but also as providing a publicly visible affirmation that Jews were making prominent contributions to many aspects of British life and culture. As Meldola emphasized in his opening speech at the 1905 'science dinner', Jews 'had contributed much to the advancement of philosophy and of science', adding a list of eminent scientists of Jewish background. Jews, he asserted, 'were as capable of appreciating the humanities as their fellows'.<sup>19</sup> These were particularly important messages to disseminate at a time when many Englishmen associated Jews principally with the influx of 'destitute aliens' arriving from the East. The established Jewish community wanted to be perceived as cultured, successful and well integrated. The existence of the Maccabæans confirmed and nurtured this image.

In 1921, six years after Meldola's death, the Maccabæans instituted the Meldola Medal, which is presented annually by the Institute of Chemistry to an innovative young British chemist. But the Meldola Medal was neither the first nor the only medal for scientific research that the Maccabæans have instigated.<sup>20</sup> Nearly a quarter of a century earlier the Maccabæans followed Meldola's lead and played a major role in establishing the Royal Society's Sylvester Medal.

#### Meldola's mission

The mathematician James Joseph Sylvester (1814–97) followed one of the most unusual trajectories of any nineteenth-century English Jew. His education included periods at University College London (from which he was expelled), Liverpool's Royal Institution, St John's College, Cambridge (where he was not able to take a degree on account of his religion) and Trinity College, Dublin (where he gained his BA and MA). In 1838 he was appointed to the chair of natural philosophy at University College London but soon accepted a post at the University of Virginia. Conflict with some violent and ill-disciplined students resulted in his return to England in 1843 and for the next decade – during which he worked as an actuary for the Equity and Law Life Association and trained for the Bar – he lacked an academic position. Subsequently he was appointed to the chair of 1883 he was again in America, this time holding the chair of mathematics at the prestigious, newly founded Johns Hopkins University. To cap his career he was appointed Savilian Professor of Geometry at the University of Oxford in 1883, a position he held for the next eleven years.<sup>21</sup>

18 SMP, AJ17/2/1, letter from the Maccabæans to Alfred Dreyfus, 27 July 1906. Typescript by M. H. Spielmann.

19 The Times, 18 December 1905, 16.

20 Since 1961 the Maccabæan prize and medal has been awarded bi-annually, in conjunction with the Worshipful Society of Apothecaries of London, for an essay on the History of Medicine and Pharmacy.

21 For biographical information see Karen Hunger Parshall, *James Joseph Sylvester: Life and Work in Letters*, Oxford, 1998; *idem*, 'Building an international reputation: The case of J. J. Sylvester (1814–1897)',

During this remarkable career Sylvester was highly innovative; his posthumously published mathematical papers fill four substantial volumes. His mathematical contributions covered many topics, but the bulk of his research was directed to resolving fundamental problems in algebra. Bringing a sense of poetry to this work he sought to comprehend the internal dynamics that constrained equations through the variables they employed. He made impressive innovations concerning the reality of the roots of numerical equations, building on Isaac Newton's rule for determining the number of imaginary roots – a topic on which intervening mathematicians had made little progress. Likewise he wrote innovative memoirs on the roots of quintic equations. These and other contributions earned him not only a fellowship of the Royal Society in 1839, but also its prestigious Royal and Copley medals in 1861 and 1880 respectively, and honorary degrees from several universities.

The death of this famous and highly productive mathematician on 15 March 1897 was widely reported in the press, as was his funeral, held four days later at the cemetery of the West London Synagogue, the principal Reform synagogue in Britain. His funeral was attended by representatives of the mathematical, scientific and Jewish communities. The press also published a number of obituary notices summarizing the main events in his life and praising his brilliance as a mathematician. The Jewish Chronicle carried a generous obituary by Oswald John Simon, an essayist, community worker and one of the founders of the Maccabæans, and also a shorter memorial by the editor.<sup>22</sup> Yet the obituaries were not uniformly complimentary; for example, the Athenaeum referred to his predilection for 'writing Latin epigrams and English verses' and dismissed his book The Laws of Verse (1870) as 'a somewhat whimsical and egotistical volume. ... He was essentially a kind-hearted man, but with a quick temper and a strain of naive vanity.' The Times likewise pointed to defects 'of temper [that] sometimes obscured his real amiability of character, and injured his work as a teacher'.<sup>23</sup> It is clear that while some acquaintances considered Sylvester open and generous, others perceived his character as deeply flawed. It is difficult to determine whether his detractors' dislike of him was accentuated by his religion, but he was clearly a man who both inspired deep friendship and created unforgiving enemies.

Sylvester's death offered Meldola an unrivalled opportunity. As the best-known Victorian Jewish man of science Sylvester had achieved celebrity status in both the Jewish and the scientific communities. Moreover, he was reasonably well known to the wider public. Meldola must soon have realized that some form of commemoration of Sylvester would be attractive to both scientists, especially mathematicians, and Jews. Most importantly, a high-profile memorial would provide a timely link between the Jewish and scientific communities, and demonstrate that Anglicized Jews were prominent bearers of English culture at a time when anti-Semitism was in the ascendant and

American Mathematical Monthly (1997), 104, 210–22; I. M. James, 'James Joseph Sylvester, F. R. S. (1814– 1897)', Notes and Records of the Royal Society of London (1997), 51, 247–61; Lewis S. Feuer, 'America's first Jewish professor: James Joseph Sylvester at the University of Virginia', American Jewish Archives (1984), 36, 152–201.

22 O[swald] J[ohn] S[imon], 'Death of Professor Sylvester', JC, 19 March 1897, 12; editorial on 19.

<sup>23</sup> Athenaeum, 20 March 1897, 382-3; The Times, 16 March 1897, 9 and 20 March 1897, 12.

Jewish immigration was becoming an increasingly prominent political issue. As far as the Jewish community was concerned, the details of Sylvester's mathematical innovations and his somewhat embarrassing forays into poetry could be overlooked, as could his lack of religious orthodoxy; indeed one contemporary claimed that he was not a practising Jew.<sup>24</sup> It was sufficient that he was applauded as a fellow Jew and as a great mathematician. By contrast, Sylvester's mathematical achievements would have been well known to mathematicians and to many other scientists.

Meldola first suggested a memorial to Sylvester at a meeting of the Maccabæans held on 21 March, just two days after the funeral. His proposal was clearly approved by the meeting. As a result, Asher Myers provided further publicity in an editorial in the following Friday's *Jewish Chronicle*, adding, 'It would be most discreditable to the Jews of this country if they allowed to pass by this opportunity of showing their appreciation of the intellectual giant who shed such great lustre upon the [Jewish] community.<sup>25</sup> In the following issue the editor noted that Meldola had gained considerable support among the Fellows of the Royal Society for a commemorative medal, and that he would be tabling a proposal at the next meeting of Council.<sup>26</sup> During the coming months both the Maccabæans and the *Jewish Chronicle*, and to a lesser extent the *Jewish World*, were to play important roles in advancing the project.

On 8 April 1897, at one of the first meetings of the Council of the Royal Society that he attended, Meldola raised the issue of 'a proposed medal in honour of the late Prof. Sylvester'. In advancing that proposal he argued that 'some fitting memorial of his work should be established' and pointed out that although the Royal Society already awarded several medals, none was specifically for mathematical research. He further indicated that a sum of between £800 and £1000 would suffice and suggested that the Royal Society should undertake trusteeship of the fund once established. After some discussion the subject was postponed until the next meeting, possibly indicating that the Council was less than enthusiastic about this proposal from its newest member. In the meantime Meldola approached various people who might be expected to support the scheme, among both the Jewish and the scientific communities. When Council reconvened on 20 May he announced

that an anonymous donor had offered a sum of money to be administered by the Royal Society for the purpose. Whereupon, it was moved by Prof. Meldola, and duly seconded, – 'That the Royal Society accept the offer to found a medal to be associated with the name of the late Prof. Sylvester, and to be awarded triennially for the encouragement of pure mathematical research, irrespective of nationality'.

The 'anonymous donor' who swayed Council was the banker and philanthropist Lord (Nathan Meyer) Rothschild, who had subscribed £100. However, even before Council had time to minute its thanks to the donor, an amendment was tabled by the Secretary, Michael Foster, and by Robert Clifton, the professor of experimental philosophy at

<sup>24</sup> On Sylvester's 'Jewishness' see Feuer, op. cit. (21), 190-4; Davis S. Blondheim, 'James Joseph Sylvester', *Jewish Comment*, 25 May 1906, 36-40; Lucy Cohen, *Arthur Cohen: A Memoir*, London, 1919, 16. 25 JC, 26 March 1897, 19.

<sup>26</sup> JC, 2 April 1897, 21.

Oxford. Like subsequent critics of the proposed medal, they preferred some other form of commemoration. In the ensuing vote this amendment was narrowly defeated and Meldola was instructed to proceed with his proposal to found the Sylvester Medal.<sup>27</sup>

For the next few weeks Meldola was busy raising subscriptions. In a letter published in the *Jewish Chronicle* on 4 June he asserted that 'an honourable duty has been placed' on the Jewish community to contribute to the fund. By reproducing a passage from the obituary notice written by the mathematician Percy MacMahon that had appeared in *Nature*, Meldola portrayed Sylvester both as a mathematical genius and as solely responsible for the renaissance of British mathematics during Queen Victoria's reign. A Jew had brought great credit to England. In order to celebrate and publicize Sylvester's achievements, Meldola therefore invited readers to subscribe to the memorial; subscriptions were to be sent to the *Jewish Chronicle*. Immediately following Meldola's plea a letter from a subscriber was printed offering one guinea.<sup>28</sup>

Although it was agreed that the trusteeship would rest with the Royal Society, the money was initially to be raised by a committee consisting of Rothschild, MacMahon and Meldola, who undertook most of the extensive correspondence (a significant proportion of which has recently been deposited in the archives of Imperial College London). Although Meldola asked some of his correspondents to contribute towards the Sylvester fund, it appears that many of the scientists he initially contacted were only invited to lend their names to an International Committee. The construction of patronage thus took precedence over fund-raising, presumably in the hope that a committee of eminent men would subsequently attract large subscriptions.

Meldola's activities on behalf of the Sylvester fund were, however, interrupted owing to his participation in the annual meeting of the British Association for the Advancement of Science held in Canada in the summer of 1897. Only in December was the 'first circular' printed inviting contributions and containing the names of the International Committee, now eighty strong, and of the seven members of the Executive Committee. Most of those named were eminent scientists and mathematicians, with the Duke of Devonshire heading the list. By signing their names to the appeal they added social recognition and intellectual gravitas. Few Jews were included, the most prominent being Rothschild and the banker, philanthropist and Liberal MP Sir Samuel Montagu. Yet despite obtaining the signatures of many eminent individuals, Meldola was disappointed by the initial response, which raised less than half of the expected £1000.<sup>29</sup> He might have been more successful had he put greater effort into raising money and less into constructing his list of international celebrities, several of whom failed to contribute anything but their names.

Particularly active in helping to obtain contributions from abroad were Cyrus Adler – curator of oriental antiquities at the Smithsonian and a prominent member of the American Jewish community – and George Bruce Halsted, professor of mathematics at

<sup>27</sup> Royal Society Council Minutes, 8 April and 20 May 1897; Royal Society Library, MC.17.19, letter from Raphael Meldola to Secretaries of the Royal Society, 26 March 1897; *JC*, 28 May 1897, 10.

<sup>28</sup> JC, 4 June 1897, 8; Nature (1897), 55, 492-4.

<sup>29</sup> First circular, December 1897: Royal Society Library, Papers relating to the Sylvester Medal Fund, MS 499, item 9: JC, 24 December 1897, 19.

the University of Texas, Austin, who had studied under Sylvester at Johns Hopkins. Adler and Halsted publicized the Sylvester Fund in several American periodicals and undertook responsibility for collecting contributions in the United States, which amounted to \$230. When Adler visited London in 1898, he was one of the guests of honour at an 'American night' held by the Maccabæans.<sup>30</sup>

In the early months of 1898 the fund grew rather slowly, prompting Rothschild and Meldola to issue a further appeal through the pages of the *Jewish Chronicle* on 14 April. Reporting that they were still £200 short of their target of £1000, they appealed to 'the *esprit de corps* of English Jews' and pointed out that the Jewish community would be shamed in the eyes of the Royal Society if less than the promised £1000 were collected.<sup>31</sup> Such blandishments proved insufficient to achieve the desired result and on 4 October the Executive Committee met and closed the fund, which now stood at £880.<sup>32</sup> As this final sum fell short of the original goal, it was clear that Meldola had been somewhat over-optimistic in hoping to raise £1000 – a very substantial sum. A few weeks after the meeting a 'second circular' was published listing the International Committee – that had now grown to eighty-nine – and the 203 subscribers, with the amount subscribed listed against each name. The organizers also thanked the *Eagle* (the magazine of St John's College, Cambridge), the *Jewish Chronicle* and the *Jewish World* for publicizing the appeal to their readers.<sup>33</sup>

Collecting subscriptions was not the organizers' only role. Within a few months of Sylvester's death Meldola's close associates directed their attention to the design and production of the medal. Thus in June 1897 James White, a Christian clergyman and a friend of Sylvester's from his Woolwich days, was delighted at the prospect of seeing his head – 'the most magnificent I have ever seen' – carved in relief.<sup>34</sup> Throughout 1898 the matter was accorded more serious consideration by Meldola, the Cambridge mathematician Andrew Russell Forsyth, the Harvard mathematician James Mills Peirce and especially Sir John Evans, the eminent antiquarian. Evans recommended that the medal be produced by the firm of Pinches and Sons of Oxenden Road, Haymarket. He also estimated that the production of dies would cost about fifty guineas, and with a further £800 invested, the fund would generate about £60 every three years.<sup>35</sup> Problems relating to the inscription were resolved with the aid of Richard Claverhouse Jebb, the Regius Professor of Greek at Cambridge, and the die and medals produced.<sup>36</sup> Finally, despite Lord Rothschild's hope of maintaining a connection with the trust, the Royal Society took over its trusteeship in line with Meldola's original intention.<sup>37</sup>

30 'An American night at the Maccabæans', JC, 27 July 1898, 10–11.

31 JC, 15 April 1898, 8.

32 JC, 14 October 1898, 10.

33 Royal Society Library, Papers relating to the Sylvester Medal Fund, MS 499, item 10, second circular, December 1898.

34 ICMC, MLDA00326, letter from James White to Frederick D. Mocatta, 24 June 1897.

35 ICMC, MLDA00148, letter from John Evans to Raphael Meldola, 13 January 1898.

36 ICMC, MLDA00421, letter from Andrew R. Forsyth to Raphael Meldola, 26 October 1898.

37 ICMC, MLDA00424/426/427, letters from Alfred B. Kempe to Raphael Meldola, 27 January and 4 October 1899, 4 April 1900; Royal Society Council Minutes, 7 December 1899 to 31 May 1900; Royal Society Library, Papers relating to the Sylvester Medal Fund, MS 499.

By early 1901 all preparations were complete and the Royal Society announced that Henri Poincaré, the eminent French mathematician and philosopher, would be the first recipient. The medal presented to Poincaré at the 1901 Anniversary Meeting shows Sylvester's 'most magnificent' head in relief, bordered by text giving his name and dates. Balding, strong-faced and with a bushy beard, Sylvester was portrayed as the somewhat unworldly but profound thinker; indeed, at first glance he could be mistaken for Charles Darwin. The reverse side bears the rather prosaic inscription 'IN DISCIPLINIS MATHEMATICIS OPTIME MERITO REG. SOC. LOND. DECREVIT' – 'The Royal Society of London has awarded [it] to one who most deserves [it] in the field of mathematical learning'. Surrounding the inscription is a laurel crown, the classical symbol for victory; in this case victory over the recondite problems of mathematics (Figure 1).

#### **Respondents and contributors**

Responses to Meldola's letters of solicitation differed widely. Most of his correspondents willingly accepted a place on the International Committee, despite not always being ready to part with their money. A few declined. 'Many thanks – I dont care about it', was the curt response of E. Ray Lankester, the Oxford comparative anatomist. Ludwig Mond, one of the very few Jewish Fellows of the Royal Society, was less than enthusiastic: I 'cannot agree with you, that the addition of my name ... can do any good to the cause you have undertaken, but fear rather the contrary, as I am not connected with mathematics at all'. Subsequently, however, he was persuaded to contribute five guineas.<sup>38</sup>

At the other end of the spectrum a number of mathematicians and scientists, perceiving the importance of Sylvester's contributions to mathematics, warmly supported the project. Thus Forsyth praised Sylvester, 'Alike for his genius, for his achievements, for his inspiring enthusiasm, and for an example of devotion to his subject', while James Glaisher, junior, asserted, 'He *really* was a genius.'<sup>39</sup> In the light of the somewhat equivocal judgements contained in several obituary notices, it is interesting to note that a number of respondents paid him glowing personal tributes. For example, the clergyman White wrote,

It is a great pleasure for me to be connected in any way with one for whom I had such reverence & esteem, & may I add affection, as I had for Professor Sylvester. Our acquaintance [dating from their time together at Woolwich] was of 32 years standing, & at times our intercourse was very close.

Another wrote with sincerity of 'my old and valued friend Prof. Sylvester'.<sup>40</sup>

38 ICMC, MLDA00430, letter from E. Ray Lankester to Raphael Meldola, 13 October 1897; MLDA00335, letter from Ludwig Mond to Raphael Meldola, 3 July 1897.

39 ICMC, MLDA00163, letter from Andrew R. Forsyth to Raphael Meldola, 30 April 1897; MLDA00355, letter from James W. L. Glaisher to Raphael Meldola, 22 August 1897. Original emphasis.

40 ICMC, MLDA00336, letter from James White to Raphael Meldola, 5 July 1897; MLDA00398, letter from Morgan W. Crofton to Raphael Meldola, 8 January 1898.



Figure 1. The Sylvester Medal © The Royal Society.

Several letters confirm the strength of Sylvester's international reputation and his close personal friendships with a number of foreign mathematicians. Ferdinand Lindemann, writing from Munich, asserted that 'Sylvester has always been very kind to me; for he wanted myself to be his successor in Baltimore at Jon's [*sic*] Hopkins University', while the professor of mathematics at Cornell described Sylvester as 'a

name so well known and so highly esteemed in America'.<sup>41</sup> Of the twenty-nine Americans who subscribed most were mathematicians – several with Johns Hopkins connections – but a few were members of the Jewish community. One particularly interesting trans-Atlantic intervention came from James Mills Peirce, who wrote,

My interest in Professor Sylvester's fame is more than an ordinary one. Through the personal intimacy which my father [Benjamin, who was the leading mathematician and astronomer at Harvard] had with him, from a time when they were both young men, I have learned from childhood to have a profound admiration for his genius & a deep regard for his qualities as a man. I have myself too had much experience of his kindly heart, his brilliant social talents, his affinity for all that is intellectual on every side, and his singular, but always delightful, eccentricities.

Although Peirce joined the International Committee and advised on the final production of the medal he does not appear to have contributed to the Sylvester fund, unless he made his donation anonymously.<sup>42</sup>

Late in the day an extraordinary communication arrived from Russia. Writing from Kazan' the mathematician A. V. Vassilief reported having read about the Sylvester memorial in an American journal, adding that the 'physico-math: Society of Kasan, who has received a great simpathy [*sic*] of Prof. Sylvester in the organising of Lobatschewsky Capitol, will be very glad to assist your idea'. Vassilief subsequently offered to act as treasurer for Russia and circulated the appeal to a number of Russian professors, some of whom had been close to Sylvester.<sup>43</sup> The final subscription list contained donations from Vassilief, the Kazan' Physico-Mathematical Society, the 'Russian Mathematicians' and Count Schouvaloff. The list also contains the names of fourteen Continental contributors, mainly eminent mathematicians such as Luigi Cremona, Charles Hermite, Felix Klein, Camille Jordan and Henri Poincaré, who acknowledged Sylvester's international standing. Among the American scientists and mathematicians were Josiah Willard Gibbs, Edward Pickering (Harvard), Robert Woodward (Columbia University) and George Halsted.

While scientists and mathematicians dominated the International Committee, the Jewish community contributed over seventy per cent of the money raised in Britain, including many of the larger subscriptions – thirty-one of the forty-six who donated  $\pounds 5$  and over. As well as Lord Rothschild, several other philanthropists from wealthy banking and mercantile families contributed, including Frederick D. Mocatta, Sir Samuel Montagu, Dennis E. Samuel, Sir Edward Sassoon and Ellis A. Franklin. However, not all affluent Jews subscribed; for example, both Joseph Sebag-Montefiore and Francis Montefiore expressed sympathy with Meldola's aims but pleaded that other financial demands prevented them from contributing.<sup>44</sup> Subscribing Jewish political

41 ICMC, MLDA00340, letter from Ferdinand Lindemann to Raphael Meldola, 12 July 1897; MLDA00381, letter from R. S. Woodward to Raphael Meldola, 18 October 1897.

44 ICMC, MLDA00319, letter from Joseph Sebag-Montefiore to Raphael Meldola, 8 June 1897; MLDA00321, letter from Francis Montefiore to Raphael Meldola, 8 June 1897.

<sup>42</sup> ICMC, MLDA00358/422/423/425, letters from James Mills Peirce to Raphael Meldola, 26 August 1897, 18 and 28 November 1898 and 2 August 1899.

<sup>43</sup> ICMC, MLDA00409/411, letters from A. Vassilief to Raphael Meldola, early 1898 and 28 March 1898, 1 May 1898.

figures were represented by Benjamin Louis Cohen, Herbert Jessel and Samuel Montagu – respectively Conservative, Unionist and Liberal MPs. Particularly well represented among the subscribers were the professions, especially the law, among whom was Arthur Cohen, who, like Sylvester, had attended Cambridge and developed considerable interest in mathematics.<sup>45</sup> Added to the above were a number of communal leaders headed by the Chief Rabbi, Hermann Adler. Among the ninety British Jews who contributed there were also many less elevated and less affluent members of the community.

Contributions from the Maccabæans deserve particular attention. According to his obituary in the *Jewish Chronicle*, Sylvester 'was in full sympathy [with the Maccabæans], and if he had been in health he would have taken some active interest in it. ... He was, of course, an honorary member'.<sup>46</sup> Not only did Meldola first raise the issue of a commemorative medal at a meeting of the Maccabæans, but the society had a particularly strong reason for wanting Sylvester's name and accomplishments widely publicized. Sylvester's death proved providential in furthering the Maccabæans' aim of drawing attention to the achievements of Jews in advancing English culture at a time when anti-Semitism was much in evidence. Sylvester's reputation showed that a Jew could add lustre to the international standing of England. Thus the secretary, Bertram Abrahams, informed Meldola,

The £5 [which he initially proposed] was only intended as a stalking horse to comply with the bye-laws as to the giving of notice with regard to sums of money. I withdrew my resolution at once in favor of another, which was passed unanimously ... granting 10 guineas to the [Sylvester] Trust – which I am sure will be a great success.<sup>47</sup>

Over the ensuing months Meldola reported to the Maccabæans on the progress of the Sylvester Fund, which the society had helped to initiate.<sup>48</sup>

Despite their collective enthusiasm for the project, only about ten per cent of the Maccabæans made personal contributions, although in some other cases the subscription was probably paid in the name of a close family member. This low percentage is probably due to the relatively low income of some of the members and the more pressing demands of the many charities that aided the new immigrants. However, several of the Maccabæans who did contribute were from wealthy elite families, such as Claude G. Montefiore and F. D. Mocatta.

Some non-Jews considered that the Jewish community should have funded the medal. Thus Karl Pearson, after agreeing to join the International Committee but declining to make a contribution, unabashedly stated that the 'Jewish Community ought to subscribe offhand the amount proposed'. Adopting a far less aggressive tone the Manchester mathematician Horace Lamb – who donated two guineas – suggested 'a

45 Cohen, op. cit. (24), 12 and 48-9.

46 S[imon], op. cit. (22).

47 ICMC, MLDA00323, letter from Bertram Abrahams to Raphael Meldola, 9 June 1897; MLDA00322, letter from Asher Myers to Raphael Meldola, 9 June 1897.

48 Royal Society Library, Papers relating to the Sylvester Medal Fund, MS 499/2/7, 'Report on the progress of the Sylvester Memorial' presented to the AGM of the Maccabæans, 27 March 1898.

number of Jewish families here who might be disposed to help from patriotic motives', and he then added the names of four eminent Manchester Jews.<sup>49</sup>

Of the British members of the London Mathematical Society, where subscriptions for the medal had been canvassed at a meeting on 13 January 1898, thirty-one contributed.<sup>50</sup> There was considerable overlap between these members of the LMS and the forty-four British Fellows of the Royal Society whose names appear on the subscription list. The majority of the scientists who contributed were either mathematicians, like Andrew Forsyth, George Darwin and Horace Lamb, or physical scientists with a strong interest in the applications of mathematics, such as Michael Foster, John Lubbock, George Gabriel Stokes, George Johnstone Stoney, Lord Kelvin and Lord Rayleigh – the last two being members of both the London Mathematical Society and the Royal Society. Most of the scientists and mathematicians contributed between £1 and five guineas, the significant exceptions being the military engineer Sir Andrew Noble (£50) and William Esson (£20), who occupied the Savilian Chair of Geometry at Oxford after Sylvester's retirement.

Of approximately 150 British individuals who subscribed, only a handful cannot be classified as either Jewish or members of the scientific community, mathematicians included. Moreover, there was very little overlap between the two groups; only Mond and Meldola, who subscribed in his wife's name. Indeed, it was principally through Meldola that the otherwise separate scientific and Jewish communities interacted. While many of those who subscribed donated five guineas or less, most of the substantial contributions were from the Jewish community. Ironically, the bulk of these subscriptions came from those 'merely moneyed men', from whom the Maccabæans sought to distance themselves. Thus, while the Maccabæans were largely responsible for initiating the project, the Sylvester Medal was funded primarily by the traditional Anglo-Jewish elite.

#### Significance of the medal

Although the anonymous donation of £100 helped persuade the Council of the Royal Society to endorse Meldola's plan, its members were divided and clearly less than enthusiastic. Their lack of zeal had little to do with the subject of mathematics, with Sylvester's idiosyncratic personality, with his being Jewish or even with the prospective involvement of the Jewish community. Rather, the number of such awards was increasing rapidly and many in the Society doubted whether the award of medals was efficacious. Although only four medals had been founded prior to the late 1880s, four further medals were then created in a little over a decade.<sup>51</sup> In response to this proliferation Council decided in 1900 that neither the interests of the Society nor 'the

<sup>49</sup> ICMC, letter from Karl Pearson to Raphael Meldola, 21 July 1897; MLDA00396, letter from Horace Lamb to Percy MacMahon, 19 December 1897.

<sup>50</sup> Norman Biggs, the Librarian of the LMS, has kindly provided me with a copy of that minute.

<sup>51</sup> The other three being the Darwin Medal which was first awarded in 1890, the Buchanan Medal (for service to hygiene science) in 1897 and the Hughes Medal (for discovery in the physical sciences) in 1902.

Advancement of Natural Knowledge' were served by instigating any further 'prizes for past achievements'.<sup>52</sup> Instead of founding medals, the Society welcomed funds that could be put to good use by furthering scientific research.

Not only did two members of Council openly question whether it was appropriate to found the Sylvester Medal, a number of Meldola's correspondents also raised this issue. For example, the Cambridge mathematician and astronomer George Darwin asserted, 'I must say ... that the medal is a very uninteresting form of memorial – in my opinion.' There was no shortage of alternative suggestions. Several mathematicians considered that 'a good edition of his works' would be far more beneficial to the development of mathematics than a medal. Among those who supported this position was the Edinburgh mathematician George Chrystal who also added a diatribe condemning the Royal Society for its pronounced London bias.<sup>53</sup> Forsyth, by contrast, suggested a mathematical studentship: 'I believe that great stimulus is given by such studentships to able young men holding them and excellent scientific work is produced.' Another correspondent asserted, 'don't waste the money on a medal – medals are a nuisance to the owner! A bronze medal & cash for the purchase of books would be much more useful'.<sup>54</sup>

Although the interest generated by the Sylvester Fund was ultimately used to finance a bronze medal and a monetary award every third year, on only one occasion did Meldola express the hope that there would be sufficient funds to generate the monetary prize.<sup>55</sup> Instead, he considered that a medal was the most appropriate form of commemoration and he may initially have intended that the medal would be struck in a precious metal. Indeed, beginning with his very first approach to the Royal Society's Council he had argued for a medal.<sup>56</sup> Throughout his campaign to raise funds he had repeatedly insisted that the aim was to found the Sylvester Medal.<sup>57</sup> This emphasis on a medal is significant since, as Ludmilla Jordanova has argued, medals have traditionally been deployed to celebrate scientific heroes.<sup>58</sup> Medals possess weight, solidity and permanence. As with other awards administered by the Royal Society, the winner of the

52 The Record of the Royal Society of London, 4th edn, London, 1940, 117.

53 ICMC, MLDA00343, letter from George Chrystal to Raphael Meldola, 12 July 1897. See also MLDA00404, letter from William D. Niven to Raphael Meldola, 10 February 1898; MLDA00336, letter from James White to Raphael Meldola, 5 July 1897.

54 ICMC, MLDA00163, letter from Andrew R. Forsyth to Raphael Meldola, 30 April 1897; MLDA00166, letter from K. Fletcher to Raphael Meldola, 7 May 1897. The four-volume *Collected Mathematical Papers of James Joseph Sylvester* (ed. H. F. Baker), was published by Cambridge University Press between 1904 and 1912.

55 JC, 4 June 1897, 8.

56 Royal Society Library, MC.17.19, letter from Raphael Meldola to Secretaries of the Royal Society, 26 March 1897; Royal Society Council Minutes, 20 May 1897.

57 See ICMC, MLDA00427, letter from William D. Niven to Raphael Meldola, 22 October 1897; MLDA00385, letter from Fabian Franklin to Raphael Meldola, 23 October 1897. For recent analyses of scientific commemorations see Pnina G. Abir-Am and Clark A. Elliott (eds.), 'Commemorative practices in science: historical perspectives on the politics of collective memory', *Osiris* (1999), 14.

58 Ludmilla Jordanova, Defining Features. Scientific and Medical Portraits 1660-2000, London, 2000, 116-17.

Sylvester Medal is announced at its Anniversary Meeting and reported in the national press; the award ceremony thus becomes a highly visible public act that confers honour on the recipient and esteem on the awarding institution, and memorializes the 'hero' depicted on the medal. Moreover, as noted above, the design of the Sylvester Medal was thoroughly in keeping with established convention.

It is interesting to note the similarities between Meldola's campaign to initiate the Sylvester Medal and his later attempt to orchestrate support for a plaque in Westminster Abbey to commemorate Herbert Spencer, who died in December 1903. As Hannah Gay has shown, Meldola pursued an extensive correspondence among Spencer's friends and admirers but was thwarted by the Dean of Westminster, who declined this proposal. Gay notes that this campaign was 'rather exclusive ... in that only those with influential positions in scientific, academic and public life were being asked to sign'.<sup>59</sup> Although Meldola welcomed contributions from anyone to the Sylvester Fund, his elaborate construction of the International Committee to legitimize the enterprise likewise indicates his enthusiasm for the patronage of men of influence. Moreover, in both cases Meldola intended to celebrate a recently deceased celebrity not only by gaining public attention but also by doing so in a tried and conventional manner. While some of Spencer's friends considered the proposal for a plaque in Westminster Abbey inappropriate owing to Spencer's proclaimed agnosticism, Meldola appears to have viewed the plaque as an acceptable means of marking the life of an eminent Englishman. The Sylvester Medal was similarly a conventional form of memorial.

At an early stage in his project Meldola also suggested to the Jewish community another conventional form of commemoration. If sufficient money were raised, he proposed that a bust of Sylvester would be commissioned and copies deposited in the Royal Society and the universities of Oxford, Cambridge and Dublin.<sup>60</sup> This suggestion was, however, dropped when it became clear that ample funds were not forthcoming. However, busts placed in the Royal Society and in three of the universities with which Sylvester had been connected would, like the medal, have been aimed at fostering his memory among the educated elite. Interestingly absent from this list is the nondenominational and less socially exclusive University College London where Sylvester had both studied and taught.

I have argued that the creation of the Sylvester Medal served Meldola's principal aim, which was to keep Sylvester's name before the public and thereby demonstrate that Jews were cultured and scientifically productive subjects of Queen Victoria. The award of this medal by the Royal Society ensured that a Jewish scientific hero would be memorialized in an appropriately high-profile and socially acceptable manner. Indeed the adoption of a conventional mode of celebration reflected on the respectability not only of Sylvester but also of the Jewish community. As historians of Anglo-Jewry have stressed, well-established Jewish families sought to portray themselves as ultrarespectable Englishmen and women. While they maintained Jewish practices and

<sup>59</sup> Gay, op. cit. (2), 49.

<sup>60</sup> JC, 4 June 1897, 8.

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religious beliefs they internalized the mores of polite English society.<sup>61</sup> It is therefore hardly surprising that Meldola should have chosen a conventional way of celebrating Sylvester and rejected other, less public and more contentious, forms of commemoration.<sup>62</sup>

61 Especially Englander, op. cit. (12).

62 While Meldola pursued his own agenda, a columnist on the *Jewish World* – a weekly that sold at one penny and was aimed principally at lower-middle and working-class Jews, rather than the elite – offered a very different interpretation of events. He drew attention to the financial contributions received from Vassilief and other Russian mathematicians. Their donation, he claimed,

has more than a momentary significance. It shows how scholarship serves to unite the nations, to make men rise superior to the cries of race that would drown the voice of human brotherhood; it suggests a realisation of the dim future of some of the optimistic ideas to which Zola gives expression in his latest book.

Zola's 'latest book', which had been published a few months earlier, was *J'Accuse1* Here Zola had fiercely argued that Dreyfus was innocent and that the charges against him had been invented by corrupt anti-Semites. See *Jewish World*, 13 May 1898: Royal Society Library, Papers relating to the Sylvester Medal Fund, MS 499. A translation of *J'Accuse1* was published as a supplement to *JC*, 28 January 1898.