

London Mathematical Society Historical Overview

Taken from the Introduction to *The Book of Presidents 1865-1965*

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The London Mathematical Society (LMS) is the primary learned society for mathematics in Britain today. It was founded in 1865 for the promotion and extension of mathematical knowledge, and in the 140 years since its foundation this objective has remained unaltered. However, the ways in which it has been attained, and indeed the Society itself, have changed considerably during this time. In the beginning, there were just nine meetings per year, twenty-seven members and a handful of papers printed in the slim first volume of the Society's *Proceedings*. Today, with a worldwide membership in excess of two thousand, the LMS is responsible for numerous books, journals, monographs, lecture notes, and a whole range of meetings, conferences, lectures and symposia. The Society continues to uphold its original remit, but via an increasing variety of activities, ranging from advising the government on higher education, to providing financial support for a wide variety of mathematically-related pursuits.

At the head of the Society there is, and always has been, a President, who is elected annually and who may serve up to two years consecutively. As befits a prestigious national organization, these Presidents have often been famous mathematicians, well known and respected by the mathematical community of their day; they include Cayley and Sylvester, Kelvin and Rayleigh, Hardy and Littlewood, Atiyah and Zeeman.¹ But among the names on the presidential role of honour are many people who are perhaps not quite so famous today, who don't have theorems named after them, and who are largely forgotten by the majority of modern-day mathematicians. Who were they? What mathematics did they do? And why haven't we heard of them?

This is what this book is about. It has been created to give you an idea of the men and women behind the mathematics and, more specifically, behind the London Mathematical Society. It will tell you when they lived, how they earned their living, what mathematics they did, and will leave you to form your own judgement as to whether they deserve to be remembered or not. But in order to give some sort of context to the biographies that will follow, it seems appropriate to provide an overview of developments concerning the Society itself, to lend some coherence to the volume as a whole. What follows, therefore, is a short history of the LMS from its inception to the present day.

The LMS is one of the oldest and most distinguished mathematical societies in the world.

and means) to warrant the acquisition of a permanent room in Crispin Street, East London, and for the next few decades, the society apparently flourished. From the 1820s, however, it began to experience a rapid drop in numbers, perhaps due to the decline of working class members, until by the 1840s there were fewer than twenty members left.

In June 1845, the remaining members decided on dissolution. But rather than let their valuable library be dispersed, they asked the Royal Astronomical Society to consider incorporating it with its own. Augustus De Morgan (of whom more later), was a fellow of the RAS who served on the committee appointed to inspect the old society. He reported that it had quite changed from its clay and pewter days: “We found an FRS, an F.Ant.S, an F.Linn.S, a barrister, two silk manufacturers, a surgeon, a distiller, &c.”. Moreover, he added, “Their library is a good one.” It was thus decided that: “the books, records, and memorials of the Mathematical Society should be made over to the Astronomical Society [and] that all the members of the former society not already Fellows of this Society should be thereupon elected Fellows without payment of any contribution whatsoever.”

Although the Spitalfields Society was dissolved before the formation of the LMS, the significance of the Spitalfields Society has been acknowledged by several LMS members over the years; indeed, two LMS Presidents, Augustus De Morgan and J.W.S. Cassels, have published accounts of its history. In his *Budget of Paradoxes*, De Morgan gave a charming account of their weekly meetings, noting “that each man had his pipe, his pot, and his problem”. Indeed, he pointed out that the Spitalfields Society’s allowance of smoking and drinking at its meetings was in sharp contrast to the more sober gatherings of its successor. Writing of the LMS in 1866, De Morgan stated that “not a drop of liquor is seen at our meetings, except a decanter of water: all our heavy is a fermentation of symbols; and we do not draw it mild”.⁴

From 1845 until 1865, the main national outlet for the work of British mathematicians was through the Royal Society, but this was not the only option.⁵ Some mathematicians joined the Statistical Society, but its priority was more the *collection* of data than its mathematical analysis. A more satisfying alternative was the Astronomical Society. Founded in 1820, it had become one of Britain’s most important scientific societies, receiving its Royal Charter in 1831, and including among its members such mathematicians as Charles Babbage, John Herschel, Augustus De Morgan, and even foreign scholars of the calibre of Bessel and Gauss. As a result, much of the content of its meetings, and therefore its publications, was mathematical in nature. With its incorporation of the Spitalfields Society in 1845, it became the nearest thing Britain had to a national mathematics society.

Meanwhile at the local level, the Cambridge Philosophical Society continued to publish mathematical papers. But mathematics was far from being its sole concern and, in any case, its membership was open only to graduates of the University of Cambridge.

the country. To pass the Tripos exam with the highest mathematical honours, namely to be classed as a “Wrangler,” opened doors to a career in government, law, the church, or even academia.⁶ Ironically, however, although Cambridge was by far Britain’s biggest producer of mathematics graduates, institutionally it was still very insular, with little regard for mathematics elsewhere and does not seem to have been home to that critical number of mathematicians sufficiently motivated to form such a body.

In contrast, principally because of its size, London had many more practising mathematicians, not just in academia, with many pursuing the subject while earning a living as lawyers, actuaries, civil servants, clergymen and schoolteachers.⁷ Moreover, higher education was rapidly expanding, with the recently-founded University College London leading the way as the prime source of mathematical education in the capital. While the level of its mathematics did not yet rival that taught at Cambridge, under the expert guidance of Augustus De Morgan it soon began to produce graduates of a high mathematical standard. So, while it was by no means inevitable, it is not a complete surprise that when a new society was formed, it came into being in the capital.

What was to become the London Mathematical Society arose from a chance remark in a conversation between two former students of University College London in the summer of 1864. During a discussion of mathematical problems, it occurred to them that “it would be very nice to have a Society to which all discoveries in Mathematics could be brought, and where things could be discussed, like the Astronomical [Society]”. The two young men were Arthur Cowper Ranyard and George Campbell De Morgan,⁸ the son of Augustus De Morgan, their professor at University College. Conscious of the key role the Professor’s reputation could play in attracting members to the Society, it was agreed “that George should ask his father to take the chair at the first meeting”.

The tentative title agreed between the two friends was the “London University Mathematics Society”, but on Professor De Morgan’s advice, that name was changed to the “University College Mathematical Society”. The revised title features on a circular, dated 10 October 1864, and signed by Ranyard and George De Morgan, inviting mathematicians to the first preliminary meeting of the society. The meeting was held on the evening of 7 November, in the botanical theatre of University College. The chief decision that appears to have been taken on this occasion was a final alteration to the name of the Society. Anxious that the Society should not limit itself to University College members alone, those present voted to change the name to its present incarnation: the ~~wh~~ ~~mathematicsl~~ ~~ocieth~~. T

ideally, every branch would be amply supported by the membership, so that the Society would not become dominated by one particular field of study.

Fundamentally, however, the Society's brief was to further the bounds of mathematical knowledge. As De Morgan concluded: "If it should chance that we find a disposition among the members of this Society to leave the beaten track and cut out fresh paths, or mend the old ones, we may make this Society exceedingly useful." One year later, at the Society's first Annual General Meeting, De Morgan was able to report that the papers presented in its first year had, in his opinion, largely adhered to his founding objectives. Perhaps more significantly, he also "called attention to the novelty and importance of many of the papers, and remarked that this was the only society in England where such papers could be received."

At the stage, the Society's rejected name of "University College Mathematical Society" would have been more accurate than its new name since, of the twenty-seven founding members, no fewer than twenty-six were, or had been, associated in some way with University College. Yet, despite this apparent bias, many members had received tuition elsewhere, exactly one-third being Cambridge men, eight of whom were Wranglers.⁹ Even at this formative stage, not every member was based in London. E.J. Routh, a student of De Morgan in the late 1840s, had been Senior Wrangler in 1854, the year in which James Clerk Maxwell came second, and was famous for his impressive record of coaching Cambridge students to success in the mathematical Tripos. Another founding member and former De Morgan student, Robert Clifton, was professor of natural philosophy at Owen's College, Manchester (now Manchester University).

Although we are told that "it was Mr. De Morgan who ... did away with the original restriction of membership to persons associated with University College," it is likely that other members were involved. Chief of these would have been the geometer Thomas Archer Hirst, who, as the Society's first Vice-President, played a major part in enlarging the scope of its operations. Hirst, a mathematics teacher at University College School in 1865, had been one of the first British mathematicians to obtain a Ph.D. (from Marburg in 1852). A rising figure in the British scientific community, he was known and well respected by

As one of the earliest foreign mathematicians to

unconnected with any academic institution and regarding mathematics purely as an interesting diversion from their professional activities. Some, Robert Harley for instance, were clergymen. Others, like Charles Merrifield, were civil servants. More than a few were schoolteachers, such as J. J. Walker and Sophie Bryant. A significant number were lawyers, including three Presidents, Samuel Roberts, Sir James Cockle and Alfre

included the American algebraist and number theorist L. E. Dickson, Hungarian all-rounder Georg Pólya, Dan

It appears that this rigorous refereeing policy was unique to the LMS. Moreover, so effective was its operation that no alterations were considered necessary for some considerable time. By comparison, contemporary procedures at other learned societies appear far more lenient. At the Royal Society, one written report was sometimes considered sufficient, while at the Royal Astronomical Society “it was rarely that a paper was refereed, and a verbal report from a single referee was generally accepted”. In this respect, as with its acceptance of female members, the LMS again set a trend that its older contemporaries would eventually follow.

However, the Society very soon became a victim of its own success. The sharp rise in membership and papers contributed to its meetings led to an increase in the cost of printing and distribution. Consequently, the first volume of the Society’s *Proceedings*, covering the period from January 1865 to November 1866, contained just eleven of the 37 papers presented during that time. The need for financial retrenchment was to be a characteristic feature of the Society’s formative years. It has been observed with good reason that “if ever a major scientific society was run on a shoe-string, this one was.”

In their initial circular of 1864, George De Morgan and Ranyard had assured prospective members that “the annual subscription will not exceed half a guinea.” However, the cost of producing the *Proceedings* quickly resulted in the need to more than double the membership rate from 10 shillings to one guinea in November 1867. But despite the increased revenue that this rise provided, by 1873 the Society was in deficit due to its escalating publication of papers. The Society was thus faced with surviving on an even tin

But it would be far from accurate to say that the Society consisted solely of pure mathematicians. Many of the highest ranking British mathematical physicists of the time were members, including James Clerk Maxwell, Lord Kelvin and Lord Rayleigh. All three contributed papers to meetings during the early years, such as Maxwell's "On the displacement in a case of fluid motion" (1870) and Rayleigh's "Progressive waves" (1877). Other less frequent contributors were E. J. Routh who, in 1874, presented a paper on the "Stability of a dynamical system with two independent motions", and G. H. Darwin, whose paper "On probable error in statistics" (1874) was among the first on that subject to be read before the Society.

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contained the first statement of Ramsey's theorem and, consequently, laid the foundations of Ramsey Theory, while Alan Turing'

That the Society was able to survive for so long on meagre resources was in no small way due to the efficient and economical management of its honorary secretaries. During the Society's first few months there was a rapid turnover in this position, but the situation soon stabilized and for nearly three decades the Society was served by two secretaries of outstanding efficiency:

Profits from its publications began to accrue, enabling the widening of activities and the employment of part-time support staff.

But the financial situation changed out of all recognition with the Hardy bequest in 1963. Hardy, who died in 1947, had long been especially fond of the LMS, and had made provisions for the Society in his will. After his surviving sister died, a substantial legacy of investments, totaling around £50,000, was received by the Society. One of the first uses of this money was the establishment of a scheme to bring the work of mathematicians from overseas to the attention of a British audience. To commemorate Hardy's work, not just in mathematics, but in the internationalisation of the subject, a Hardy Lectureship was set up in 1967 to enable distinguished overseas mathematicians to visit the United Kingdom for an extended period to work and exchange ideas.¹¹

After the Hardy bequest, the Society changed dramatically as its activities diversified and its day-to-day operation became larger and more complex. While its central aim of holding meetings and publishing papers remains unchanged, recent years have seen a huge increase in the diversity of activities in which the Society is involved – from popularisation to public policy. Its meetings are no longer solely in London, with a variety of conferences, symposia and popular lectures being held around the country. As well as its journals, the Society now publishes a range of lecture notes, monographs and student texts. The LMS has active committees on education, computer science and women in mathematics. It also liaises with and provides information to schools and universities, business and industry, as well as the civil service and government departments.

Acknowledgement of the increase in the Society's activities eventually came in 1980, with the appointment of its first full-time employee to administer its affairs. That employee was Susan Oakes, who has worked loyally and assiduously on the Society's behalf for a quarter of a century. Today at its headquarters in De Morgan House, the LMS has a full quota of staff, but Susan is by far the longest serving, rivaling Jenkins and Tucker as someone to whom the Society owes a particularly special debt of gratitude.

The Society that entered the new millennium bears little resemblance to the modest collection of University College alumni who gathered for their first meeting in January 1865. The recent relocation to De Morgan House was fitting, both as a reflection of its status as Britain's national mathematical society and also as a tribute to its first President. But, as this survey attests, to focus only on the "big names" would give a very distorted view of the subject. Not everyone who has been associated with the Society was a great mathematician, and we do well to remember those of lesser fame. For, as the list of Presidents contained in the present volume illustrates, without them, the history of the London Mathematical Society would be far from complete.

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