

# THE LMS COMMITTEE FOR WOMEN AND MATHEMATICS - A HISTORY 1995-2021

CAROLINE SERIES

**ABSTRACT.** We give a brief account of the history and activities of the London Mathematical Society's Women in Mathematics Committee (LMS WiMC) and the British Women in Maths Days (BWM Days) which preceded it.

**Introduction.** What follows is a brief account of the history and activities of the London Mathematical Society's Women in Mathematics Committee (LMS WiMC) and the British Women in Maths Days (BWM Days) which preceded it. The LMS WiMC has been very active and has led the way to what has been a complete change of climate for female mathematicians in the UK. Thus it seemed worthwhile to compile an account of the history before memories fade away.

Similar accounts of trans-European activity for women mathematicians, in particular European Women in Mathematics, and the European Mathematical Society's Women in Maths Committee, can be found in [6], while a history of the more recent international activity around the IMU's Committee for Women in Mathematic appears in [7].

Apart from personal memories and material from Newsletterd of European Women in Mathematics, much of what follows has been extracted from accounts by Cathy Hobbs, Eugenie Hunsicker and Gwyneth Stallard, current and former chairs of the LMS WiMC. I would like to thank them all for their help.

**Prehistory.** In 1986, I took part in a panel discussion organised by the US based Association for Women in Mathematics (AWM) during the International Congress of Mathematicians in Berkeley, 1986. In my report in the AWM Newsletter of that year [1] I wrote: “*This spring I circulated a letter to women members of the London Mathematical Society asking for their ideas on the subject of the panel. I sent out about 70 letters, roughly half to institutional addresses. Of the replies I received, the general impression was of little change, with many problems stemming from the primary school level. Lady Jeffreys, the distinguished applied mathematician and former Mistress of Girton College, Cambridge, who is now 83, writes: “It is 65 years since I began my studies, and it is disappointing that it is still considered rather odd for a woman to be mathematical. Something has to be done in the home (Your mother couldn't do it either, dear) and in the primary school, giving the girls confidence, which the little boys have. At all stages confidence is important.”*

I added: “*One of the changes which I do see over the last eight years is that there are now enough women involved in serious mathematical research that collaboration between women has become not only possible but quite natural, without compromising standards or field of research. I find this very exciting, and consider myself truly fortunate to be part of what is probably the fast generation in history where this has been possible.*

As a result of the panel, European Women in Mathematics (EWM) was set up in 1986 as a sister organisation to the largely US based Association for Women in Mathematics. Some British women took part, and indeed the third meeting of EWM took place in Warwick in 1988, see [6].

**British Women in Maths Days.** Despite this European activity, activities for women mathematicians in the UK did not really take off nationally until a suggestion from Dusa McDuff <sup>1</sup> who wrote about her idea at some length in the 2nd EWM Newsletter, January 1995 [2], on one of her extended visits to the UK. I quote: *“I have been visiting the Newton Institute at Cambridge recently, and the University too, and was saddened to find that the situation for women in mathematics at Cambridge seems little better than when I was a student there in the late sixties. I have also travelled about a little... and it seems that in many places in Britain there are so few women mathematicians that they get very isolated. Even if that doesn't lead to discouragement, it can make it very hard to interact fruitfully with colleagues. (I am very aware of that problem since I suffered from it for many years.)*

*I think that the AWM (Association for Women in Mathematics) has done a great deal to help improve the lot of women mathematicians in the States and so I am proposing that we start a similar kind of organisation in the UK.*

*Things this organisation might do: (i) Organise meetings.... the speakers would be women at a variety of stages ... and we'd try to get as many women to come as possible so that they could meet each other. I have been told that the LMS would almost surely supply some money to support such meetings...provided that the lectures are open to everyone.....*

The idea took root and the first British Women in Maths Day took place in Imperial College, London in September, 1995, see Figure 1. Nearly 50 women attended from all over the British Isles. The main organisers were Ruth Williams (Cambridge) and Lynda White (London). There were short talks followed by a lively discussion about ‘what next’ with numerous suggestions for further activities. It was agreed that a similar meeting should be held the following year [3].

Not only the following year but, in some form or another ever since, BWM days have been an annual event. From early on, the days were supported by the LMS and for a number of years were organised by Helen Robinson (Coventry University). Once the LMS committee was established, it took over the organisation with both financial and administrative support from the LMS, which made an enormous difference to the volunteer organisers. The workshops are mathematical in content and open to all, but all the speakers are female. In 1999, a BWM workshop was held in Edinburgh, and in 2001 for the first time the event was held at the LMS headquarters, De Morgan House, in London.

**The LMS Women in Maths Committee: early days.** Between its foundation in 1865 and 1998, the LMS awarded in total only four prizes to women mathematicians, and only one woman (Mary Cartwright, see below) became its President. Whilst in the early days of the Society this no doubt reflected the make-up of the profession, by 1998 this was certainly not the case. By then, around 38% of graduates and 18% of lecturers were female. However, at the upper end only 2% of professors of mathematics were female. Few women were invited to showcase their work at the prestigious Society meetings (3 speakers out of 21 were female in that year) and there were very few women on the LMS Council.

Concerned at the under-representation of women in the discipline, especially at the highest levels, and also inspired by international comparisons particularly of the kind documented by European Women in Mathematics, the LMS Council discussed what it could do to address the challenges the profession had in recruiting and retaining talented women mathematicians. The upshot was the creation in 1999 of the Women in Mathematics Committee of the Society. Cathy Hobbs (University of the West of England), who was on the LMS Council, chaired the committee from 1999-2001 and the work to develop initiatives continued under the leadership of Helen Robinson and then Alice Rogers (Kings College London). The committee was tasked with undertaking activities with four aims:

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<sup>1</sup>Dusa McDuff FRS was born and educated in the UK and moved to Stony Brook in 1978, but has always maintained her close ties with the UK. In 2007 she moved to Barnard College in New York. In 1994 she became the second female mathematician to be elected to the Royal Society and in 2018 became the second woman to win its Sylvester medal.



FIGURE 1. Dinner at the 1995 workshop at Imperial College.

- Raising the profile of women in mathematics,
- Supporting women in the mathematics profession,
- Improving practice in the mathematics community as regards gender diversity,
- Collecting and disseminating data about women in mathematics.

One of the committee's first actions was to suggest that each year the LMS should have an invited lecture given by a prominent woman mathematician as part of an LMS Society Meeting. The lecture, organised by the committee, is called the Mary Cartwright Lecture after the distinguished mathematician Dame Mary Cartwright (1900-1998), student of G. H Hardy and the first female mathematician to be elected to the Royal Society, as well as the first female President of the LMS. These lectures have been given every year, usually but not always in London, since 2000.

Gwyneth Stallard took over as the committee chair in 2006 and continued with many new initiatives. In terms of removing barriers, an issue for many parents was that the additional costs incurred to cover childcare while on short visits to collaborators or attending a conference were not covered by any existing mechanism. Grant-giving bodies did not recognise these costs as being valid claims alongside travel and subsistence, yet they are very real financial barriers which tend to affect women more than men – an example of indirect discrimination. The LMS WiM Committee decided to take direct action on this by using some of its budget to make small grants of up to £200 to parents who needed money to fund childcare during short visits. Applicants have to make a case for the importance to their career of attending the conference/making the visit and give a breakdown of costs, but they can choose to use the money in the way most effective for their own children, such as the extra cost incurred of taking someone with them to look after the children, or paying for extra childcare at home.

Another barrier to women is that they often find themselves the 'trailing partner' to another academic. Typically their partners are a few years older and higher up the academic ladder, so when the partner is offered a promotion elsewhere the couple make the pragmatic decision to move. This can leave a highly qualified and talented woman moving to a new area with no commensurate job. The WiM Committee bid for funds from the LMS to provide fellowships for those who find themselves

in such a position (female or male). The Grace Chisholm Young Fellowships recognise the holder's academic ability and gives them an official position within the host university, providing a small amount of funding for travel and other expenses and a contribution to the host university. They are named for the mathematician Grace Chisholm Young (1868 – 1944) who looked after the family home and children while her husband, another mathematician, travelled for work and (apparently by mutual agreement) published many of their joint papers in his name alone.

**The LMS Women in Maths Committee: expansion.** Although the WiM Committee was very active right from its beginning in 1999, the work of trying to support women in mathematics was for many years carried out by a relatively small number of people. This changed dramatically following an International Review of Mathematics in the UK in 2010 which included as one of its main findings that “action about gender diversity is not a sufficiently high priority for the UK mathematical sciences research community” and recommended that urgent action was needed. The following year, Research Councils UK began to talk about making research funding conditional on action being taken on equality and diversity. These two events caused a sea change in the mathematical community with Heads of Departments keen to know what they should do.

The WiM Committee developed a ‘Good Practice Scheme’ [4] to support departments and, in 2012, ran the first ever UK wide Benchmarking Survey of practice in mathematical departments. This provided data on the number of women at various career stages and information on practices currently adopted by university departments, with lots of examples of what could be done. The report was launched at the House of Commons – the first ever LMS event to be held there, and the work of the Committee was now mainstream. This was particularly important in view of the national Athena SWAN award scheme, a national initiative to encourage women into science, see <https://www.ecu.ac.uk/equality-charters/athena-swan/>. The award, which has to be applied for by individual university departments, requires the collection of many statistics along with the development of numerous actions and action plans, and was found by many to be extremely burdensome. The Benchmarking Survey provided the kick start that many departments needed and, between 2013 and 2016, the number of mathematics departments with Athena SWAN awards increased from 3 to 39. Good Practice Workshops continue to be run at regular intervals.

The LMS also reviewed its own practices to ensure that work to support women in mathematics is embedded across its work, issuing a Council Statement that has been used as a model by many other similar societies, see <https://www.lms.ac.uk/womeninmaths>. The LMS Programme Committee (now renamed SLAM) which awards grants for conferences has added new questions to its application forms to ensure that conference organisers include a good proportion of female speakers and support those with childcare needs, providing role models and ensuring that women are given opportunities to speak about their work. After an initial year or two when many conferences were refused funding or asked to reapply because of the low numbers of proposed women speakers, the community is now taking this issue seriously.

In 2013, Anne Bennett, a senior and much valued member of staff at the LMS, died very suddenly. She had always had an interest in women in mathematics, and on the recommendation of the WiM committee, the LMS established the Anne Bennett prizes in her memory. Awarded to both junior and senior mathematicians in different years, the prizes recognise both work in and influence on mathematics, and also having acted as an inspiration for women mathematicians. (In 2020, the senior AB prize was awarded to Peter Clarkson who took over as chair of the Good Practice Scheme Steering Group from Cathy Hobbs.) There have also been significant efforts to encourage the nomination of women for all the LMS prizes. Indeed in almost every year since 2000, at least one of the winners of the Whitehead prizes (for mathematicians within 15 years of their PhD) has been a woman, as have a significant number of winners of the more senior prizes.

**The present.** Since 2015 the chair of the WiMC has been Eugenie Hunsicker (Loughborough). The committee now includes representatives from the other mathematical societies in the UK (IMA, EdMS, ORS) and also from EWM. It is working to increase the number of women and girls in mathematical events supported by the Society as well as to attract a broader range institutions and greater geographical diversity within the UK. As well as the Women in Maths days, it is now also possible for schools to bid for LMS funding to help running Girls in Maths Days. The committee is developing online and print resources such as posters for use in schools, showcasing a broad range of individuals in mathematical careers and a broad range of careers that involve mathematics. This project, entitled *Success Stories in Mathematics* was launched in the British Library in 2018 and can be found at <https://www.lms.ac.uk/success-stories>. The benchmarking survey has been recently updated [5]. In 2020, thanks to a generous donation from the Liber Stiftung, in 2020 the committee awarded four special Emmy Noether Fellowships to support career development of mid-career women mathematicians with substantial caring responsibilities. The Foundation was delighted with the use made of its grant and have repeated its donation for 2021.

The committee is also broadening the range of equality and diversity issues it addresses and has very recently changed its name to the LMS Women and Diversity Committee, to recognise that now gender diversity has become more mainstream it is time to focus on wider diversity issues as well. It is looking at ways to collaborate with other STEMM groups nationally and mathematical groups internationally on issues related to ensuring equal access and opportunity regardless of ethnicity, class, religion, LGBT status or disability. In 2020 the Society organised a hugely successful online meeting *Celebrating Black Heroes of Mathematics*, in partnership with the Institute of Mathematics and its Applications, the British Society for the History of Mathematics, and the International Centre of Mathematical Sciences in Edinburgh.

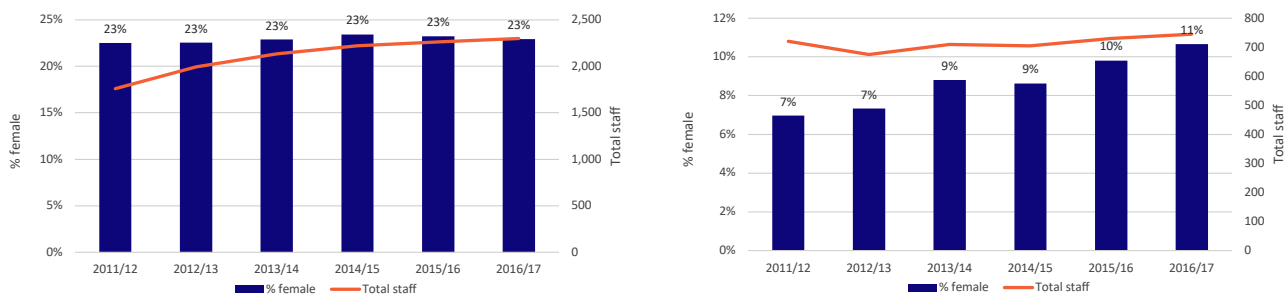


FIGURE 2. Proportion of UK female lecturers (left) and professors (right) in mathematics 2011-2017, from [5].

**Conclusion.** One indication of the dramatic increase in engagement of the community with the work of the WiMC over the last few years is the number of participants at the annual Women in Maths Days which have been expanded to invite applications from several institutions to host such an event each year. This has grown from about 30 participants in the early days to around 100 at triennial two day events introduced in 2010. There were several hundred participants (including undergraduates and school girls for the first time) at a four day event in Oxford in 2015, one of the highlights of the 150th anniversary of the LMS. Overall well over 1000 women have attended a WiM Day. The number of female members of the Society has increased from 12% in 2010 to almost 20% in 2019. Cathy Hobbs is now one of the two LMS Vice-Presidents and both the immediate past and immediate future Presidents are female, while 8 out of 20 Council members have been female for most years since 2013. In recent years the various grant giving committees have always been chaired by men who have been

hugely supportive of initiatives to insist on more female speakers. For example, in 2015, 42 out of 106 speakers at LMS events were women, and the Society’s Lectures and Meetings Committee (SLAM) is for the first time chaired by a woman.

All this work won a remarkable tribute in 2016 when the committee was awarded the Royal Society’s inaugural Athena Prize “in recognition of their work in introducing a broad range of initiatives in the field of mathematics resulted in a change of culture that has happened nationwide, leading the way in increasing the number of women in mathematics.” The prize is awarded biennially or teams working in UK academic and research communities, who have contributed most to the advancement of diversity in science, technology, engineering and mathematics (STEM) within their communities. The recipients of the prize receive a medal and a gift of £5,000. Gwyneth Stallard was also recognised individually by the award of an OBE in 2015 for her work in supporting women in mathematics.

Among the many different models of how best to address the issues faced by female mathematicians, the UK experience shows the great advantages to be gained by working through an established body with a budget and good administrative support and structures. From the start, the committee greatly benefitted from very strong support from senior male mathematicians, which was very important in making progress. These included Sir Martin Taylor (LMS President at the time the committee started), Peter Clarkson mentioned above, Charles Goldie and Malcolm McCallum. It was also crucial that it has always worked alongside Heads of Mathematics Departments (within the UK this is an organised group called HoDoMS, of which both Cathy and Peter have been members). Non-mathematicians working to promote diversity have commented how impressive the achievements have been with a relatively small budget and operation. By 2017, approaching 11% of professors of mathematics in the UK were female – still small, but nearly triple the percent in 1998. This and much further data can be found in the updated Benchmarking Survey [5]. The indirect effects of the work of the committee have made a tremendous difference to mathematical life in the UK.

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