

ANNUAL REPORT 2018-2019



supporting mathematics in education

President's Report

It seems many past Presidents use this opportunity to reflect on their mathematics careers, so I shan't break the tradition.

My primary school mathematics teaching was traditional lots of work on column calculations - and having a good memory I found these as soothing as knitting - ten to the top, one to the bottom, repeat. My earliest recollection of meeting mathematics that was more than arithmetic was in my last year of primary when a student teacher introduced us to curve stitching. Memories of the magic of straight lines creating a curve were in my mind when meeting calculus at university, and again later, when thinking about Jerome Bruner's claim that "any subject can be taught in some intellectually honest form to any child at any stage of development". I still believe that a curriculum framed around mathematical 'big ideas' is more enticing than being introduced to a list of discrete skills.

My secondary years presented a very different mathematical experience, as the school was an early adopter of the School Mathematics Project and I was immersed in set theory and matrices, and loved it. Doing, for A-level, the traditional mathematics, physics and chemistry, my mathematics teacher, Mr. Stansby, must have spotted something in my work when he suggested that I might try also doing further mathematics, in one year, in a class of one - me! His gamble (and mine, in deciding to drop chemistry) paid off, and I went from Newcastle to Sheffield to read mathematics and computing.

Although I enjoyed producing huge stacks of punched cards for the computing part of my degree, my mathematical experiences became, surprisingly, somewhat less enjoyable. I found the lectures not overly engaging and a strong recollection from my second year marks the moment when I began to question my mathematical understandings. Sitting in a tutorial on second-order differential equations I sensed that everyone else seemed to be 'speaking' to some image in their mind, some image which I could not access. Years later I was relieved by some research from Leone Burton in which she had asked mathematicians how they thought about the discipline. Most reported seeing symbols on a mental screen, but a small minority reported that they 'talked mathematics' to themselves - I immediately identified with the latter group. Only recently, psychologist have started to get interested in Aphantasia the inability to voluntarily visualize images in the mind's 'eye'. Folks, who seem to be the majority, who can



visualise seem to find it difficult to imagine not being able to do that, just as I find it difficult to imagine what it must be like to 'see' things in the mind - a reminder that as teachers we must never take it for granted that what comes 'naturally' to us is the case for everyone.

While careers advisors suggested I might think about becoming a mathematics teacher, it didn't appeal immediately after my degree. I ended up working at the Open University for a year, working on the history of graph theory with Robin Wilson. That itself didn't change me greatly but two experiences during that year did. First, moving to Milton Keynes and needing to find a 'gang' I volunteered to work on an after-school project for disaffected 7- to 11-year-olds. Not only did I enjoy the company of the primary teachers running the programme, I was struck by just how keen the children were to learn, given a suitable opportunity, and so I decided to apply to Goldsmiths to become a primary school teacher.

Second, I was offered a week as a tutor on the OU's ground-breaking mathematics foundation course. At the tutor briefing, we were told that a number of the sessions over the week were to be given over to problem solving. 'Fine', said the more experienced tutors, 'where are the

solution sheets?' 'There aren't any', they were told 'you are going to be working alongside the students on the problems.' And so, I first met the instigator of what I thought, in my inexperience, sounded like a great thing to be doing but which filled others with dread - John Mason.

My PGCE at Goldsmiths was at the tail-end of the progressive Plowden-inspired approach to teaching, and although, looking back, there were some poor incarnations of such teaching, the emphasis on not treating pupils as 'empty vessels', on working with what they brought to the classroom, and on problem solving and investigating mathematics has continued to inform my thinking and teaching approaches in all the years that have followed. Coming across the work of Hilary Shuard opened my eyes to the richness of mathematics to which we might introduce primary pupils.

The OU took me on as a part-time tutor, so for several years I was teaching addition to seven-year-olds during the day, and integration to adults in the evening, and although I thoroughly enjoying the breadth of teaching in primary schools, I came to realise that it was with adults and mathematics teaching and learning that I wanted to settle to. Stints at, the then, Polytechnics of Kingston, and Thames, led to my Master's Degree and then working at King's College London, with the wonderful Margaret Brown. After several fantastic years there, I got the opportunity to work in Australia with Alan Bishop, and currently in South Africa with a terrific team of educators.

So, it's been a pleasure to follow in the footsteps of people like Margaret and Hilary, to know that one of my heroes Alfred North Whitehead is a past president, and to have worked with, or share platforms with, other past presidents including Lynne McClure, Rob Eastaway and Paul Andrews. I feel lucky to have come through my education and teaching experiences at a time when there was less pressure on simply preparing learners for exams and I feel privileged to have engaged with such wonderful mathematics educators, all of whom put the emphasis firmly on mathematics, on helping teachers and students see that there is more to our wonderful discipline than long division and simultaneous equations. We need The Mathematical Association to continue to be an independent voice for all that history so that future folk can look back on their mathematical experiences with as much fondness as I do.

Mike Askew (President 2018-2019)

Chair's Report from Council

This is my fourth annual report as Chair of Council and it will be briefer than last year! I wish to start by thanking all those who teach, or have taught, our young people mathematics. At times it is not an easy job, presenting many challenges, but it is varied, interesting and has a massive positive impact on people's lives, though they do not always see it at the time. Thank you for all you do.

It has been a busy year but one which I have enjoyed immensely and I treasure the support of my colleagues,

without whom The Mathematical Association would not flourish.

Council met four times since the last AGM, in June, September, December and March. In between those times Standing Committee met four times to deal with any unexpected business, or items that Council delegated to them.

The MA continues to work with the other classroom facing organisations. At the time of writing this report we do not know what the future holds as far as a single subject association is concerned. Next year we will have a joint conference with NANAMIC in April next year at Wyboston Lakes, Bedfordshire on Exploration and Insights in Mathematical Education.

The various committees are a vital part of the MA. Reports on their activities can be found in later in this Annual Report. At the end of 2018 we introduced monthly direct debits for subscriptions so that members do not have to pay their subscription in one lump in January. This was an initiative that Julia Brown, our Chair of Membership, instigated with our Treasurer's and Council's approval.

Based on suggestions received by members last year we invited Professor Adam Clark McBride to become an Honorary Member. At the March 2016 Council meeting it was agreed that we have a procedure for appointing Honorary Members and so members are annually asked for written proposals that include a case made for their suggestion, to be received by 15th May so that Council can consider and make its decision at the June Council meeting. An 'Honorary Member' is 'any person who has made a distinguished contribution to mathematical education or who have provided outstanding service to the Association'. So, suggestions are welcomed at any time, but are only considered each June.

There were a few changes to Council at the AGM in 2019. Two members stepped down: Jennie Golding as Secretary and Rob Smith as Member without Office. We are most grateful for all they have done: Jennie in particular for all her time on working towards a single subject association and Rob for his help with one day events and all his many contacts with other concerns. Tom Roper took on the role of Secretary now he is no longer the Immediate Past President. Mike Askew takes an active interest in MA affairs and moved from President to Immediate Past President. He is succeeded as President by Ems Lord. We welcomed Hannah Fry as our President Designate, Ray Huntley (who was a Member without Office) as Chair of Publications and Jenny Field, Ed Southall and Owen Toller as Members without Office. Thanks are due to Bill Richardson for being the Acting Chair of Publications during the year.

Finally, I have completed my fourth year as Chair. It is a great privilege and honour to work with all the MA members and mathematics teachers in one way or another. It continues to be time consuming but has been

both enjoyable and, at times, challenging. My sincere thanks to all members of Council as well as members of all the committees and subcommittees who give up a great deal of their own time preparing for, travelling to and attending meetings and generally furthering the aims of the Association. I also thank Marcia Murray and her staff at HQ for all their support and hard work behind the scenes. Our membership owes them a great debt of gratitude. The force (F = MA) is strong in you all.

Peter Ransom (Chair of Council)

Branches Committee

The Branches Committee met twice during the year, once in October 2018 at HQ and also immediately after the MA Council meeting, again at HQ, in March 2019. At the October meeting reports were received from committee officers and appointments were made to officer roles for the year April 2019 to April 2020. Re-appointed were Rob Smith (Vice-Chair), Paul Harris (Secretary), Cindy Hamill (Treasurer), David Myers (Youth Activities Officer) and me as Chair. Discussion then centred on publicity with reference to branches and branch events. The proposal of a branches' committee bursary for the 2019 annual conference was discussed and approved. Branch representatives then gave accounts of their recent events and outlined their upcoming events. The short meeting after MA Council in March consisted of approving the minutes of the October meeting, discussing matters arising and receiving reports from committee officers. A short discussion paper on publicity, written by me as Chair, was circulated and feedback by email was invited. The next Branches Committee meeting (Branches Day) was fixed for Saturday 19 October 2019 at MAHQ.

There continues to be a tremendous amount of work done by the local branch organisers. They do this work on a voluntary basis and devote much of their time to ensuring that events happen and run smoothly. It would be a great shame if their work was not given as much publicity as possible. So we have once again placed great importance on the regular updating of the Branches section of the MA website, Branches section of MA News, email alerts to local members and E-News throughout the year. The MA website now serves as the reference point for details of all branch events. The editions of MA News throughout the year have contained details of many branch events and also more general reports and photographs. Each of the last two editions has contained a full five pages of Branches news. Email alerts have been sent from HQ to MA members about upcoming events in their locality. Imminent branch events are advertised in E-News which is emailed to members at the end of each month. Marcia Murray (Senior Administrator) and her colleagues at HQ, together with David Pountney (MA News Editor), have worked with me and have once again done an excellent job in this regard. Twitter messages about upcoming branch events have also been sent out.

There are currently eleven local branches. The branches are Birmingham, Cambridge, East Midlands, Exeter, Gloucester, Liverpool, London, Meridian (based in Reading), Sheffield, Sussex and Yorkshire. This is a modest increase from ten this time last year. Seven of these eleven branches are joint branches with ATM. The branch locations give a good geographical spread across England. It is a great credit to the local organisers that a total of 26 branch events took place during the year April 2018 to April 2019. Fewer events were organised during the Summer Term 2018 partly due to both organisers and delegates preparing for public examinations. Branch organisers are also preparing their programmes for the following academic year during this period. It is excellent news that there is the prospect of three new branches emerging in Glasgow, Manchester and Surrey. Jim Reid, a teacher in Glasgow, has been in touch with me and Manchester would involve the appears very keen. Greater Manchester ATM Branch converting to a joint branch with the MA. Mick Blaylock and Rosa Archer have been in regular contact regarding Manchester. There was an exploratory event in Guildford, Surrey, in October but this particular development remains ongoing. Douglas Hainline in Surrey keeps in touch.

Branches Committee continues to try and encourage branch members to attend the annual conference at Easter. This year branches were once again invited to nominate members who had never been to an annual conference before to apply for a bursary to cover the cost of one full residential place. It is hoped that this bursary initiative will be repeated again next year.

In summary the main focus this year has been on giving as much support as possible to existing branches. Updating of all matters relating to branches on the MA website etc. was really important in terms of giving as much additional publicity as possible to branches and their events. A number of positive developments have taken place however. The figure of 26 branch events during the year is impressive. It is hoped that new branches will emerge in Glasgow, Manchester and Surrey as detailed in the third paragraph above.

Keith Cadman (Chair of Branches)

Conference 2019

In 2019 the MA Conference formed part of the jointly badged mc² conference at Chesford Grange, Warwick. The conference was jointly badged with ATM and was held from Monday 15th to Thursday 18th April at Chesford Grange, Warwick.

The theme of the conference was Mathematics. Collaboration. Creativity, beginning at 14:00 on Monday and ending at 14:00 on Thursday. Resident delegates had the pleasure of three nights in a pleasant countryside setting, with the added bonus of all the leisure facilities a large hotel can offer, including a health club and spa. All sessions took place within the hotel, so delegates did not need to step outside unless they chose to.

The programme was built around three plenary sessions, including Mike Askew's Presidential Address. The opening plenary was given by Dr Colin Foster, Reader in Mathematics Education in the Mathematics Education Centre at Loughborough University. His talk was called Learning for the Learners. The focus was on trying to see things from a learner's point of view. This included pressing an imaginary pause button within a lesson to give yourself time for a full 'armchair workout,' reflecting on what was going on within a lesson. Mathematical etudes were explored as a way of practicing a particular skill to develop fluency and more, in contrast to an open-ended problem where learners could perpetuate misunderstandings. The plenary matched the conference themes perfectly, focusing on collaboration and on creativity through taking something and improving it.

The Special Event on the first evening led by the Nrich team had us all frantically working to make a marble run in small teams. With the limited equipment provided, several teams produced some amazing marble runs, earning themselves thousands of points and chocolate rewards. This was great fun and a lovely way to bring people together.

The second day saw Mike Askew's Presidential Address, *Reasoning as a mathematical habit of mind.* Mike currently works at the University of the Witwatersrand Marang Centre for Mathematics and Science Education, spending a good proportion of the year in South Africa. This was Mike's swansong as President as his Presidential year finished at the close of the conference. Mike focused on creating a common experience to reflect on and so bring about learning. He reflected on the different types of mathematical reasoning, including deductive, inductive, abductive, analogical and relational reasoning, giving clear examples of each while skilfully engaging us in some mathematics and plenty of discussion.

The third day saw Sue Gifford's closing plenary, *Between the secret garden and the hothouse (not about horticulture).* Sue is Principal Lecturer in mathematics education at the University of Roehampton. Her plenary focused on how young children can reason about mathematics in a very common-sense way and record in their own way. Fun is a core element for many children, and some can even make their own jokes about mathematics. Sue showed us many examples of young children being creatively mathematical when problem solving and particularly in patterning contexts, her current research focus.

During the course of the conference, over 80 separate sessions were on offer, with some double sessions and extras available too. There were also 2 AGMs, an open meeting of Teaching Committee, newcomers' event, tweetup, quiz, musical/open mic event, Ceilidh and disco as well as a bar/lounge with several nooks and crannies to get cosy in. With a wide range of exhibitors on Tuesday and Wednesday, there was plenty to occupy everyone throughout.

The 2020 MA Annual Conference will be jointly badged with NANAMIC and held at Wyboston Lakes Resort, Bedfordshire, 14 - 16 April 2020. We look forward to seeing you there.

Professional Development Committee

During the year 2018-2019 the Professional Development Committee met formally three times, in three different venues. We looked at possibilities for high quality professional development that will complement the free provision by Maths Hubs and the Advanced Mathematics Support Programme (AMSP), which are government funded. There is still a need for more independent training, and offering these on Saturdays, at a competitive price, means teachers do not incur cover costs. Because of the reputation of The Mathematical Association and its charitable status, excellent speakers and workshop leaders are normally prepared to offer their expertise free, allowing us to keep prices low.

Our annual Scottish one-day conference took place on 29th September 2018, at Stirling University, with 75 delegates. The keynote speech was by Maureen McKenna, OBE, Executive Director of Education, Glasgow City Council, with workshops led by Chris Smith, Stuart Welsh, Stuart Winning, Mike Smith and others. Although the numbers were lower than some previous conferences, the quality was high and the event was a success. We are grateful to Bill Richardson who put in many hours planning and coordinating this event.

The Primary Professional Development day took place on 13th October 2018 at Wycombe High School, with 47 delegates. The keynote address was by Mike Askew, who spoke engagingly about "Reasons to love Reasoning". This was followed by workshops on many different primary themes, with delegates choosing three. The evaluations showed the event was really well received. Many thanks to Julia Brown for her expert organisation. This is the last one she will be doing.

Plans are underway for the 2019 conferences. 5th October for Stirling (keynote: Andrew Jeffrey) and 12th October for High Wycombe (keynote: Ems Lord). The Stirling conference as traditionally been a secondary conference, but this year it will be open to primary colleagues too. There have been some potential conflicts of dates with the La Salle events, but we are sticking with our original date and anticipate a good number of delegates. We have also sparked interest in running events similar to High Wycombe in York and in the South West. Keynote speakers have been agreed (Judy Sayers in York and Ruth Merttens in the South West) and dates and venues are being finalised. Phil McBride has offered to coordinate the York event and Ray Huntley has offered to do the South West event. Many thanks to them for this. We are also grateful to Julia for sharing her event plan.

Peter Ransom has made plans for a ratio and proportion day, to be held on 6th July at the MA headquarters. It looks like an interesting day and with low associated costs, should be successful.

We have discussed running a mechanics and statistics day, but at present this is well catered for by other groups. However, schools in the independent sector do not have

Cherrie Moseley (Chair of Conference)

access to the AMSP training. At the moment we don't think there would be sufficient support for such an event.

We continue to hold the NCETM standard with which we were first awarded in February 2010. This accredits our CPD events and allows us to use their logo. It also allows us to advertise events on their website. They conduct an annual interview to quality assure us and then give us advice. This year's interview took place in August and the advice was to use the NCETM website to advertise our events. This now happens and is regularly updated.

This has been an interesting year to start my period chairing the committee. I am grateful to Julia for all her work previously, and for inducting me into the role.

Sue Southward (Chair of Professional Development)

Publications Committee

The year has been one of rebuilding. In March 2018, Mary Ledwick, Michael Fox and Barry Lewis left the Committee. All were very experienced and their departure was a great loss. We thank them for all their work. The continuing members were Paul Harris, Chris Pritchard and Bill Richardson. Fortunately we were able to recruit for new members: Sue Childs; Ray Huntley; Luke Rolls and Ed Southall.

Items which have been added to the catalogue

- 2019 MA Calendar (Mary Ledwick)
- Primary Padlock Challenges (Rachael Horsman)
- Leadership to Count On (revision) (Robin Bevan, Paul Metcalf, Chris Pritchard)
- The Room in the Elephant (Chris Pritchard)
- *Everyone counts (poster based)* (Rose Griffiths, third party)

Other pending items

- Comic Sections (Des MacHale) The original book was published in 1994. Des would like the MA to produce a revised edition with extra materials. Work has been done but some finishing is still needed.
- Rainbow Maths (Jenni Back) After a slight pause, work is now progressing rapidly.
- *Primary Problem Cards* (MAHQ) Whilst a lot has been done more is needed.
- GCSE Revision Cards (second edition) (Mary Ledwick, Ray Huntley) Work is ongoing.
- Challenge Your Pupils 4 (PMC committee) It has been agreed this will go ahead and the initial phase has begun.

New Ideas

• Maths and Sport (Chris Pritchard and Tom Roper)

Conclusion

This report covers my year as Acting Chair. I am delighted to pass it on to Ray Huntley.

Bill Richardson (Acting Chair of Publications Committee)

Editorial Board

This is my second report since taking over at the 2017 AGM. It has been a satisfying year but there will always be challenges. During the year we said farewell to Vince Trakulphadetkrai and welcomed Ray Huntley back to the *Primary Mathematics* team.

The MA produces a range of journals for different audiences and with some variation in frequencies. It is appropriate to give a brief outline of each as follows:

The Mathematical Gazette, three issues of 192 pages, audience senior pupils and above, Editor Gerry Leversha.

Mathematics in School, five issues of 40 or 48 pages, for teachers of pupils aged 11 to 18, Editors John Berry; Chris Pritchard.

Primary Mathematics, three issues of 32 to 48 pages, for teachers of pupils in the primary sector, Editors Cherri Moseley; Ems Lord; Ray Huntley.

Equals Online, three pdf issues of around 24 pages, for teachers working with special needs pupils, Editor Alan Edmiston.

*SYMmetry*Plus, Three issues of 20 pages, for active young at heart mathematicians, Editor Peter Ransom.

Mathematical Pie, three issues of 8 pages, for those interested in mathematical byways, Editors Wil Ransome, Erick Gooding.

MA News, three issues of 12 or 16 pages, for MA members, Editor Dave Pountney.

Each of the Editors is supported by a Production Team and Sub-editors as follows:

Mathematical Gazette: Owen Toller; Nick Lord; Stan Dolan; Tom Roper; Colin Davis; Michael Fox; Adam McBride; Graham Howlett; Bill Richardson.

Mathematics in School: Grant McLeod; Tina Webb; Helen Oldfield.

Primary Mathematics: Tina Webb.

Equals Online: Lucy Cameron; Mark Clark; Peter Jarrett; Mark Pepper; Carol Buxton.

Symmetryplus: Oli Saunders.

It is very pleasing to be able to report that all editions came out on time.

In addition to the work of those already mentioned, Janet Powell continues as the MA Advertising Manager. In the current financial climate, it is proving harder to sell space in journals but Janet manages to produce a steady income. As well as being able to say that, overall, processes were smooth, it is good to report some innovations. As flagged up last year, for *Equals*, we have introduced page-turning software and plan to extend it to *Primary Mathematics* as well. The intention of placing *Mathematics in School* in the Members Area of the MA website has still to be implemented but it is getting closer.

So I wish to close with heartfelt thanks to all the editors and their teams for all the hard work done in the past year (and for all they will do in the months ahead). Should you have any comments or questions about our journals do please e-mail me on editor-in-chief@ma.org.uk or write to me care of MA headquarters.

Bill Richardson (Editor-in-Chief)

Primary Mathematics Challenge

We were disappointed to see a drop in the uptake of the PMC this year. 1573 schools took part. We were pleased with the spread of results for the November paper. 56% scored 11 or over (see below).

Mark	0-5	6-10	11-17	18-25
% of pupils	8	36	46	10

We invited 2375 pupils who had scored 19 or more to take part in the February Bonus Round. From the 2019 Bonus Round OMR sheets which were received in time to be entered into the February results, the distribution is shown here:

Bonus Round Marks

0-5	6-10	11-15	16-20	21-25
0	10	45	40	5

We awarded: 736 bronze, 657 silver and 103 gold awards. The award winners receive lapel badges, which children can wear and display. Teachers tell us that they love them!

The website continues to provide an easy way for schools to order their papers. Earlier difficulties have been resolved and it now works very smoothly, making things easier for schools and for the MA office.

We have a number of staunch members of the PMC team, but continue to welcome new recruits. If any MA members feel they have the necessary skills in writing problems for this age group, please feel free to get in touch and offer your services pmc@m-a.org.uk.

The new look of the paper has been widely welcomed. The additional space makes it easier to present a paper which is attractive and interesting

In 2019 we are celebrating the 20th birthday of PMC. Look out for exciting offers and birthday events to mark the 20 years. In that time we have sold more than 1.46 million papers, given 876 000 certificates and awarded 7875 medals to the best young mathematicians in the country.

Lesley Jones (Chair of PMC Management Team)

Library Committee

Wittgenstein Archive of Francis Skinner:

The complete manuscript of Arthur Gibson's edition of the Archive, together with two reviewers' reports, was delivered electronically to MA HQ in June 2018. The MA's permission for Springer to publish depended on Gibson's correction of a number of errors and the MA's verification of all the corrections. The resubmission was approved in September 2018 and publication agreed by Council. Three signed copies were promised for the MA but the edition has not yet been published by Springer.

Donations and Duplicates:

A large donation of close to 500 books was offered to the MA by Howard Fay in July 2018 and over 200 of these books have been accepted as new titles for the MA library, to be gradually transferred from August 2018. Some of the duplicate books have been accepted for the John Hersee Room and others are being kept for disposal at meetings and conferences. Over half of the books for cataloguing are waiting in a queue for 2019. Nine works of historical interest, including a 1609 Algebra of Clavius, have been donated by Alan Williamson and catalogued as a priority. A major donation of 270 titles from the library of the late Rachel Gibbons has been accepted from her two collections in Hove and London; all the arrangements were very helpfully managed by Mary Clarke. Nearly 40% of these books are new titles for the MA Library and are being catalogued in 2019. Around 120 duplicate titles from these and from earlier donations were taken to the joint ATM/MA Conference and about 80% were adopted in exchange for donations totalling almost £120. An accumulation of around 300 books, which have not been adopted, has been accepted by the charity Loros at its Leicester warehouse. Back numbers of Mathematical Pie from the 1950s onwards have been donated by Donald Keedwell and these have helped to secure a complete run of *Pie* for addition to the MA Library periodicals collection.

Research Links:

The MA jointly with the University of Leicester has become involved with the 'Reading Euclid' project, based at the University of Oxford, and featuring a wide-ranging



network of physical and electronic exhibitions of early editions of Euclid's geometry: 'Seeing Euclid' on the

internet provides an entry point for these exhibitions, including five of the MA's own early *Euclid's* at Leicester. The MA Library also proved to be a key resource for research by Joerg Zender into the international history of 'mathematics trails'.

Advertising the MA Library through Twitter

With assistance from Alice Hall at MA HQ, commemorative tweets for mathematicians and their key publications held in the MA library have been posted: Maria Agnesi (born 1718), Abraham de Moivre (probability treatise 1718), Gaspard Monge (died 1818), August Mobius (died 1868), Robert Simson (died 1768), Georg Cantor (died 1918), Grace Chisholm Young (born 1868), and Jacques Ozanam (died 1718). In March 2019 a special tweet marked the 450th anniversary of Tartaglia's edition of *Euclid* (1569), alongside two of the oldest MA books featuring *Euclid's Geometry* (1533 and 1548); and a link was made to the still live online Euclid exhibition at seeingeuclid.org

Links with the MA Council and Committees

The MA Librarian gave a presentation to the September Council meeting and a tour of the Library was arranged, including exceptional Saturday access to the Special Collection provided by the University Librarian, Simon Dixon. In February, Publications Committee members were given access to the rare books in the John Hersee Room at HQ, and a particular attraction was the 1847 coloured Euclid of Oliver Byrne. Plans are also being made for an exceptional Saturday visit in July by MA Teaching Committee members, again to include the Special Collection. In connection with MMSA developments, representations have been made both by the MA Librarian and the Library Committee concerning the library as a unique MA asset which needs to be protected in its entirety in any future merger negotiations.

Mike Price (Librarian, Chair of Library Committee)

Teaching Committee

Many thanks are due to Mel Muldowney for chairing Teaching Committee (TC) during the year.

The aims of TC can be found on the MA website, but briefly they are to look out for matters concerning the teaching and learning of mathematics, and address them, or escalate them to the MA Council. We aim to be the voice of mathematics teachers in speaking truth to power.

In recent years the reform of the curriculum and the new examinations and tests led to a lot of work responding to public consultations on behalf of our members. We continue to discuss these issues, as well as meeting with other organisations. For example, we had a fruitful discussion sharing ideas with representative of the Advanced Mathematics Support Programme (AMSP). However, the stream of public consultation is now much reduced. Realising that this is an opportunity to be more proactive rather than reactive, Mel led a vibrant discussion at the open meeting at conference in 2019 to start the process of developing an agenda for action. The task for the year ahead is to turn some of these ideas into lines of action. It became clear that one of the topics of great concern is the wellbeing of teachers, and working out what the MA could do in this area will be one focus for the coming year. If you have any ideas on that front, please email me at <u>tc-chair@m-a.org.uk</u>. We have also realised that we need to work on our own processes and our communication mechanisms both within the MA and beyond.

Much of the work of TC is conducted by its three subcommittees – post 16, 11-6 and primary, the last one being jointly run with ATM.

For the primary sub-committee, Alison Borthwick is the chair. Over the year, they had three well-attended meetings, and discussed and had presentations on the following: Teaching mathematics to lower attainers; An exploration of Pattern; The Ofsted Bold Beginnings Report; British Congress of Mathematics Education; Year 4 Multiplication Tables Check; 2018 NC tests for KS1 and KS2; Analysis of Conceptual Pictorial and Abstract pedagogy; Early Learning Goals; NRICH updates. They developed and published an article in both MA and ATM journals on the teaching of times tables, and delivered a workshop at the conference.

The post 16 sub-committee is chaired by Anne Baker. Their focus has been analysing the new AS/A levels. They felt it was imperative to help classroom teachers more, and felt this was best achieved with our blog and with Twitter. Amongst the questions they have addressed are: What are teachers using as a transition package from KS4; How are teachers using the large data set in the classroom; although the new A Level is not a modular exam, are any colleges allowing students to take extra units; how can we help to teach students to solve problems, to think and express sound arguments; what support will AMSP have for Core Maths; why do not as many girls as boys get a 9/A* at GCSE? Is there bias in the questions?

The 11-16 committee is chaired by Oli Thomson. Amongst the topics they have worked on are advice and resources for preparing GCSE classes, and teaching and learning in key stage 3. They are the driving force behind the 60second surveys, though not all of them are necessarily about 11-16 topics. In fact, there is one going live around the time this report is published about the Multiplication Table Check run on behalf of the primary subcommittee. They ran one on KS3 mathematics, and you can read the analysis of the responses at

www.m-a.org.uk/resources/Sixty-Second-Survey-KS3-Mathematics-results.pdf.

We are always on the lookout for new members of TC and its subcommittees. We'd like to have a wide geographical spread across the whole of the UK, as well as people with experience in a wide range of schools and colleges. You might want join in for a variety of reasons: altruistically to help your fellow mathematics teachers to find a voice, or as CPD in its own right, to learn more about the National scene. If you are at all interested in joining us, please email the chair of TC or one of its subcommittees:

Teaching Committee:tc-chair@m-a.org.ukPrimary Subcommittee:tc-121@m-a.org.uk11 – 16 Subcommittee:tc-132@m-a.org.ukPost-16 Subcommittee:tc-129@m-a.org.uk

Jim Simons (Vice Chair of Teaching Committee)

Membership Committee

From November 2018 new and existing MA members had the option of paying their subscription by monthly direct debit. Whilst some existing members switched to paying by monthly direct debit, the majority of direct debits were set up by new members of the association. At the March meeting of Standing Committee we voted to keep membership costs the same for the third year running. This means that for a few pounds a month members continue to receive high quality publications and membership of our organisation; our rate is very competitive and we feel it offers excellent value for money.

We do however have a wide range of membership categories and a small working group has been set up with members of council to revisit our membership structure and examine if this is still the most effective way of providing our membership with the opportunities and magazines most relevant to them. We will be making an initial report to the MA Council at the June meeting.

Julia Brown (Chair of Membership)

Publicity & Media Report

The Mathematical Association continues to thrive on Twitter thanks to the excellent work of David Miles. The Twitter account (@Mathematical_A) recently passed 20,000 followers. It continues to be a key source of information and advice for mathematics teachers on Twitter.

As Chair of the Publicity and Media Committee, my own activities during the year have included:

- Having an article about the Primary Mathematics Challenge published on TeachWire.
- Taking numerous opportunities to promote The Mathematical Association through my own Twitter account and blog.
- Promoting The Mathematical Association (including the PMC and the 2020 conference) on Craig Barton's popular maths podcast.
- Running the MA bookstand at conferences promoting membership and selling publications.
- Overseeing the production of the monthly e-News.
- Taking opportunities to distribute promotional items to spread awareness of The Mathematical Association (for example, having rulers sent out to teachers as part of a ThinkMaths mail out).

I would like to thank Lucy Rycroft-Smith for producing the monthly e-News, and Ed Southall and Tom Bennison for taking over when Lucy stepped down from this role. I would also like to thank Rob Smith and David Faram for their help in running the bookstand at conferences, and the team at Head Office for all they do to support publicity and media.

There will be numerous opportunities in the coming year to publicise the initiatives and activities of The Mathematical Association. The new monthly direct debits for membership needs to be widely publicised – it is hoped that this will attract many new members. The First Mathematics Challenge and the 20th Anniversary of the Primary Mathematics Challenge present significant promotional opportunities, as does the 2020 conference. There is much work to do on the publicity front over the coming year.

Jo Morgan (Chair of Publicity and Media)

United Kingdom Mathematics Trust (UKMT)

The core activities of the UK Mathematics Trust continue to thrive. Overall, entries for the Mathematical Challenges increased. For those who like details, the specific figures were as follows: Senior Challenge 108 100 (from 2290 schools), Intermediate Challenge 270 050 (from 3285 schools) and Junior Challenge 322 080 (from 4152 schools).

For students who perform well in the Challenges, the follow-up competitions provide an extra opportunity to solve mathematical problems from the Junior Kangaroo and the Junior Mathematical Olympiad for Years 7 and 8 (and below) through the three papers that make up the Intermediate Olympiad Group and the Grey and Pink Kangaroos for Year 9, 10 and 11 to the Senior Kangaroo and the ultimate challenge of the British Mathematical Olympiad (BMO) and the opportunity to represent the UK in international mathematical Competitions such as the International Mathematical Olympiad or the European Girls' Mathematical Olympiad.

As well as the individual competitions, the Team Mathematical Challenges have continued to flourish with around 1300 schools taking part in the Senior Team Mathematical Challenge. This culminated in joint winner at the National Final in February for Durham School and Westminster School.

The Team Mathematics Challenge itself has also prospered this year and the final, at which 88 of the top young mathematical teams will battle out for the title, will take place in London on June 17th this year.

The UKMT also produce a set of Primary Team Maths Resources (PTMR) every year, to facilitate secondary schools organising and running their own team events for feeder primaries, and this year's materials are available for downloading from the UKMT website (<u>www.ukmt.org.uk</u>). The MA's Primary Mathematics Challenge is recommended as an additional enrichment event for primary children in UKMT's instructions for the PTMR. On behalf of the MA, the UKMT once again marked the Bonus Round of the MA's Primary Mathematics Challenge (PMC) using our staff and optical mark reader and is happy to continue to do so in the future.

UKMT has also run or plans to run many enrichment events including Maths Circles (2 day enrichment courses for Year 10 pupils – four of which have happened already this year with five more planned for later in the year) and four National Mathematics Summer Schools.

The Mentoring Scheme continues to support young people to develop their problem solving skills.

UKMT would not be successful without the support of its volunteers and helpers and thanks are due to all who help make it as successful as it is.

David Crawford (MA representative)

The British Mathematical Olympiad Committee

In July 2018 the 59th International Mathematical Olympiad was held in Romania. The UK team contained only one contestant who had taken part in the previous IMO, so did well to obtain one Gold (with a perfect score) and four Silver medals, together with an Honourable Mention (for a complete solution to a question by a non-medal-winner). This gave them 12th position out of 107 participating countries. Their achievement was celebrated in September at the Science Museum, where Professor Ursula Martin gave a talk entitled "The Scientific Life of Ada Lovelace".

Earlier, in May 2018, the Balkan Mathematical Olympiad was held in Serbia; the UK team of six secured one Silver and three Bronze medals. More recently, the Romanian Master of Mathematics competition was held in February 2019, resulting in two Bronze medals and four Honourable Mentions for the British team, putting them 16th out of 24. And at the European Girls Mathematical Olympiad in the Ukraine, our four girls won a Gold and three Silver medals, placing them 5th out of 50 participating countries (not all from Europe!).

Training for these events had taken place throughout the year with our own contests: Mathematical Olympiad for Girls in October, British Mathematical Olympiad rounds 1 and 2 in December and January; and camps at Oxford, Cambridge, Tonbridge and in Hungary.

The Summer Schools are now all located near Leeds. The mentoring schemes have been reorganized into nine levels and are aimed at a wider audience.

Finally, we look forward to this year's IMO in July, to be hosted by the UK at Bath. A large number of volunteers is being recruited for the many roles required at this event.

Philip Coggins (MA Representative)

Association Articles and Regulations

These documents can be viewed at:

https://www.m-a.org.uk/articles-and-regulations

The Council from April 2018 to April 2019

<u>Presidents</u> President Immediate Past President President Designate

<u>Officer</u>s Chair of Council Secretary Treasurer

<u>Chairs of Committees</u> Branches Conferences Editor-in-Chief Professional Development Publications (Acting Chair) Membership Teaching Committee Publicity and Media

<u>Members-without-Office</u> Elizabeth Glaister Ray Huntley Gerry Leversha Cordelia Myers

The Company Secretary

Bill Richardson

Mike Askew

Tom Roper

Peter Ransom

Jennie Golding

Keith Cadman

Cherri Moseley

Bill Richardson

Bill Richardson

Mel Muldowney

Chris Pritchard

Dave Pountney (to July)

Julia Brown

Julia Brown

Jo Morgan

Rob Smith

David Miles

Ems Lord

Headquarters

The Headquarters Team during 2018-2019:

Senior Administrator	Marcia Murray
Finance Officer	Linda Medhurst
Membership Officer	Charnjit Seehra
Sales, Marketing, Challenges	Alice Hall
Committees and Conferences	Carol Mackerness

Linda Medhurst completes 25 years of employment with the MA on 23rd May 2019. The occasion is to be marked by a special lunch with presentation of a commemorative crystal vase.

Marcia Murray completes 20 years on 28/06/2019 Charnjit Seehra completes 11 years on 03/10/2019 Alice Hall completes 6 years on 02/09/2019 Carol Mackerness completes 3 years on 11/07/2019

THE MATHEMATICAL ASSOCIATION

BALANCE SHEET FOR THE YEAR TO 31 DECEMBER 2018

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	Note	2018 £	2017 £
Fixed assets		-	
Tangible assets	11	326,376	333,288
		326,376	333,288
Current assets		W	
Stocks		21,757	23,294
Debtors	13	66,071	38,433
Cash at bank and in hand		222,949	186,709
		310,777	248,436
Creditors: amounts falling due within one year	14	(56,524)	(63,598)
Net current assets	1	254,253	184,838
Total assets less current liabilities		580,629	518,126
Charity Funds			
Restricted funds	17	6 500	6 500
Unrestricted funds	17	380 070	376 876
Revoluction recerve	17	194 300	104 000
IN VALUATION LOSELYE	17	104,200	184,800
Total charity funds	17	580,629	518,126

For the year ended 31 December 2018, the charitable company was entitled to audit exemption from an audit under section 477 of the Companies Act 2006.

The Council Members have not required the charitable company to obtain an audit for its accounts for the year in question in accordance with section 476 of the Act.

The Council Members acknowledge their responsibilities for complying with the requirements of the Companies Act 2006 with respect to accounting records and preparation of the accounts.

The financial statements were approved and authorised for issue at the Annual General Meeting and were signed on its behalf on

Signed on behalf of the board of Council Members

PHRamom Mr P H Ransom **Chair of Council**

Date: 1.6 /4/ 2019

Charity Number: 1117838 Company Registration Number: 05729264

and 1 Mr D Miles

Treasurer





CELEBRATE **20 YEARS** OF THE PRIMARY MATHEMATICS CHALLENGE with 20% OFF entry in 2019

www.primarymathschallenge.org.uk The Mathematical Association, 259 London Rd, Leicester, LE2 3BE Tel: 0116 22100 14 Email: pmc@m-a.org.uk Registered Charity No: 1117838 VAT: 199 3211 41 GB



First Mathematics Challenge 2020

The First Mathematics Challenge **(FMC)** has been specifically created to give all pupils in **Years 3 and 4** in England and Wales, **P3 and P4** in Scotland and **Years 4 and 5** in Northern Ireland, the opportunity to take part in a National Challenge.



Download the 2019 paper for FREE

www.primarymathschallenge.org.uk/fmc-downloads

Packs for 2020 entry can be ordered from January onwards

