



# Moving Forward

**The Royal Microscopical Society 1989 - 2014**

John L. Hutchison



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John L. Hutchison

Honorary Fellow and Past President of the Royal Microscopical Society



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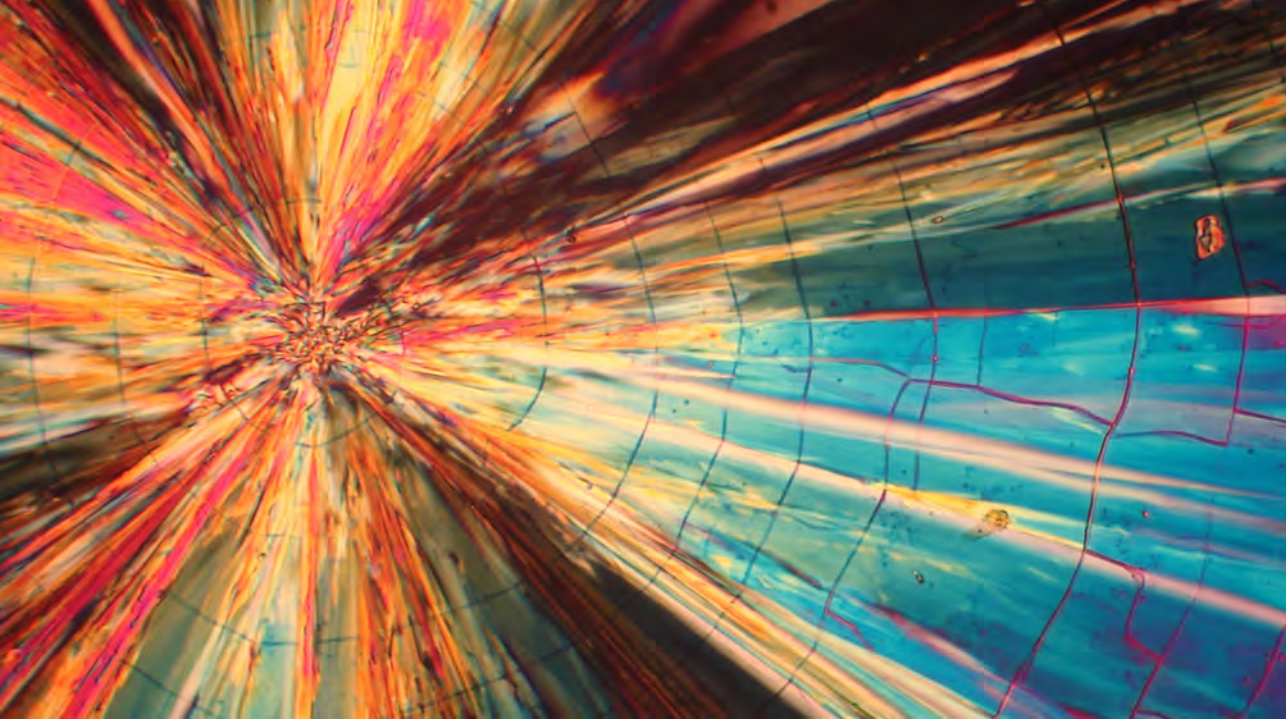
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*Micrograph competition entry – Ascorbic acid*

## Acknowledgements

I am greatly honoured to have been entrusted with the task of updating Gerard Turner's history of the Royal Microscopical Society, as it celebrates its 175<sup>th</sup> Anniversary. I have attempted to cover the RMS's wide range of activities over the past 25 years, from a personal perspective. For this I have had the benefit of serving on many of its Committees, and thus gaining an insight into its very diverse and often complex structure and activities.

The successful operation of the Society is due in no small measure to the efficiency of its permanent staff (Committee members come and go) and it has been my privilege to work with several Administrators: Paul Hirst, Rob Flavin and the current Administrator Karen Collins. Allison Winton, Event Director and Karen manage the office and its staff, and they have

provided innumerable cups of tea, as well as a wealth of information to help me in preparing this book. A special thanks to both.

Several colleagues have kindly provided additional material, and thanks are due to Chris Hammond and Susan Anderson for background information on the AMFES and MAK initiatives, both of which are unique to the RMS.

The editing and final layout of the book were done by Lucy Saxton, and I am grateful for her careful work; thanks, Lucy.

Finally, the snowflake which graces the front cover of this book is the work of Philip King, and I thank him for allowing me to use it in this way.

*John C. Hutchinson*



If you are interested in finding out more about the Royal Microscopical Society, please visit our website **[www.rms.org.uk](http://www.rms.org.uk)** where you will find dates and details of our forthcoming events, updates on the outreach activities, and options available for membership; there are also back copies of the members' magazine **infocus**.

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You can follow us on social media at:

 [RoyalMicroSoc](https://twitter.com/RoyalMicroSoc)

 [RoyalMicroscopicalSociety](https://www.facebook.com/RoyalMicroscopicalSociety)



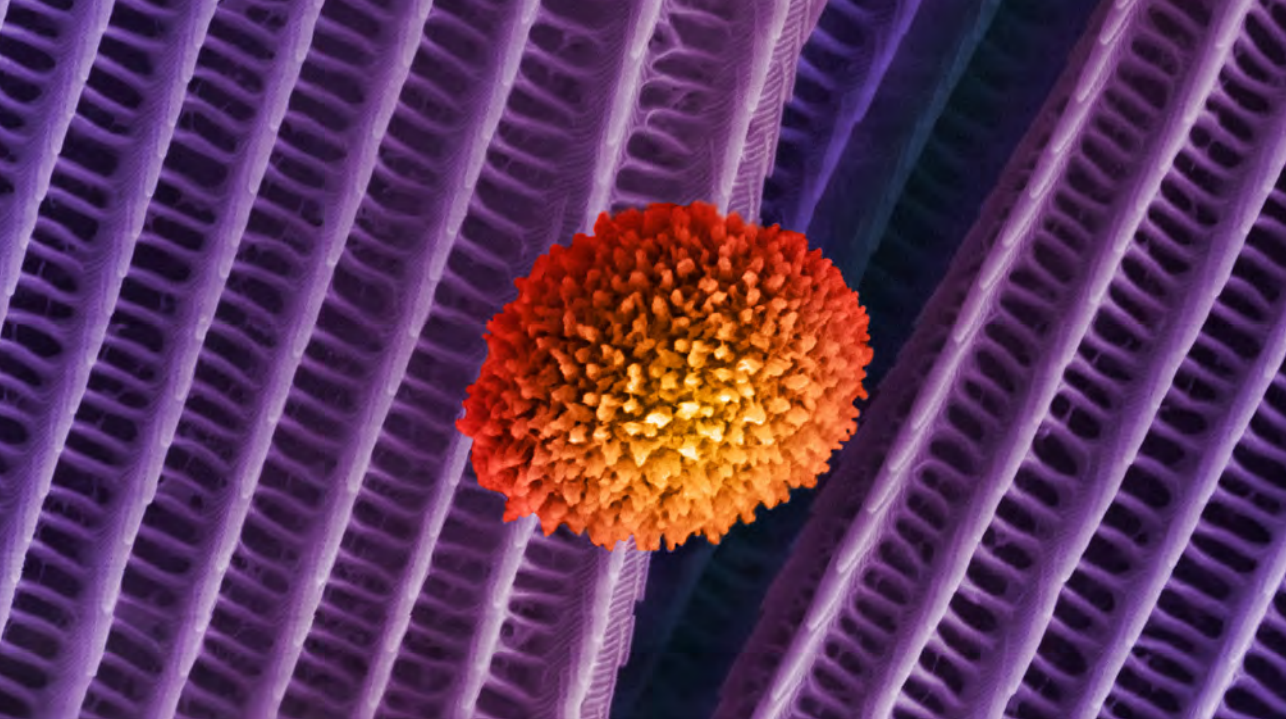
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*Micrograph competition entry – Spore on butterfly wing scales*

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Micrograph competition entry – *E. coli* bacteria

## Introduction

**The Society was founded in 1839 by 17 amateur microscopists, as the Microscopical Society of London, becoming the Royal Microscopical Society (RMS) 17 years later, on being granted its Royal Charter by Her Majesty Queen Victoria.**

To mark its 150<sup>th</sup> anniversary in 1989, the late Gerard L'E Turner, former President of the Society and a leading historian of science and scientific instruments, produced a book "*God Bless the Microscope!*". (The title was based on the exclamation made by James Scott Bowerbank at one of the informal gatherings of these microscopists: "*God bless the microscope – let's have a Society!*"). The book was written from the standpoint of a historian with particular interest in the early development of optical microscopes, and charted the growth of the RMS and many of its early members from its beginnings, up to 1989. Alongside this book Gerard compiled a volume "*The Great Age of the Microscope*" cataloguing the Society's unique collection of microscopes and related equipment. "*The Great Age of the Microscope*" is a beautifully

illustrated work and documents over 450 separate microscopes and accessories, some dating back to the 1730s. Many of these instruments are on display in Oxford University's Museum for the History of Science.

This current account is an attempt to provide a brief outline of the developments in the RMS over the 25 years since 1989, and is written from the standpoint of a practising microscopist (rather than historian) with involvement in the Society during that time. The author has also had the privilege during that period of serving both as Honorary Secretary and President of the Society.

## Membership



*The RMS team at emc2012, the biggest RMS event so far*

## Categories of membership

Over the years there have been several categories of membership, some of which survived for only a relatively short period. Thus there were Associates (very few, between 1840 and 1880); Corresponding Fellows, for six years in the 1870s, and *ex-officio* Fellows, these being Presidents of other societies with some interest in microscopy, both in the UK and overseas, ranging from the London-based Quekett Microscopy Club to the Asiatic Society of Bengal, Calcutta! With a few notable exceptions such as the Quekett Club, the links with many of these groups have withered away over the years and the majority of the members now join the Society either as students, i.e. in full-time higher education, or as Ordinary

Members. Fellowship of the RMS then follows after three years' membership once certain criteria are fulfilled, and a Fellow is then entitled to use the post-nominal "FRMS". Two other categories are currently recognised: Corporate Membership, whereby a company involved in microscopy is linked with the RMS, and whose representatives enjoy the benefits of membership and often work on various committees; and Honorary Fellowship, an honour bestowed on individuals who have made "distinguished contributions to microscopy". This award was established in 1840, very soon after the Society was founded, and has continued uninterrupted to the present time. It is encouraging to note that this list includes many of the true pioneers of microscopy in all its forms, including Ernst Abbé (theory of

optical imaging, 1878), Fritz Zernike (Phase contrast, 1950) Ernst Ruska (co-inventor of the electron microscope, 1963), Gerd Binnig & Heinrich Rohrer (inventors of the Scanning Tunnelling Microscope, 1988), Osamu Shimomura & Roger Tsien (Fluorescence technology and fluorescent proteins, 1999 & 2000) and Tony Wilson (development of confocal microscopy, and former President of the RMS, 1998). At least seven of the Honorary Fellows are also Nobel Laureates – indicating the RMS's emergence from its “Brass & Glass” image (a legacy of which it can be justifiably proud) to its involvement in some of the key contributions of microscopy in modern science. A total of 25 new Honorary Fellows have been elected since 1989.



*The author with the Register of Honorary Fellows*

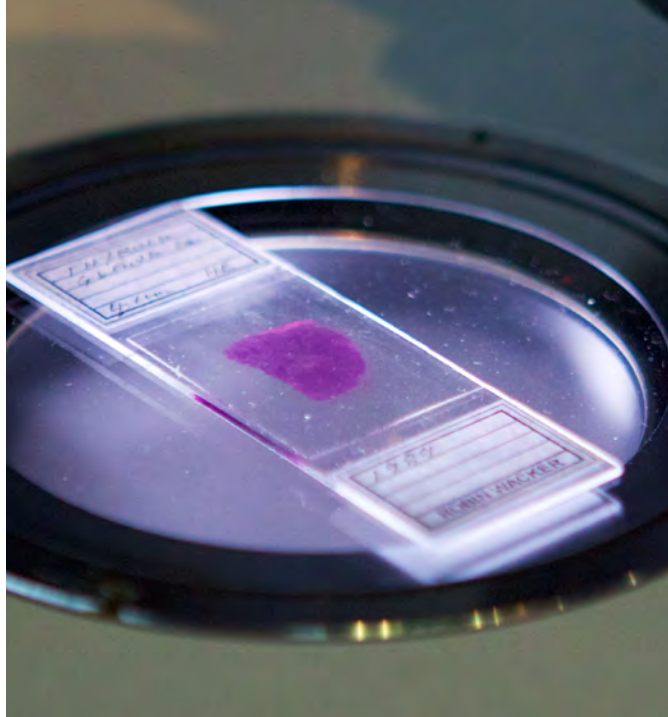
## Ups and downs

By the 150<sup>th</sup> Anniversary in 1989 the number of members, including Student and Corporate Members had risen to over 2300. This reflected a remarkably steady growth over the previous 50 years. Membership peaked shortly after, reaching 2408 in 1990. Since then there has been a steady decrease in membership, now appearing to have stabilised at just over 1300 in 2013 (including more than 300 members from overseas). This trend is shared with most other microscopy societies, some of which started out as electron microscopy societies to cater for the needs and interests of a rapidly growing community coping with, and exploring the capabilities of, increasingly complex instruments and imaging theories. In an attempt to reverse the trend in shrinking membership, many electron microscopy societies (but not all) have dropped the exclusive “electron” from their names in a bid to attract other microscopists to join, with mixed success. In this respect the RMS was ahead of the field, building as it did on a solid base of “brass & glass” microscopists and welcoming with open arms electron microscopists in both life and physical sciences. The RMS enjoys a very close working relationship with the Institute of Physics’ Electron Microscopy & Analysis Group (EMAG) community. They support each other’s activities, sponsoring sessions at conferences and running joint meetings.





*RMS publicity material*



*Glass microscope slide, standardised by the RMS*

As pressures on today's scientific community steadily increase, and financial support for research diminishes, many scientists who use microscopy in their professional lives see the need to join a Learned Society in order to progress their careers. Furthermore, microscopy is now regarded in many circles as one of a whole armoury of analytical tools, rather than a discipline in its own right. For today's microscopist, facing shrinking budgets and spiralling costs, membership of another society, albeit one of cross-disciplinary enthusiasts, becomes an optional extra, and that member either lapses – or doesn't join in the first place. (It is interesting to note here that very similar problems were faced over 100 years ago, with members falling behind in payment of subscriptions and being “named and shamed” before eventually being removed

from the register). Also, in 1918, it was decided to remove all “enemy aliens” from the roll, thereby losing a significant number of Ordinary Members and Honorary Fellows! Thankfully this policy is long abandoned and now the RMS can truly claim to be international with Fellows from all corners of the globe.

## Getting the message out

The RMS has over the past 20 years or so been increasingly pro-active in seeking to grow its membership. Numerous initiatives and working groups have been set up to address the problem of declining numbers. Promotion and publicity are assuming ever greater importance if the microscopy community is to discover the benefits of joining the RMS and in this regard attractive brochures and other

publicity materials are regularly produced, in up-to-date format, and distributed widely. The “snowflake” emblem, which has been in constant use in one form or another for over 100 years, was originally based on a drawing of a snowflake crystal by the RMS’s first President, James Glaisher. Over the years it has undergone several changes in style, whilst retaining the special 6-fold symmetrical appearance. Its latest version combines a stylised snowflake motif with the letters “RMS” in a 3 X 1 format, identical to that of the 3 X 1 inch glass microscope slide designed and standardised by the RMS, and now in use in laboratories throughout the world.

Recognising the growing importance of the internet, the Society set up its own website in 1997 as a public shop window for all its activities. Our first efforts were produced in-house by Paul Mummery and his wife, and then further developed by George Bou-Gharios and Karen Collins, but the growing challenge of setting-up and maintaining an up-to-date website meant that this was eventually outsourced to a professional company, in addition to having a member of the office staff responsible for its content. A strong and lively presence on Facebook and Twitter also provide up-to-date information and news. During 2013 the website received just under 60,000 visitors and pages were viewed over 200,000 times, with visitors from as far afield as USA, Canada and India. Latest figures of over 1000 Facebook “likes” and 700 Twitter followers confirm



*RMS has a strong web presence*



*The RMS at the Institute of Biomedical Science Congress 2011 in Birmingham*



*Allison Winton representing the RMS at M&M 2010 in Portland, Oregon*

that the RMS is using these tools effectively in communicating with our membership and also with the wider world.

It is also seen as extremely important for the RMS to be highly visible at other societies' events, including national, European and International conferences, where senior staff from the office often attend and manage a stand, being supported by RMS members who are themselves there as delegates. Regular news features in laboratory- and microscopy-related magazines, which are sent to huge mailing-lists, are also used to increase awareness of the RMS and its activities.

## Who does what?

In a Society of over 1200 members from at least 50 countries, ranging from tiny Andorra to Zambia, it is useful here to summarise its organisational structure, which has evolved over 175 years. The Trustees of the Society - a registered Charity - with ultimate responsibility for its affairs and effective operation, are all members of its Council, which comprises the President, Honorary Treasurer, Executive Honorary Secretary, Vice-Presidents, Honorary Secretaries (Science and Education), together with chairs of the various Science Sections (see below), Editors of the Journal & **infocus**, and the chair of the Corporate Advisory Board. A number of Ordinary Members are also elected for fixed terms. Linking the membership with Council are the Science





Some of the RMS's wide range of Handbooks



The RMS occupies this building in Oxford, which it purchased in December 1974

Sections: these groups cater for the needs and interests of more specialised areas, and were first established in the early 20<sup>th</sup> century, with *Brass & Glass*, *Bacteriology & Protozoology*, and *Pond-life* Sections. Some Sections had a brief existence and eventually faded away, such as the *Leather Industries* and *Industrial Applications*, while others were set up in response to new developments. The current Sections are: *Light Microscopy*, *Electron Microscopy*, *Life Sciences*, *Materials Sciences*, *Flow Cytometry\**, *Scanning Probe Microscopy* and the *Outreach & Education Committee* – reflecting the breadth of the RMS's interests. The Science Sections and Committees meet regularly, and generate fresh ideas for meetings, courses and input for the Society's various

publications. A number of Special Interest Groups were also set up in the mid 1990s: *Image Processing & Analysis*, *3D Imaging* and *Scanning Probe Microscopy*, largely reflecting the enthusiasm of individual members at that time. Of these, the SPM Group has now grown into a Section, with full representation on Council.

The day-to-day responsibility for the RMS's full-time staff, finances and property is the responsibility of the Executive Committee, its authority being in turn delegated by Council. The office, which is currently housed in freehold premises located in a pleasant Edwardian building in Oxford, is a hub of activity with some twelve staff supporting the wide range of activities,

*\*It is good to record that the Flow Cytometry Section celebrated its 25th birthday in 2013. More information on the celebration can be found in the March 2014 issue of infocus magazine.*



*Lt. Col. Peter Fleming, with  
Bumble*



*Allison Winton and Karen Collins*

under the joint management of the Administrator, Karen Collins and Events Director, Allison Winton. The Society's first Administrator was the late Lt. Col. Peter Fleming, brought in in 1971 a few years after the RMS moved out of London to Oxford, replacing the then full-time Executive Secretary who had been dismissed for "neglect of duties". Peter ran the office and its affairs with considerable aplomb, and was invariably accompanied wherever he went by an enormous sheepdog (think of D\*\*\*x paint...!) and then latterly by an elderly bulldog (Bumble). Peter retired rather abruptly in the summer of 1988, and was replaced a few months later by Paul Hirst, whose quiet style was in marked contrast to that of his predecessors. Paul looked after the Society for 17 years until his retirement in 2005, when the Council

took the unusual step of awarding him an Honorary Fellowship in recognition of his outstanding service to microscopy through his careful and prudent management of the RMS, steering it safely through some financially difficult times. Peter and Paul were in turn supported very ably by the Assistant Administrator, Judith (Judy) Lewis, who worked for the Society for over 30 years before retiring in 2004. Sadly, Judy's retirement was cut short when she passed away in 2008.

Paul Hirst's replacement, Rob Flavin worked effectively to bring the RMS into the new age of the internet and social media, putting its first proper website on a firm footing and upgrading the IT facilities of the office. In 2009 Rob moved on to set up his own events promotion company and





*Paul Hirst was given an antique glass bowl on his retirement (top), Judy Lewis celebrating a major birthday (bottom)*



*RMS President Mark Rainforth receives the new Charter in 2009*



*Some of the RMS officers: Rob Flavin, Allison Winton, Clare Oxenbury-Palmer*

still provides valuable support with IT and the promotional side of meetings. During Rob's time with the Society, the Executive Committee and Council undertook the major challenge of updating the Royal Charter, first awarded in 1866, to establish a set of "rules" which simplified the day-to-day running of the RMS without recourse to the Privy Council, and to bring it into line with current Charity Commission requirements. For this task we had the invaluable guidance and input of Keith Lawry QC, the Learned Societies' Liaison Officer for the Foundation for Science and Technology, to which the RMS is affiliated. On a very hot 1<sup>st</sup> July 2009 members of Executive plus Allison Winton and Karen Collins travelled to the House of Lords to collect the new Charter. One result of this reappraisal of the functioning of the RMS

was the establishment of a rolling 5 year plan; the targets set for the first of these plans were achieved in just three years!

Alongside Karen and Allison, some ten full-time staff are now employed to provide the necessary support to arrange up to 15 or more events in a typical year, some with associated exhibitions, and many running over several days; our website must be kept accurate and up-to-date, as well as any output in social media. The Journal and **infocus** magazine are also handled in-house, providing essential backup for the Editors; our membership list is constantly changing, and maintaining it also keeps a member of staff very busy; the outreach work involves several different activities, from responding to requests for microscopes in primary schools (AMFES – see below),





with former Presidents Tony Wilson, Chris Hawes, Paul Monaghan & Mark Rainforth. Les Stump (former Treasurer) is also present (4th from right)



Lynne Joyce stepping down as Treasurer in 2005

to maintaining and refurbishing the new Microscope Activity Kits (see below), to looking after the RMS Diploma scheme. For the meetings which include exhibitions, much work goes on behind the scenes to ensure that enough space and appropriate utilities will be available on the day. Security and Wi-Fi access are now taken for granted by the exhibitors, but need to be confirmed and put in place before the events.

As a charitable organisation with substantial assets and a significant annual turnover of more than £1M, the RMS must have accurate and correct accounting procedures in place. Karen Collins looks after the day-to-day accounts, assisted by an Accounts Administrator and works closely with the Honorary Treasurer. This latter post involves financial oversight of the RMS's

activities and over the years Honorary Treasurers have guided us through times of financial recession and uncertainty. During the past 25 years this post has been filled by a number of individuals: Clive Cowen, Andrew Briggs, Vyvyan Howard, Lynne Joyce and Leslie Stump. Several Honorary Treasurers have been involved in the business side of microscopy, and the RMS has benefited greatly from their expertise. Clive Cowen was in post for the period 1972 – 1988. Lynne Joyce served effectively during the period 1995 – 2005, being replaced by Leslie Stump for a further nine years (the shortening of the term from 10 to 9 years being due to the recent changes in the by-laws).

In addition to its freehold property, the RMS also has a significant investment portfolio.



A busy working lunch at an annual SPM meeting



Poster sessions promote in-depth discussions

This is entrusted to a leading professional company, ensuring a steady income stream which has recently been used to greatly expand our outreach activities.

## Meetings and courses

The founding members of the Society met regularly to discuss their recent findings, the latest developments and improvements in their instruments. They also arranged for special events where guests could come and see for themselves some of the microscopes and specimens on display. Throughout its history, the RMS has maintained these activities, and as a major element of its work now runs numerous conferences and courses: an average of 15 every year, all administered efficiently by the events team in the office, under the guidance of Allison Winton.

Conferences range widely from specialist “one-off” events such as *Capturing Colloids* and *Microscopy in Archaeology*, to regular fixtures such as *Electron Backscatter Diffraction (EBSD)* and the UK’s annual SPM Meeting. Others have been set up in response to a quickly developing situation, such as the sudden appearance in the UK of several expensive field-emission-gun electron microscopes in both life and physical science disciplines. Thus the FEGTEM series of meetings began in 1999 and ran annually for seven years, by which time these instruments were installed and being used more widely across the UK’s universities. Another successful series is the *Microscopy of Semiconducting Materials Conferences*, initially set up in Oxford in 1979 by Tony Cullis, and now alternating between Oxford and Cambridge, the





*Conferences and courses. Microscopy of Semiconducting Materials (top); Light Microscopy Summer School (bottom, left); Cell Imaging Techniques Course (bottom, right)*

administration also alternating between the RMS and the Institute of Physics. The RMS has also been involved in running major conferences overseas, such as the ELMI meeting in Leuven, Belgium and the long-running International Botanical Microscopy Meeting which has been held in Lisbon, Salzburg, and Wageningen in The Netherlands.

As part of its educational activities, the RMS also runs a number of training courses annually. The EM Spring School and LM Summer School are regular fixtures where post-graduate students and microscope technicians receive intensive, hands-on teaching of both theoretical and practical aspects of microscopy, from experts in the



*The RMS events team supports delegates at courses and meetings: Allison, Victoria, Lucy and Kathy*



*EBSD Conference delegates enjoying a working lunch*



*Light Microscopy Summer School lecture 2011*

fields. *Cool Runnings* and *The Big Freeze* are catchy names for special courses on cryo-techniques for electron microscopy held every two years at Rothamsted Research. Flow Cytometry courses are also held regularly, and other courses arranged when specific needs are identified, or as new techniques such as confocal and high resolution fluorescence microscopy emerge.

## **MICRO meetings: from local event to major International Congress**

Following on from a very successful conference held in London in 1966 to mark the Centenary of the Society's being granted its Royal Charter, the biennial series of regular MICRO meetings was launched in 1970, using a range of London-based venues

to accommodate the growing numbers of delegates. During the 1980s these meetings continued to expand, encompassing life and physical sciences as well as instrumentation and techniques in both light and electron microscopies, a feature which was at the time unique amongst microscopy conferences. The special attraction of these meetings was the combination of a scientific conference and a major microscope exhibition. In a further move to broaden our international appeal, September 1988 saw the RMS organise and host the very successful 9<sup>th</sup> European Electron Microscopy Congress, on the impressive and spacious campus of York University. In the absence of an Administrator, the then Deputy Administrator, Judy Lewis took over the overall running of the event and, with her typical good humour combined with

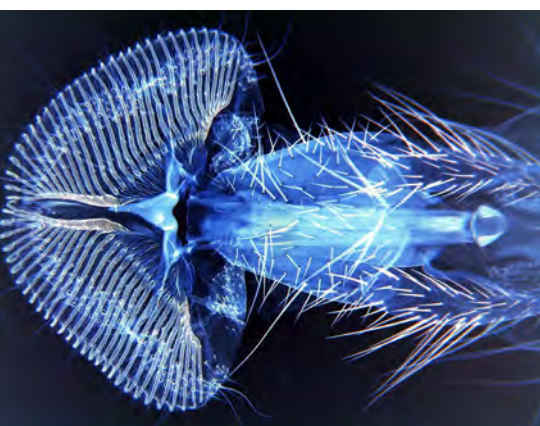
unflappable patience, ensured everything went smoothly. This was run along the same lines as the MICRO meetings, with several parallel sessions and an excellent, up-to-date exhibition which was housed almost entirely in an enormous marquee. When the events team arrived to prepare for the exhibition, they were faced with a large and rather damp marquee due to the unseasonably cold and wet August bank holiday weekend prior to the event. A number of industrial strength heaters were hastily procured and installed, and none of the companies arriving to set up their equipment two days later would have been aware of these earlier problems! However, grave concerns were expressed by some of the electron microscope companies when arriving to install their delicate instruments: there was a somewhat bouncy wooden floor which was supported underneath by scaffolding to make it level and “stable”, as the whole structure was located above a set of uneven concrete steps! Thankfully the events team was able to quickly arrange to reinforce the floor, and several electron microscopes were thus installed to demonstrate their impressive high resolution capabilities to amazed delegates.

The RMS's steadily strengthening links with instrument manufacturers and other associated companies meant that major meetings such as this one could count on significant support from companies in terms of the new instruments and accessories on display, and also sponsorship. One outcome

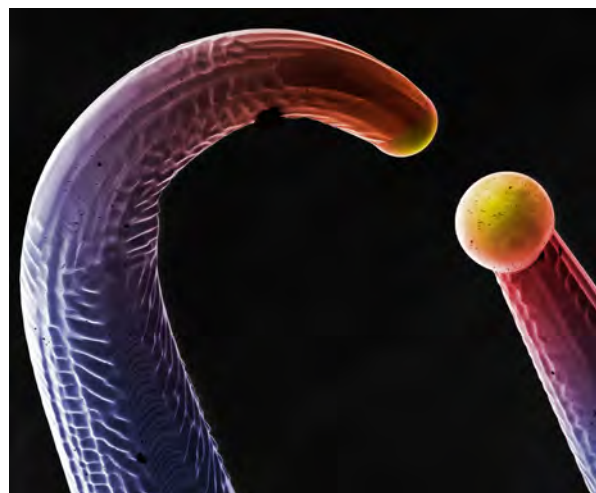
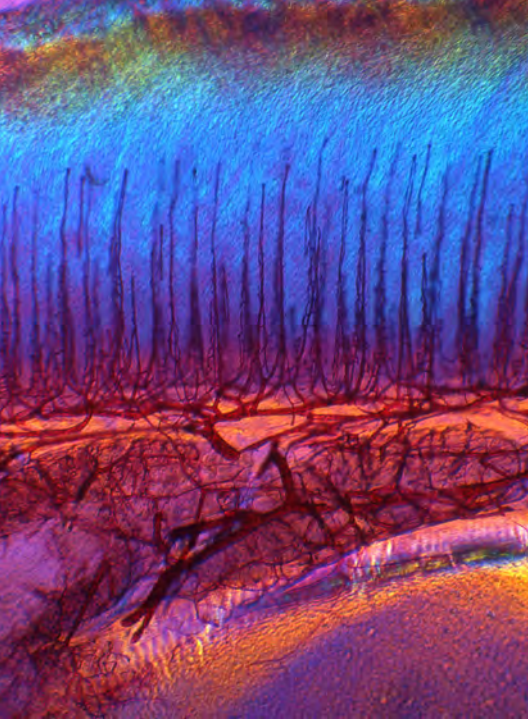
of this was that the exhibitions grew to become major attractions, alongside the conferences themselves. The RMS has for many years recognised the importance of strong links with microscope companies – after all, it is the manufacturers who supply our microscopes and ancillary equipment, software etc. To this end an advisory group, the Trade Advisory Committee was set up. This has, over time, evolved into the current Corporate Advisory Board (CAB) a group consisting of some 20 representatives of (almost) all the “major players” in light and electron microscopy, and other related companies. This group meets regularly with the RMS Executive Committee and events team to discuss trade input into, and feedback from, events and to assist in strategic planning of future ones. The chair of this group is also an *ex-officio* member of Council at its regular meetings. The RMS sees its links with the CAB as a symbiotic relationship: our aim is to promote and develop microscopy at all levels; for this we need the latest and best available equipment, and support, from the manufacturers and suppliers – who in turn need active microscopists across all disciplines, to purchase – and use - their products.

Generous sponsorship from supporting companies has also enabled the RMS to develop its ever-popular International Micrograph (now Scientific Imaging) Competition, which has now grown to become a key part of the MICRO series









of events. Those who submit entries are often taken aback by significant prizes on offer for winners: these have included digital cameras, iPads, laptops and even a diamond! The aim of the competition is to encourage and reward scientific, aesthetic and artistic excellence in presentation of micrographs, and regularly produces truly stunning images.

*Some of the wonderful images submitted to RMS Micrograph Competition over the years*



*Public Lecture at the Royal Institution in 1989, with an attentive audience*

1989 was the 150<sup>th</sup> Anniversary of the RMS. To celebrate our birthday as the world's oldest microscopy society, two major events were held in London, beginning with a two-day meeting in the Royal Institution. Then, joining forces with our colleagues in the Institute of Physics' EMAG group, "EMAG-MICRO" took the form of a 3-day conference, held in the Institute of Education in Bloomsbury. The facilities for lectures and poster displays were adequate, but over-all the cramped space was far from ideal; accommodation for delegates in the nearby Royal National Hotel was "quaint". The exhibition had also now grown to become a major attraction in itself for microscopists from all disciplines, and thus demanded significantly more space than was available in the Institute's buildings. Along with three banqueting

rooms spread throughout the hotel the exhibition space was again provided in the form of a large marquee, which was more-or-less secure and weatherproof for the three-day duration of the conference. The official opening ceremony in the exhibition had to terminate rather abruptly, and sooner than planned, due to a fire alarm; what followed was a swift evacuation of the building and marquee, and the arrival of five fire engines, complete with wailing sirens and blue flashing lights! Despite being spread around the venue as well as in the marquee, the exhibition itself was fairly uneventful until the last afternoon. While it was being closed down and the instruments dismantled, a sudden and unannounced switch-off of all electrical power caused great consternation as electron microscope vacuum systems and water chillers crashed!





*Entrance to MICRO 92, at Earls Court Park Inn*



*Welcome team at MICRO 92*

Thankfully, a speedy restoration of power prevented any lasting damage to delicate and expensive equipment.... but “lessons were learned”....!

## Going West....

Following a search for a suitable alternative venue, in 1990 the MICRO event moved to London’s West End. The Novotel Hotel at Hammersmith offered reasonable rooms for parallel lectures, poster displays, as well as adequate, reasonably-priced accommodation on-site for delegates. The basement area was (just about) large enough to host the exhibition although the low ceilings, enormous pillars and stuffy atmosphere were not conducive to serious discussions between the manufacturers and potential customers in such a claustrophobic environment.

1992 and 1994 then saw MICRO move to nearby Earls Court Park Inn (now Ramada). This was in response to the needs of a growing conference and exhibition, as well as increasing numbers of delegates and visitors from overseas. The main lecture theatre was within the exhibition area but any parallel sessions had to be held in rooms on the second floor of the hotel, too far from the main event, and very cramped with low ceilings. The exhibition space was adequate, but was still not large enough to accommodate the growing number of companies who wanted to exhibit, so in 1996 the conference returned to a newly refurbished Novotel.

It was recognised and appreciated that MICROs running in even years had to be aware of, and fit in with other major



*MICRO 98 registration desk*



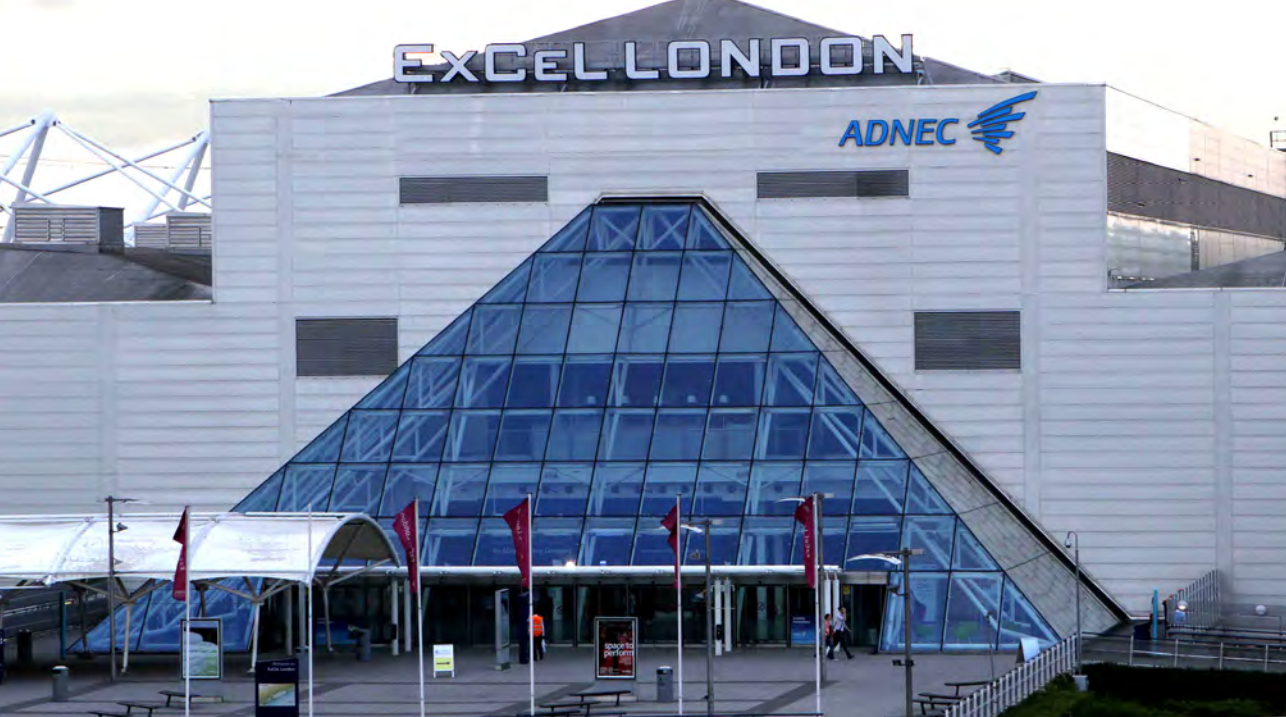
*RMS Learning Zone*

Microscopy congresses, either International, or European, both of which run on alternate 4-year “even-year” cycles. Great care had to be taken to avoid clashing with these and other major meetings. But sometimes other attractions were simply too much and as a consequence the RMS suffered – in 1998 the MICRO held in The Novotel had to compete with an International Electron Microscopy Congress in Cancun, Mexico. The significant drop in attendance at MICRO that year was probably due - at least in part - to the promise of sunshine and company-sponsored beach parties in Mexico. What an attractive alternative to the West End of London!

2000 was a particularly busy year for the RMS – Ron Van Noorden and Gary Coulton masterminded and ran a successful International Congress on Histochemistry

and Cytochemistry in York, (20 years after a previous one which had been held in Brighton, at the same time as MICRO 80), attracting over 500 delegates. RMS members were also heavily involved in organising the scientific programme of the 12th European Electron Microscopy Congress (EUREM) in Brno, Czech Republic. With these meetings competing for attention in the summer/autumn period, it was decided to bring MICRO forward to the Easter break. However the disappointing attendance indicated that this was not a smart move; and in addition the cramped and stuffy basement at The Novotel no longer satisfied the needs and demands of manufacturers eager to display their latest instruments. If we were to succeed in running and offering Europe’s best microscopy exhibition as a major element of future MICROs, and retaining the support of exhibitors and





*The ExCeL Congress and Exhibition centre*

visitors, it was made very clear that things would have to change. MICRO would have to move; but the burning question was “where?”

### **Down the river....**

Surprisingly, there were very few locations in London that offered the combination of multiple lecture theatre facilities alongside a large, secure and fully-serviced exhibition area, together with a good range of affordable accommodation nearby. To ensure the MICRO conferences developed into truly international-quality scientific meetings, the Executive Committee and Council finally chose the ExCeL complex in the newly-redeveloped Docklands area of East London as the new venue with its easy access by Docklands Light Railway, and within *walking distance* of London’s City Airport. This venue had the advantages of

being modern, spacious and flexible – but the huge challenge facing the organisers and events team was how to fill over 1000m<sup>2</sup> of exhibition space, doubling the size of any exhibition that had been run previously.

Thus the series of MICROs at ExCeL was launched. Microscope company representatives were invited to a special presentation, where the venue was explored and plans for MICRO 2002 were put forward. The then Chair of the Corporate Advisory Board, Leslie Stump led the presentations, supported by Rod Shipley, as well as members of staff from ExCeL and the exhibition contractors. These presentations were met with an enthusiastic response, and the RMS felt confident that this move would provide the necessary boost for the planned development of the MICRO series.



*MICROSCIENCE 2004 attracted over 1000 delegates and visitors*



*RMS Learning Zone continues to expand*

Given the promise of strong support from our colleagues in the corporate microscopy world, the fresh challenge would now be to attract large numbers of delegates and day visitors to both the programme of lectures, and to the exhibition. With this in mind a Marketing Committee was set up to support and promote the event. This group's input included the suggestion of an innovative layout to encourage delegates to walk around the whole exhibition. The design was originally based upon the idea of a 'department store', with specific areas for our basic light microscopy workshops, seating, catering and posters. A diagonal floorplan was implemented, which was popular with some - but less so with others. However visitors felt about it, it meant that they did not have to cover the same ground twice.

The MICRO series was thus re-branded as MICROSCIENCE events during the period 2002 – 2010. The increased space available and department store layout allowed us to increase the scope of what was on offer at a MICROSCIENCE Conference. There would be the usual programme of plenary, invited and contributed lectures, poster sessions, and micrograph competition displays, but with two new and unique features. The first was better workshops within the exhibition area where company representatives could present and discuss new techniques or instruments, or provide focussed seminars on specific new techniques, many of which would be linked to the conference sessions. Secondly, from 2004, a "Learning Zone" (developed from the basic light microscopy workshop area) where experienced microscopy "experts" would



*Eye-catching entry to MICROSCIENCE 2008*

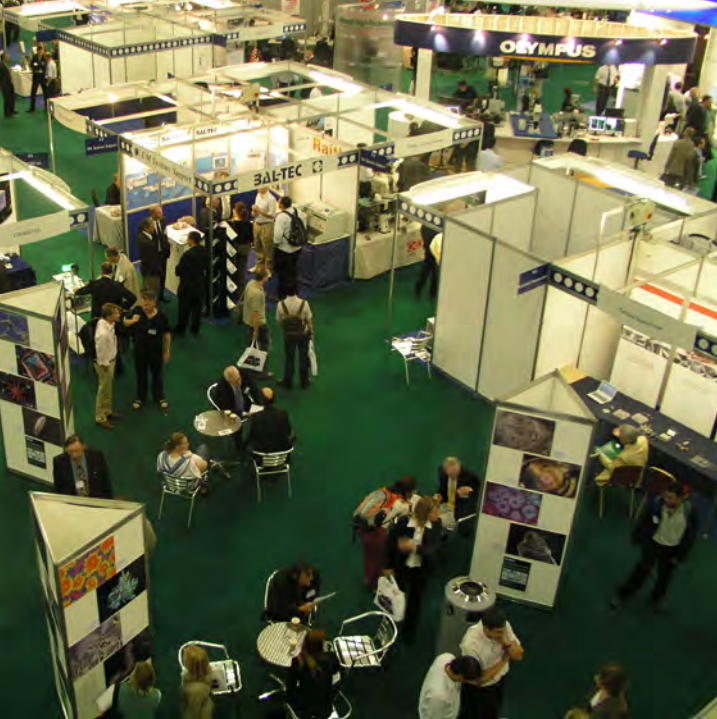
be available to discuss technical questions, and provide hands-on demonstrations using instruments (including light, confocal and electron microscopes) kindly lent by the manufacturers. These extra features proved immensely popular, and set the MICROSCIENCE Conferences apart from most others. Also, the policy of allowing day visitors free access to the exhibition, the associated workshops and Learning Zone was an added attraction, particularly for microscopists in the London area.

The MICROSCIENCE Conferences continued to develop into one of Europe's major microscopy events. They served – and continue to serve – several purposes: promoting the latest developments in all branches of microscopy, showcasing the latest instruments, including numerous launches of new ones; providing plenary

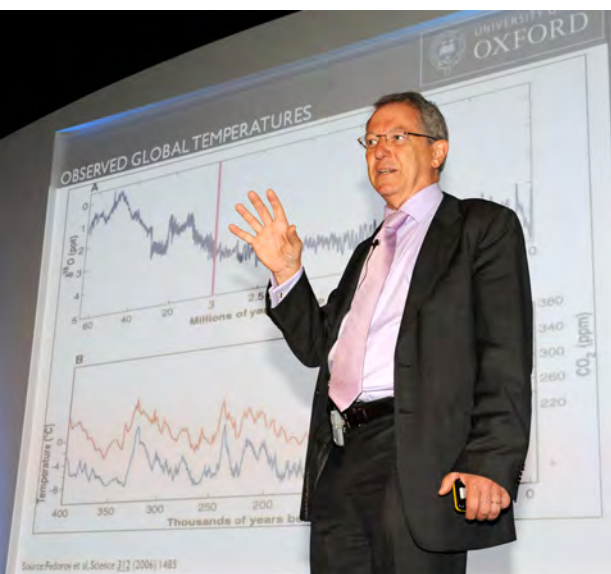
and keynote speakers of the highest calibre, including Nobel Laureates. Opportunities for making new contacts and networking were also a special feature, with plentiful seating for refreshments and food in the exhibition areas. Free Wi-Fi was of course expected, and appropriate steps were taken to provide it, along with a unique smartphone app to guide delegates around the conference and exhibition.

Social events became a regular and very popular feature at MICROSCIENCE Conferences. These included open-air barbecues and parties near the ExCeL centre itself, evening cruises along the Thames and an evening reception at the famous O<sub>2</sub> Arena (aka the Dome), with memorable transport in the form of a fleet of vintage red London buses!









Images from the MICRO series

## Into Europe and beyond

Throughout the past 40 or so years the RMS has been closely involved in co-ordinating electron and light microscopy at a national level, initially through the British Joint Committee for Electron Microscopy (BJCEM). This group linked the RMS with the Institute of Physics, the Institute of Materials, Metals and Mining and several other Learned Societies, providing informal input and guidance for arranging meetings and courses. The Committee's meagre funding came from small subscriptions paid by the affiliated societies. This enabled its more useful role in providing bursaries to enable UK-based students to attend national and international electron microscopy conferences. BJCEM also nominated individuals to represent British electron microscopy interests within Europe, via CESEM (Committee for European Societies of Electron Microscopy) and also internationally, through involvement in the International Federation of Societies for Electron Microscopy - IFSEM. We again note that "Electron" was dropped from this name in the 1990s in response to the growing awareness that light microscopy was enjoying a renaissance with spectacular developments, especially in improving resolution and confocal, plus fluorescence technologies. Concurrently the whole range of scanning probe microscopies was also expanding rapidly. It is good to record here that the RMS has provided no fewer than four Presidents of IFSM (Ellis Cosslett,

Archie Howie, David Cockayne and Barry Carter), reflecting our true international character.

CESEM itself was a rather loosely connected forum which mainly oversaw the selection of venues for European Electron Microscopy Conferences, offering advice if required. This group finally ran out of steam in the mid-1990s and was disbanded in 1998. From its ashes however, a new group arose – which would become the European Microscopy Society. When the European Microscopy Society (EMS) was launched in 2000, the RMS's then Executive Honorary Secretary John Hutchison was invited onto its Executive Board, serving for a four year period. Since then the RMS has continued to have continuous representation on the EMS Board, and has provided two of its Presidents: Peter Hawkes and Paul Midgley.

During this period there was general consensus from the Council and the Science Sections that the time was ripe for the RMS to make a bigger contribution on the international scene and in 2006 a team went to the International Microscopy Congress in Sapporo, Japan to present a bid to host the 2010 Congress, again at ExCeL in London. Although we made a very strong and professional case, led by Debbie Stokes, and despite support at the very highest level – from the then Prime Minister Tony Blair – the RMS narrowly missed out in favour of the sunshine and beaches of Rio de Janeiro. The exercise was not wasted





*IMC17 Bid team in Sapporo, Debbie Stokes, Rob Flavin, John Hutchison & Allison Winton*

however, and the experience gained in Sapporo was used to support a successful bid to run the next European Microscopy Congress, the 15<sup>th</sup> in the series, as emc2012, and the second one which the RMS would organise. The vision was to combine a large, international conference with Europe's largest microscopy exhibition, along with the unique features that had come to be major attractions of the MICROSCIENCE events, again using the ExCeL centre.

2012 was of course the year of the London Olympic and Paralympic Games and it was hoped that the Congress would benefit from the huge influx of visitors to the capital over the summer. By mid-2011 planning for the Congress was at an advanced stage, with excellent publicity and a framework programme in place, when

it was discovered that the venue (and indeed all London venues) would not be made available on the dates that had been promised earlier. This forced a very rapid response to what looked like becoming a major crisis, or at worst, disaster. At that stage there simply was no "Plan B".

## Heading North...

A very nervous Organising Committee, ably chaired by Debbie Stokes, faced several hard decisions: should the dates be changed? This was not an option, as many keynote and invited speakers had already been booked. In addition, the ExCel venue was not available at other possible times anyway. So, maintaining the dates and draft schedule, the next question was: where to relocate?





*Manchester Central – the superb venue for emc2012, the 15<sup>th</sup> European Microscopy Congress*

Eventually a new venue was found, in Manchester – the recently developed Manchester Central Convention Complex, built around the former train station. This offered the advantages of being truly central, easily accessible from across the UK, with excellent, affordable accommodation nearby, and only a short distance from Manchester’s international airport.

So the decision was taken to relocate the congress to Manchester during September 2012 – ironically exactly 40 years after the 4<sup>th</sup> European Microscopy Congress, also in Manchester, but held then in the University. For emc2012 the range of lecture halls and smaller rooms available in Manchester Central was used to full effect, providing large auditoria for plenary lectures, down to more informal rooms for

specialist symposia. The exhibition space (some 1900 m<sup>2</sup>) accommodated Europe’s largest ever microscopy exhibition, with well over 100 companies displaying their equipment including the latest electron and confocal microscopes. Several new instruments were launched at the event. A unique instrument on display was one of the first commercial electron microscopes ever constructed in Japan (in 1949), now officially regarded as a “national treasure”. Excellent catering facilities and expansive seating areas ensured that delegates could meet colleagues, have informal discussions, and keep in touch thanks to the free Wi-Fi facilities throughout the area. In addition to several major social events sponsored by companies, one highlight of the week was the Congress Banquet which was held at



*Oldest Japanese commercial Electron Microscope on display at emc2012*



*International soccer at Old Trafford: EMS Secretary Nick Schryvers leads the Belgian team*



*Lecture facilities at emc2012 ranged from the large auditorium (top) to smaller lecture rooms (bottom)*

Old Trafford, home of Manchester United Football Club, where the largest ever RMS dinner was hosted in the conference suite after a stadium tour which included the impressive trophy room and a chance to go pitch-side. With over 3000 delegates, exhibition visitors and members of commercial companies, emc2012 turned into the largest European Microscopy Congress to date.

The RMS will build on the success of emc2012 and previous MICROSCIENCE events, with the newly branded Microscience Microscopy Congress 2014 (mmc2014) taking place in Manchester in June/July, where we will celebrate the 175<sup>th</sup> Anniversary of the Society.





Reminders: *Journal of Microscopy* fridge magnets help to maintain brand awareness

## Publications

The RMS produces several distinct publications, foremost of which is the well-known *Journal of Microscopy*. Its present title and format can be traced back to 1966, when it replaced the *Journal of the Royal Microscopical Society*. It is currently published by Wiley, “covering all aspects of microscopy and analysis, including cutting-edge technology and innovative applications in physics, chemistry, material and biological sciences.” The editorial work is carried out by a team including the Executive Editor Lucy Saxton, Editorial Office Manager Jill Hobbs, General Editor Tony Wilson, and several other colleagues who provide the necessary breadth of expertise. The Editorial Board is available to provide specialist advice when required, and is drawn from as far afield as USA,

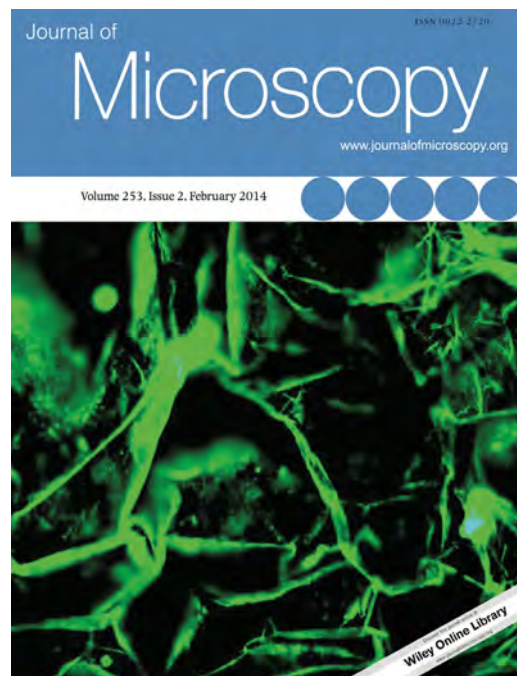
Australia and Japan, reflecting the Journal’s international nature and appeal. The routine facility to submit and publish high quality colour diagrams and micrographs at no cost to authors is an attractive feature that sets the Journal apart from many others in the field. Initially all of the work was done using hard-copy manuscripts and printed figures, copies of these being posted out to referees for review, and finally to the publishers for type-setting and printing. This time-consuming and costly process has, in common with most other journals, moved into the digital age, a development successfully implemented by the then Editorial Assistant, Ilaria Meliconi and the whole procedure is now handled online, streamlining the process from submission to publication.



It was recognised that there was an on-going, strong demand for papers from past issues and in response to this, the complete set of journals, going back to 1841 has now been digitised and is available online from Wiley ([www.journalofmicroscopy.org](http://www.journalofmicroscopy.org)). This delicate task was entrusted to a company in India, who carried out the work efficiently and with great care, particularly for the early volumes, which are now well over 100 years old.

The *Journal of Microscopy* is part of Wiley's hybrid Open Access option entitled *OnlineOpen*. This is available to authors who wish, for a fee, to make their article freely available to all on Wiley Online Library. This is commonly known as Gold Open Access and is a model that provides immediate access to scholarly content and is funded by article publication charges (APCs) paid

by authors or on behalf of authors by universities or funding institutions. The *Journal of Microscopy* published its first *OnlineOpen* article in 2010. Since then the number of *OnlineOpen* articles in the journal has continued to grow steadily as the demand from funding bodies, universities and authors increases. There is a clear author preference when selecting Open Access for high-quality journals with strong reputation. The demand for Open Access in the *Journal of Microscopy* is a clear indication of the high regard it has in the community. As universities and research funding bodies come to terms with these new arrangements, the implications, along with the proliferation of new "journals", for societies such as the RMS are not yet clear, but will certainly pose significant challenges in future.



*The Journal of Microscopy continues to attract top-level papers in all branches of microscopy*



*infocus, the RMS house magazine, is provided free to all members*

A more informal “house journal” for all RMS members was also launched in 1966, as *Proceedings of the Royal Microscopical Society*. The late Savile Bradbury and Robert Ross took on the task of producing this journal quarterly, their editorial roles eventually being taken over in 1981 by Peter Evennett, whose meticulous work over the next 19 years ensured perfect copies every time! Adrian Burden and Tim Watson then took on the job as joint editors and brought their own distinctive styles to bear, with full-colour illustrations, and increasing commercial advertising. After 40 years, the *Proceedings* drew to a close in 2006 and was replaced by a new format, magazine-style **infocus**, again edited by Adrian and Tim, initially assisted in the office by Laura Kingsbury\* and Jill Hobbs. This attractive magazine combines news of RMS and

other microscopy events in the UK and overseas, with interesting articles and book reviews, as well as topical reports on new instrumentation etc. Once articles are over a year old they are also made available online for anyone to access via the RMS website.

Mention must also be made of a single, hard-cover volume of abstracts (*Transactions of the Royal Microscopical Society*), published in 1990 as the permanent record of that year’s MICRO Conference. This volume was edited by Hugh Elder, but it did not continue as a series.

Recognising the need to conserve resources, many of the RMS meetings and conferences now have abstracts and contributions provided to delegates online or on electronic media, although a shrinking

\* now replaced by Lucy Saxton

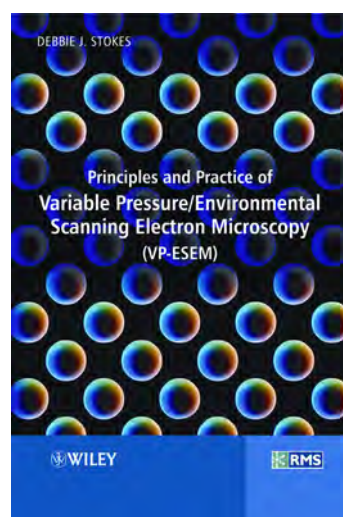
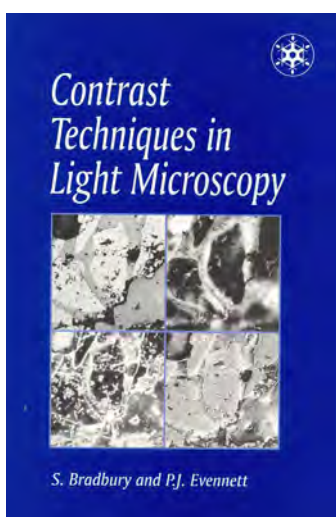
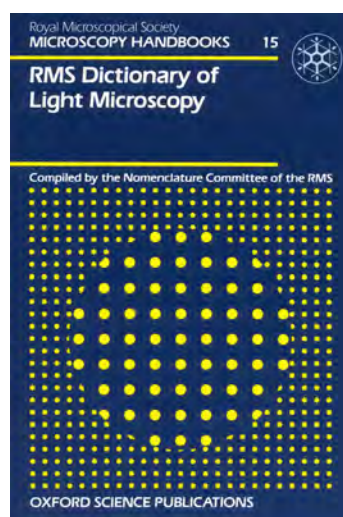
number of attendees still express a strong preference for weighty, case-bound books.

## RMS Handbook Series

In keeping with the RMS's educational activities, an extensive series of handbooks has been published. These are intended as a blend of textbook and training manual, and are mainly technique-oriented. The series was launched in 1984, with Savile Bradbury, then Chris Hammond acting as Series Editor, ensuring a steady supply of suitable material in all branches of microscopy. To date, the Society has published no fewer than 49 volumes. Titles over the years have included: *Light-Element Analysis in the Transmission Electron Microscope: WEDX & EELS* - P. M. Budd, *An Introduction to Surface Analysis by Electron Spectroscopy* - John F. Watts *The Role of Microscopy in Semiconductor Failure Analysis* - B. P. Richards, *Flow Cytometry (2nd edition)* - M. G. Ormerod. These and many others were produced in soft covers by

OUP and Taylor & Francis and may still be available from their websites.

In 2008 a new series was introduced, and its volumes are now published as well-finished hard-back volumes by Wiley, with Mark Rainforth initially, and now Susan Brooks fulfilling the role of Series Editor. Written or edited by international experts in their respective fields, these now cover a wide range of cutting-edge techniques including *Low Voltage Electron Microscopy – Principles and Applications* - Eds. Natasha Erdman & David Bell, *Aberration-corrected Analytical Electron Microscopy* - Rik Brydson, *Principles and Practice of Variable Pressure / Environmental Scanning Electron Microscopy (VP-ESEM)* - Debbie Stokes. With new techniques continually being developed the RMS's contribution to advancing microscopical science by means of these handbooks has been and remains a very valuable and timely contribution.



The RMS series of handbooks has been in production for 30 years





*The logo for the 150<sup>th</sup> Anniversary celebrations*



## Reaching Out

To mark the RMS's 150<sup>th</sup> Anniversary in 1989 several noteworthy events were organised, including the issue of a special set of commemorative postage stamps and a major, six month long exhibition of microscopes and related equipment held in the Science Museum in London. This major exhibition included numerous light and electron microscopes, kindly lent by manufacturers, which could be used hands-on by the visitors. During the six months, lots of school parties visited the exhibition, and the excited responses of many of the children were a real inspiration to the organisers – but also posed a challenge: how could we build on this success and channel that enthusiasm for microscopy? This was particularly acute as at that time

microscopy simply did not appear anywhere in the National Curriculum for primary school pupils. If these youngsters were to be introduced to the wonderful world beyond the visible, the earlier the better. And what better way of encouraging young children to become interested in science, and continue this through secondary school and on into university than through the eye-piece of a microscope?

The Executive Committee and Council put much thought and discussion into how best to try and do something about it– but what was to be done? It was recognised that the most strategic age group was 6 to 11 year-olds, i.e. before secondary school age. It was crucial to formulate clear objectives and realistic targets. It was essential to bring teachers on board, by



The Royal Mail issued a special set of commemorative stamps to mark the 150<sup>th</sup> Anniversary of the RMS



John Butcher MP opening the Anniversary Exhibition. Behind him are Neil Cossons (then Director of the Science Museum) and Gillian Bullock (then President of the RMS)

providing them with the necessary support and learning materials; it would also be a priority to identify suitable microscopes. A working group was set up, from members of the Executive Committee and Council, along with teachers and science education lecturers and advisers. This group confirmed early on the perception that engaging with primary school children should be our first priority; careful investigation also revealed that the majority of the microscopes and other magnifying devices being marketed for use in schools were not really suitable for the job: this was highlighted when the group worked with some Yorkshire schools in 1994. Shortcomings were identified and specific needs clarified. Chris Hammond and Peter Evennett, two of the main drivers of the project then produced a specification

for an ideal schools microscope, suitable for the target age group. This instrument would be of robust build (probably metal), strong enough to withstand the rigours of rough handling by over-enthusiastic youngsters; it would have a single, simple focussing mechanism, and a magnification around 20x, such that the observer could correlate what (s)he saw with a recognisable object. The image should also be “right-way-up” to avoid confusion and difficulty in manipulating the specimen. Since specimens were to be observed mainly by reflected light, the problems of making thin sections, together with the hazards of glass slides - as required in “conventional” microscopes - would be wholly avoided. Price was also an important consideration, bearing in mind the likely state of school budgets. The vision

was for the RMS to subsidise the purchase of microscopes by means of vouchers in part-payment – an attractive proposition for cash-stretched schools.

A comprehensive survey of the available instruments at that time eventually came up with two microscopes that fulfilled the criteria, both of very similar construction and marketed as the *Motic MS2™* and the *Junior Microscope™*. These were both given the RMS “Stamp of Approval” and formed the basis of the initiative.

## The scale of the task

Alongside these developments, enquiries were being made of a wide range of primary schools and these soon revealed that the majority did not possess a microscope at all, and in those which did, that instrument was an inappropriate one, or else left unused in a cupboard. This gave rise to the ambitious initiative whose aim was to see a microscope in use in every primary school in the country – some 25,000 schools! Thus AMFES – A Microscope for Every School – was born.

## How to proceed

The next major challenge was how to go about selling the idea (and microscopes) to schools. An RMS presence at the annual meeting of the Association for Science Education (ASE) produced two contacts that were to prove crucial: a Yorkshire company, *Resources for Learning* which produced educational materials for *British*

*Nuclear Fuels Ltd (BNFL)* who in turn were on the lookout for suitable material for their schools outreach programme “*Learning through Science*”. Microscopy was seen to fit very well into this initiative and the RMS AMFES working group collaborated closely with both companies in developing a teaching resource pack with the name “*The Young Detectives*”. This was a kind of microscopical “Who-done-it”. Strong sponsorship made this very affordable, and additional RMS sponsorship, donating almost half the cost of the selected microscope to participating schools, brought its cost down considerably as well. The next step was to raise public awareness of the project. A list of potential patrons from science and public life was drawn up, and we soon had the support of Sir Peter Hirsch, Heinz Wolff, Richard Gregory, Jonathan Miller, Tam Dalyell MP and others.

It was then decided to launch the AMFES project with a public event during **set95**, a week within which the Government’s Office of Science & Technology aimed to raise public awareness of science and technology in a series of events across the country. Local organisation of these events was done through the British Association for Advancement of Science. The AMFES launch took place in the spring of 1995 at Oxford University, alongside a major microscopy conference: Microscopy of Semiconducting Materials. The RMS President Peter Goodhew and one of our patrons, Richard Gregory both addressed the audience which was drawn from





*Young Detectives Kit for AMFES outreach*



*Primary school pupils using microscopes at the AMFES launch day*

the press, local radio and several local schools. Local school pupils demonstrated the microscopes, and prominent posters displayed work already being done with the kits. A programme of press releases immediately following the launch produced good publicity nationwide.

Following the successful launch of the initiative, schools around the country began to take up the offer of sponsorship, which was effectively about half the cost of a microscope, and the office staff kept up with the growing workload of administering the scheme. Peter Evennett and Chris Hammond produced a very helpful booklet for teachers and pupils, and the late Juliet Dyson provided much of the necessary support by travelling to schools and also running training courses for teachers

Looking back over the 18 years since the launch of AMFES, we may now ask the question: how much has been achieved? Certainly, we have increased the awareness of microscopy in schools; microscopy and its importance across much of science are being recognised, and many thousands of school children are being introduced to the wonders of the microscopic world.

It was a cause for celebration when in 1993 Hugh Elder, then President of the RMS presented the 1000<sup>th</sup> microscope to a primary school in the midlands.

The scheme is still running, being supported in part by direct funding from the RMS, and partly from the sale of refurbished optical microscopes by Peter Evennett and Chris Hammond. Well over 2000 microscopes have now been placed in schools across the country.

## **New developments: RMS Microscope Activity Kit**

Building on these initiatives was a crucial part of the RMS's long-term strategy and this coincided with Susan Anderson joining the Materials Sciences Science Section. At that time involved in science outreach in primary schools in the East Midlands, Susan helped to establish a network of "Lab 13's" - spaces in primary and secondary schools, run and managed by young people to encourage creativity in science. These school visits revealed that many primary schools already possessed microscopes, but also that many of them were gathering dust on shelves. These early visits showed that microscopes were not necessarily seen as relevant to the curriculum. Nor were pressed-for-time teachers always confident to use them. Microscopes themselves were not always practical - trailing wires or lack of a light source meant they were difficult to use, and having only one or two microscopes meant it was difficult to incorporate them into a whole class activity. A child's first experience with a microscope could well end in disappointment. This gave rise to the vision: could we design a kit that had robust, simple to use microscopes; ready-made samples, and activities all mapped to National Curriculum objectives? The hope was that this would become a springboard to wider use of microscopes in the modern classroom and generate enjoyment and wonder in children as they explored the micro-world around them.

At this point Susan became Honorary Secretary (Education) (September 2009) and a new Outreach & Education Committee was set up, its role being to oversee the RMS's public and school-based outreach activities as well as taking responsibility for its professional development aspects. This Committee included teachers, educational advisers and other professionals with interests in promoting science, in particular microscopy in schools.

This formed the basis of the Microscope Activity Kit (MAK), with some guiding principles. Firstly, the scheme should be inclusive and therefore free of charge to schools. Secondly, it would tap into the existing expertise of teachers, combining the Outreach & Education Committee's microscopy knowledge with teachers' knowledge of education to develop new resources and share these widely. The kit would be practical, with enough microscopes and resources for a class that could be set up quickly; and the microscopes would be robust, easy to use and of high quality. Many of the features identified in the AMFES project were retained. They needed to be battery operated, to avoid trailing wires, with an LED light source, so little fingers couldn't be burned. There needed to be a way of engaging children and holding their attention. Finally, there should be an easy way of sharing what was found, for example via an eyepiece camera linked to the interactive whiteboard. However it



Microscope Activity Kit on display....



....and the contents

was also strongly felt that children should interact with the specimen using their own eyes.

The final kit contained everything needed to run microscope sessions in the classroom, including eight RMS approved microscopes, one digital eyepiece camera, instructions, videos and teachers' notes, samples - sealed in Petri dishes to minimise mess - and worksheets ready to download and print. All of this would be delivered to schools for up to a term.

The Microscope Activity Kit Scheme was launched in January 2011 at the Association for Science Education (ASE) meeting with the intention of procuring bookings from Easter 2011. With a lot of effort from Susan, and Mel Reedman from the RMS office, and

some mechanical modifications made by Peter Evennett and Chris Hammond, five fully assembled kits were ready for delivery on time.

Initial feedback was encouraging; schools loved the kit, and described it as well thought out. Some of the messages include:

***'An outstanding resource that has inspired us to be more imaginative and adventurous in running science activities. Furthermore it was striking how the simple to use microscopes enabled the children to be independent learners for most of each session'.***



***‘Everything about the kits exceeded my expectation - from the exemplary logistics and communication to the sturdy case. The contents were incredibly well-prepared - all I had to do was read the instructions and get started as everything was provided and in its proper place.’***

***‘Will definitely tell colleagues about the resource and I really hope it continues to be available to all, even as far north as us! What a boost to learning, thank you’***

And in the words of one eight-year-old: ***‘Thank you for giving us the chance to discover the world under the microscope for ourselves’.***

The five kits were used for just over a year, reaching over 1500 children, but it very soon became obvious with a growing waiting list, that the demand was there for an increased number. The number of kits was increased to ten from September 2012 and these were booked up instantly.

## **Feedback and further developments**

The ongoing feedback from the scheme had a number of pleasing features: firstly, schools were developing their own innovative activities. Teachers were using the kit as a way

to get started, getting the children enthused and teaching them about microscopy. After that the horizons broadened and fantastic new ideas were generated by both teachers and students. Youngsters were now developing hypotheses and testing them using the microscopes. Microscopes were also being used in literacy topics to develop descriptive literacy and write poetry. In art, students investigated woven materials and made collages of findings, developing links between science and art. Microscopes were taken outdoors to investigate ponds, materials, leaf litter and plants. Plant and animal cells were prepared and viewed. The development of protozoa over time was studied and healthy and unhealthy foods compared. Schools have been happy to send these ideas, and possible lesson plans to the RMS and in turn they are shared via our website.

Secondly, schools were willing to share resources and kits. Some made the kit available to the whole school, boosting pupil numbers and giving as many children as possible access to it. One school set the microscopes up in the library for a number of weeks so that children could bring things in from home or on the walk to school to explore during lunchtimes. These schools have told us that the kit is suitable for use by the full range of primary age children and even nursery school children, who have found them surprisingly easy to use.

Awareness of the MAK scheme has now spread widely, and kits are being requested

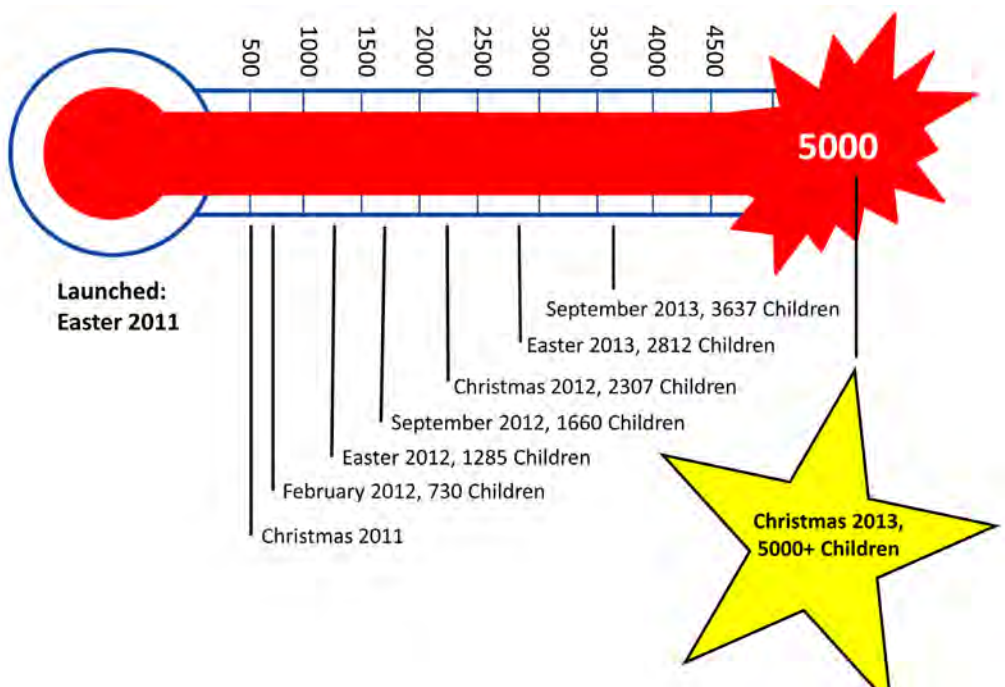
by schools in all regions of England, Scotland, Wales, Northern Ireland and the Channel Islands. Some home-school networks have also requested them. The resource is truly all-inclusive and MAKs are delivered to and collected from schools completely free of charge, the considerable costs being borne by the RMS as part of our charitable activities.

With continuing excellent feedback it was decided to scale-up the scheme to 50 MAKs. This created logistical challenges, which were resolved by out-sourcing much of the assembly, re-stocking, distribution, and storage of the kits to a local Oxford-based company, *County Print Finishers*, a collective of people with learning, mental health, visual and hearing difficulties who might otherwise find it difficult to gain

employment in the outside world. This group has worked effectively with the RMS in the past, and successfully delivered the increased number of kits in time for the start of the 2013/2014 school year. Alongside this, the coordination of the MAK outreach operation is done from the RMS office.

As of December 2013, more than 5000 children from over 100 schools based all over the UK have used the MAKs, no mean achievement for 2½ years of operation and now with 50 kits, this number is set to rise even more rapidly in the future.

Although the contents of the kits survived many school visits, an unexpected problem arose with MAK boxes being damaged in transit. The solution was to design the new rugged box now in use, giving the kit a very



MAK achievement chart



*Micrograph exhibition at Oxford's Castle Quarter*

professional appearance. Hard work by staff in the office (Kate Wooding, Karen Collins and Adam Clay in particular) has ensured the accurate collection and collation of feedback and an excellent negotiated rate for transport to ensure the scheme is sustainable.

## Other outreach activities

Despite the success of the AMFES and MAK schemes, RMS outreach activities are not confined solely to the primary school programme. They are also being used in family days e.g. a CSI-themed investigation at Oxfordshire Science Festival in 2013. These activities are always well attended, and generate interest and bookings for the MAK scheme. MAKs have also been on show at many science festivals and education conferences and fairs, attracting very favourable attention.



*Mel Reedman and Susan Anderson seated on new MAK box*





*6th form pupils enjoying a live microscope demonstration at emc2012*

Other outreach activities include the MAKs but also extend well beyond this, for example bringing scanning electron microscopy to the public and to school groups, most recently at the Eden Project in Cornwall in February 2014.

Although the main focus continues to be on enthusing primary school-aged children, MAKs were used to inspire secondary-age young people at a 'Glorious Measurement Day' at London City University, arranged by RMS past President Tony Wilson. In addition, Peter Evennett and Chris Hammond have now developed a prototype microscope suitable for secondary school projects which is ready for production.

Furthermore, as a result of a competition launched at ASE 2012 in Liverpool, 65 A-level science students from local schools attended emc2012 in Manchester where

they experienced hands-on microscopy demonstrations including TEM, SEM, confocal and light microscopy and specimen preparation, and also visited the exhibition. A particular highlight for the students was the mini careers fair we ran to illustrate the variety of careers available in microscopy. A series of short presentations was given by congress attendees from diverse roles in academia and industry, all linked by having microscopy at the core of their roles.

The RMS's wider public outreach includes exhibiting our stunning collection of award-winning micrographs at several strategic venues throughout Oxfordshire (including Oxford's prestigious Castle Quarter and the Cornerstone Gallery in Didcot). The Outreach & Education Committee has also organised numerous public lectures and Cafés Scientifique.







Recent RMS outreach activities





*School children in The Gambia being introduced to the wonderful world of microscopy*

Other activities for which the Outreach & Education Committee has ongoing oversight are monitoring the RMS Diploma arrangements and mentoring and supporting those applying, and coordinating the Learning Zone at mmc conferences.

## **Vice President's Fund**

Another important aspect of the RMS's outreach work comes from the Vice President's Fund. This is used to support innovative projects which raise public awareness of microscopy and provide some tangible public benefit. These awards provide significant financial support for a wide range of fascinating projects, such as:

***Life through a Lens - On the Road:*** This took the fully developed workshop which had been housed at the Royal Botanic

Gardens in Edinburgh in November 2011 to various schools in Scotland in 2012.

***Practical Microscopy for Gambian Schools:*** RMS members including Pippa Howard were able to introduce practical microscopy to many Gambian Schools by providing workshops and equipment in 2010, and later in 2012.

***Curious - The Craft of Microscopy:*** by mixing science, technology and art, this exhibition aimed to improve public understanding of the history of microscopy, as well as its role in modern society.

## **On air: In Our Time**

The popular weekly radio programme "In Our Time" takes the form of a panel discussion, led by Melvyn Bragg, in which experts in a wide variety of topical fields

share their views. When the important role of microscopes and microscopy in modern science and their impact upon society was being considered as a potential theme, the first body to be approached was the RMS, an excellent indicator of how it is perceived. Three RMS members, Sir Colin Humphreys, Michelle Peckham and Jim Bennett formed the panel and took part in the programme, discussing how the microscope has revolutionised our knowledge of the world and the organisms that inhabit it.

## The future of microscopy in the UK and the RMS's contribution

The RMS recognises the critical importance of microscopy in the majority of scientific disciplines, and at all levels. Our efforts in introducing youngsters to the wonderful world of microstructure, and thence into science, are reaping benefits in that thousands of school pupils are now becoming familiar with microscopes, and many of them will move on to study science in later years. Leading on from AMFES, the MAK scheme is an exciting innovation and as it continues to develop, taking on board the feedback and suggestions from schools, it will assume ever greater importance in the RMS's Outreach programme. Other public events such as Science Fairs and exhibitions will continue to have a very visible RMS presence. The Vice President's Fund will also continue to recognise and support projects that will raise public awareness

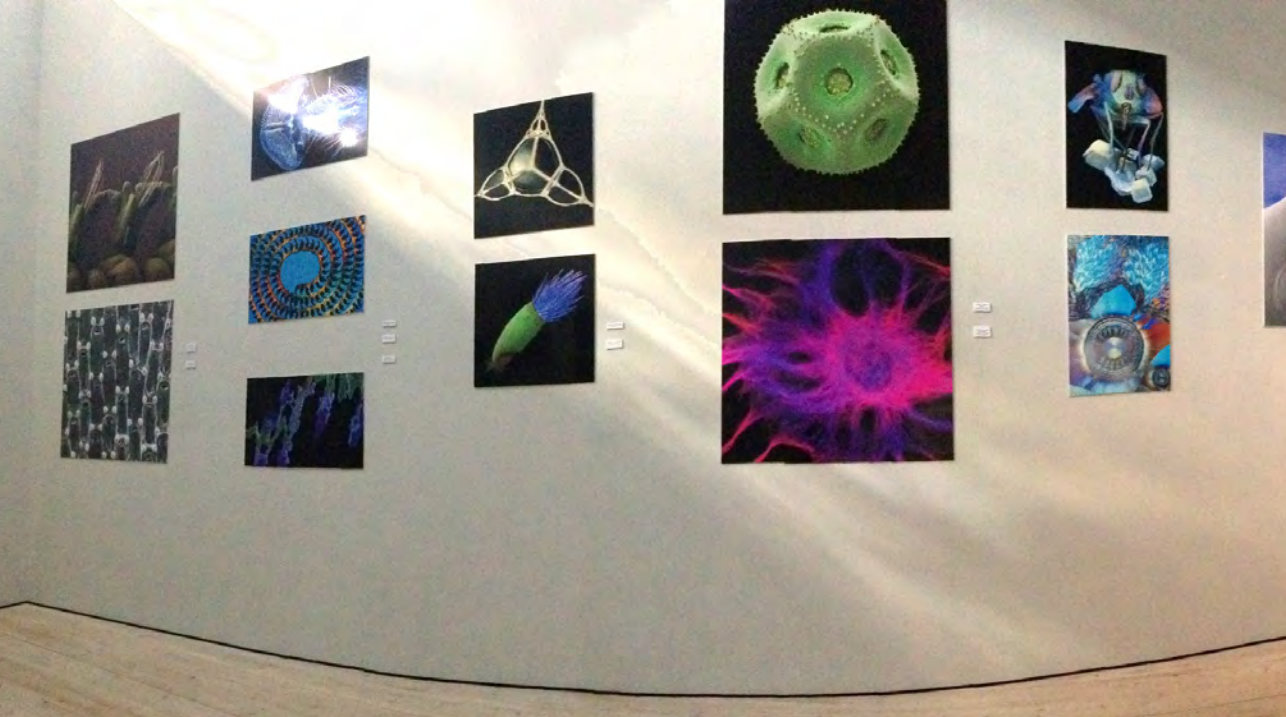
of microscopy, and also bring microscopy to communities which otherwise would not have access to it, both in the UK and overseas.

The Journal of Microscopy is proactive in striving to maintain its place as a leading journal dedicated to microscopy in all its forms, and for the RMS membership, **infocus** will provide a regular supply of articles and RMS news.

Meetings succeed in providing excellent platforms for microscopists at all stages in their careers, and range from one-day events to major international-scale conferences attracting large audiences from many countries. Courses remain popular and provide intensive teaching and training in specialised techniques, adapting to changing needs as they arise. RMS has truly become a global brand.

## Paying for it...

All of our activities cost money, and our modest membership fees would not cover the running costs. Conference registration fees (deliberately kept low if possible, and often covered by RMS bursaries), exhibitor charges, and returns from our investment portfolio all contribute to the RMS's income, along with profits from the Journal sales. These enable the Society to engage effectively in its charitable, public-benefit activities. The cost of producing the MAKs (around £800 each) and delivering them to and from schools around the country is borne entirely by the RMS. The scheme



*Micrograph Exhibition at the Didcot Cornerstone Gallery*

is entirely free to participating schools. Preparing materials such as micrographs for public events is also a costly operation, but the resulting displays all show microscopy at its best.

## **In Westminster**

At the other end of the scale is “Big Microscopy”. As new microscopy techniques and instruments develop, and costs escalate, and if the UK is to remain at the forefront of these developments, future funding for new instruments and instrumental development must be secure.

With this in mind and to underline the key contributions of imaging at the micro- and nano- levels in all branches of science, the RMS held a reception, “*Innovation under the Microscope*”, at the House of Commons

in July 2013. The event was co-hosted by Nicola Blackwood, MP for Oxford West, and RMS President Tony Wilson. It filled the Churchill Room to capacity with a group ranging from the CEO’s of major public companies via Government Chief Scientists to senior figures in the Research Councils, including John Womersley, CEO of the Science and Technology Facilities Council (STFC) and David Delpy, CEO of the Engineering & Physical Sciences Research Council (EPSRC) along with representatives of the Biotechnology & Biological Sciences Research Council (BBSRC) and the Medical Research Council (MRC). Tony Wilson introduced the principal guest David Delpy, who emphasised the critical importance of microscopy at the heart of almost all aspects of scientific research in





EPSRC's CEO David Delpy, addressing the House of Commons Reception

the UK, before going on to underline the critical need for the continued support for instrument development across all areas of the physical sciences.

## Town Hall

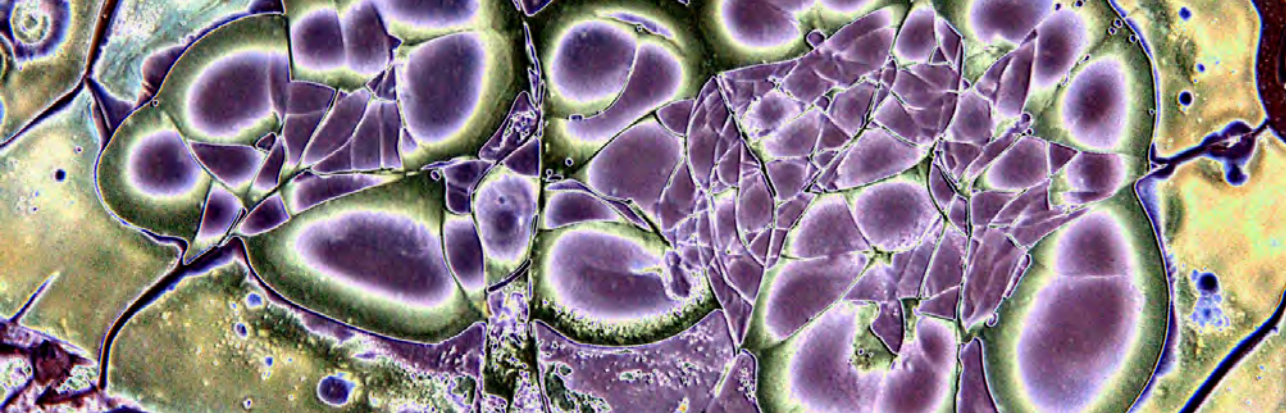
With the increasing costs of purchasing and sustaining advanced microscopy facilities came the realisation that the microscopy community should act in a coordinated way in guiding capital investment and in enabling equipment sharing. The EPSRC's review of Mid-Range facilities in 2009 brought these issues to a focus for physical science-oriented electron microscopists, and discussions at the EMAG09 meeting led to a "Town Hall" community meeting that year. The outcomes of that meeting were a vision of a "distributed facility" where specific capabilities were located at different institutions and made available to users, but also that a working group should be established to develop the ideas further.

The working group, under the aegis of the EPSRC's National Facility for Aberration-Corrected STEM (SuperSTEM), then undertook to move things forward. Funding was provided by the EPSRC and both EMAG and the RMS nominated members alongside representatives from SuperSTEM. An early activity of the working group was to survey EM laboratory leaders and EM users, and these surveys were coordinated by the RMS. It soon became clear that the

issues faced, and their potential solutions, were closely aligned with those emerging from the separate BiolmagingUK initiative, and representatives from the EM part of BiolmagingUK attended some of the working group meetings.

The RMS then organised a further "Town Hall" meeting held in April 2014, which was attended by over 50 people, with a good mix of physical and life scientists. The meeting was addressed by Dan Emmerson of the EPSRC to provide its perspective, and by Jason Swedlow who summarised the activities of the BiolmagingUK initiative. Members of the working group then presented their specific conclusions and proposals.

A significant outcome of the "Town Hall" meetings is the desire to seek ways to continue the close cooperation of the life and physical science microscopy communities to help inform funding strategy and to maximise the impact of capital investment. The RMS mmc conference series provides an excellent platform for such discussions, and an interdisciplinary life and physical science meeting is planned as a satellite to the mmc14 conference. This meeting will include both strategy and technical discussions, and the potential for the communities to work together creates exciting possibilities for microscopy in the UK.



*Micrograph competition entry – Gelatine photoemulsion deteriorated by sun rays*

## Summing up

Looking back over the past 25 years, it is clear that the RMS is actively engaged in all aspects of microscopy. It has embraced new technology and techniques as they appeared, such as confocal, scanning probe and other microscopies, and plays an important role in providing specialist training as the growing needs emerge.

Its meetings and courses continue to attract good numbers: during the period under review almost 30,000 have attended more than 370 separate events. MICRO, MICROSCIENCE and now mmc conferences are firmly established as major microscopy events, and plans are now in place to join forces with EMAG to run joint meetings as the UK's main microscopy conferences.

The outreach work, particularly in primary schools, continues to grow and thousands of children are now being introduced to the

fascinating world of microscopy. The Society is also actively promoting microscopy through its public displays of micrographs and public lectures. Its charitable activities thus include bringing awareness of science in general, and microscopy in particular, to the general public. This includes overseas visits to developing countries.

Recognising the need for future funding of ever-more expensive instrumentation, the RMS is proactive in coordinating approaches to funding agencies, including Government, at the highest level, and this will help to ensure that the UK continues to maintain its position at the forefront of microscopy.

James Scott Bowerbank's exclamation has certainly been fulfilled in a way he could never have hoped or imagined – after 175 eventful years the Royal Microscopical Society continues to flourish!





# Appendix I

## Presidents of the Royal Microscopical Society

Sir Richard Owen, KCB, DCL, MD, LLD, FRS	1840-1	Albert D. Michael, FLS	1893-5
John Lindley, PhD, FRS	1842-3	Edward Milles Nelson	1897-9
Thomas Bell, FRS	1844-5	William Carruthers, FLS, FGS, FRS	1900-1
James Scott Bowerbank, LLD, FRS	1846-7	Henry Woodward, LLD, FGS, FZS, FRS	1902-3
George Busk, FRS	1848-9	Dukinfield Henry Scott, MA, PhD, LLD, FLS, FRS	1904-6
Arthur Farre, MD, FRS	1850-1	The Rt Hon. Lord Avebury, PC, DCL, LLD, FRS	1907-8
George Jackson, MRCS	1852-3	Sir Edwin Ray Lankester, KCB, MA, LLD, FLS, FRS	1909
William Benjamin Carpenter, CB, MD, LLD, FRS	1854-5	Sir J. Arthur Thomson, MA, FRSE	1910-11
George Shadbolt	1856-7	Henry George Plimmer, FLS, FZS, FRS	1911-12
Edwin Lankester, MD, LLD, FRS	1858-9	Sir German Sims Woodhead, MA, MD, LLD, FRSE	1913-15
John Thomas Quekett, FRS	1860	Edward Heron-Allen, FLS, FGS, FRS	1916-17
Robert James Farrants, FRCS	1861-2	Joseph E. Barnard, FInstP, FRS	1918-19
Charles Brooke, MA, FRS	1863-4	John H. Eyre, MD, MS, FRSE	1920-1
James Glaisher, FRS	1865-8	Frederic J. Cheshire, CBE, FInstP	1922-3
Rev. Joseph Bancroft Reade, MA, FRS	1869-70	A. Chaston Chapman, FIC, FCS, FRS	1924-5
William Kitchen Parker, FRS	1871-2	James A. Murray, MD, BSc, FRS	1926-7
Charles Brooke, MA, FRS	1873-4	Joseph E. Barnard, FInstP, FRS	1928-9
Henry Clifton Sorby, LLD, FRS	1875-7	R. Ruggles Gates, MA, PhD, LLD, FLS, FRS	1930-1
Henry James Slack, FGS	1878	Conrad Beck, CBE	1932-3
Lionel S. Beale, MB, FRCP, FRS	1879-80	W.A.F. Balfour-Brown, MA, FZS, FRES, FRSE	1934-5
Peter Martin Duncan, MB, FRS	1881-3		
Rev. William Henry Dallinger, MA, LLD, FRS	1884-7		
Charles Thomas Hudson, MA, LLD, FRS	1888-90		
Robert Braithwaite, MD, MRCS	1891-2		

Reginald S. Clay, BA, DSc, FlinstP	1936-7	M.J. Goringe	1990-2
Joseph E. Barnard, FlinstP, FRS	1938-45	H.Y. Elder	1992-4
James A. Murray, MD, BSc, FRS	1946	P.J. Goodhew	1994-6
R. J. Ludford, PhD, DSc	1947-9	C.Vyvyan Howard	1996-8
G. M. Findlay, CBE, MD, DSc, FRCP	1950-1	Gordon Lorimer	1998-2000
H. G. Smith, CB, OBE, MC, TD, DL	1952-3	Patrick Echlin	2000-2
T. E. Wallis, DSc, FRIC, FPS, ACP	1954-5	John L. Hutchison	2002-4
J. Smiles, OBE, ARCS	1956-7	Chris Hawes	2004-6
John Bunyan, LDS, RCS	1958-60	W. Mark Rainforth	2006-9
V.E. Cosslett, MA, PhD, ScD, FlinstP, FRS	1961-3	Paul Monaghan	2009-10
John R. Baker, MA, DPhil, DSc, FRS	1964-5	Tony Wilson	2010-13
HRH Prince Philip, Duke of Edinburgh	1966	Pete Nellist	2013-
B. Barer, MC, MA, DPhil	1967-9		
Audrey M. Glauert, MA, MSc, ScD	1970-1		
A.G.E. Pearse, MD, FRCP, FRCPPath, DCP	1972-3		
G. L'E. Turner, MA, MSc, DSc, FlinstP, FRHistS, FSA	1974-5		
Duncan G. Murchison, BSc, PhD, FGS, FRSE	1976-7		
Brian Ralph, MA, PhD, ScD	1978-9		
John R. Garrett, Bsc, MB, BS, PhD, MD, FRCPPath, LDS, RCS	1980-1		
A.W. Robards, PhD, DSc, FIBiol	1982-3		
Archie Howie, MA, PhD, FRS	1984-5		
J.S. Ploem, MD	1986-7		
Gillian R. Bullock, MSc, PhD	1988-90		



## Appendix II

### Honorary Fellows of the Royal Microscopical Society

1840 Christian Gottfried, Berlin	1879 F.E. Schultze, Graz
1840 Jan E. Purkinje, Vienna	1879 G.O. Sars, Christiana
1846 Filippo Pacini, Pistoia	1879 G.R. Waterhouse, London
1851 Asa Gray, Massachusetts	1879 H. Frey, Zurich
1867 John Williams, London	1879 Hamilton L. Smith, New York
1869 George Busk, London	1879 J. Leidy, Philadelphia
1870 James Hankey, New York	1879 J.J.S. Steenstrup, Copenhagen
1870 M. Mouchet, Rochefort-sur-Mer	1879 K.A. Zittel, Munich
1871 Richard L. Maddox, London	1879 L. Cienkowski, Kharkov
1872 George C. Wallich, London	1879 L. Ranvier, Paris
1875 J.J. Woodward, Washington, D.C.	1879 Louis Pasteur, Paris
1876 Conte Ab. F. Castracane, Italy	1879 M.J. Schleiden, Wiesbaden
1876 Frederick Kitton, Norwich	1879 Maxime Cornu, Paris
1877 A. Renard, Louvain	1879 O. Butschli, Heidelberg
1878 Ernst Abbe, Jena	1879 P. Harting, Utrecht
1879 A. Agassiz, Massachusetts	1879 P. van Tieghem, Paris
1879 A. de Bary, Strasburg	1879 P.J. van Beneden, Louvain
1879 A. Dodel-Port, Zurich	1879 P.T. Cleve, Uppsala
1879 A. Grunow, Vienna	1879 Rev. M.J. Berkeley, Harborough
1879 A. von Kolliker, Wurzburg	1879 S. Schwendener, Berlin
1879 A. Weismann, Freiburg im Breisgau	1879 T. Schwann, Liege
1879 C. Nageli, Munich	1879 T.W. Engelmann, Utrecht
1879 C.A.J.A. Oudemans, Amsterdam	1879 W. Archer, Dublin
1879 E. Metschnikoff, Odessa	1879 W. Nylander, Paris
1879 E. Strasburger, Jena	1882 L. Dippel, Darmstadt
1879 E. Warming, Copenhagen	1883 Henri van Heurck, Antwerp
1879 E.G. Balbiani, Paris	1884 W.K. Parker, London
1879 F. Cohen, Breslau	1885 H. de Lacaze-Duthiers, Paris
1879 F. de Thumen, Austria	1885 J. H.L. Floegel, Holstein
1879 F. Ritter von Stein, Prague	1886 W.A. Rogers, Massachusetts

- 1887 P.H. Gosse, Torquay  
 1888 G. Govi, Naples  
 1888 G.J. Allman, Parkstone  
 1888 R. Virchow, Berlin  
 1888 S. Loven, Stockholm  
 1889 J. Ralfs, Penzance  
 1890 F. Leydig, Wurzburg  
 1890 W.C. Williamson, Manchester  
 1891 E. Bornet, Paris  
 1891 H. Fol, Nice  
 1891 Sir Joseph Lister, London  
 1891 T.H. Huxley, London  
 1893 O. Hertwig, Berlin  
 1894 E. van Beneden, Liege  
 1895 C. Golgi, Padua  
 1895 Hermann Grafzu, Strasburg  
 1896 G. Retzius, Stockholm  
 1897 A.B. Lee, Switzerland  
 1897 G.B. deToni, Padua  
 1901 C.T. Hudson, Shanklin, I.o.W.  
 1902 Rt Hon. Lord Rayleigh, London  
 1904 G. Bonnier, Paris  
 1904 J.J.H. Teal, London  
 1904 M. Treub, Java  
 1904 S. Ramon y Cajal, Madrid  
 1904 Silvanus P. Thompson, London  
 1904 Y. Delage, Paris  
 1905 E.B. Wilson, New York, N.Y.  
 1905 H.S. Jennings, Baltimore  
 1905 R.W. Wood, Baltimore  
 1905 W.G. Farlow, Massachusetts  
 1908 J.W. Judd, Kew  
 1912 Eugene Penard, Geneva  
 1918 Lady Mary Elizabeth Bruce, London  
 1919 Albert D. Michael, Swanage  
 1923 Alfred B. Rendle, London  
 1925 Marshall D. Ewell, Memphis  
 1929 Frederick Chapman, Australia  
 1929 Hans de Winiwarter, Liege  
 1929 Ludwig Rhumbler, Munden  
 1930 Sir John Bretland Farmer, London  
 1931 K. Krujii, Tokyo  
 1931 Otto Rosenberg, Stockholm  
 1931 V. Gregoire, Louvain  
 1933 Sir Herbert Jackson, London  
 1933 Sir Robert Hadfield, London  
 1934 E. Kuster, Giessen  
 1938 J.A. Cushman, Massachusetts  
 1946 C.F. Hill, Warrington  
 1947 J.E. Barnard, Oxhey, Hertfordshire  
 1948 J.A. Murray, London  
 1950 Adrianus Pijper, South Africa  
 1950 Cecil R. Burch, Bristol  
 1950 E.V. Cowdry, Missouri  
 1950 Edmund Vincent, Philadelphia  
 1950 Frits Zernike, Groningen  
 1950 R. Chambers, New York, N.Y.  
 1950 Ralph W.G. Wyckoff, Arizona  
 1950 Reginald S. Clay, London  
 1950 Warren H. Lewis, Philadelphia  
 1951 Arthur Earland, Dundee  
 1951 Ernst Leitz, Wetzlar  
 1951 H.G. Cannon, Manchester  
 1951 R. Ruggles Gates, Massachusetts  
 1951 T.E. Wallis, London  
 1951 William A.F. Balfour-Browne, Dumfries

- 1952 Lord Adrian, OM, Cambridge  
 1952 Sir Henry H. Dale, OM, London  
 1953 J. Bronte Gatenby, Dublin  
 1954 F.M. Duncan, London  
 1955 C. Tierney, Coulsdon  
 1956 G.U. Gey, Baltimore, Maryland  
 1956 Professor Pomerat, Texas  
 1957 E.W. Taylor, York  
 1958 D.W. Fawcett, Massachusetts  
 1958 E.H. Land, Massachusetts  
 1958 E.K. Maxwell, Shinfield  
 1958 Maria Rooseboom, Leiden  
 1958 R.J. Ludford, London  
 1959 B.K. Johnson, London  
 1959 Dorothy Russell, London  
 1959 J. Smiles, London  
 1959 T. Caspersson, Stockholm  
 1960 A. Frey-Weyssling, Zurich  
 1960 Irene Crespin, Australia  
 1960 Sir Wilfred Fish, London  
 1961 Irene Manton, Leeds  
 1961 M.E. Haine, Aldermaston  
 1961 R. Barer, MC, Oxford  
 1962 G. Dupouy, Toulouse  
 1962 Oscar W. Richards, Connecticut  
 1963 A. Castellani, Italy  
 1963 Ernst Ruska, Berlin  
 1963 M.C. Brown, Chicago, Illinois  
 1963 M.G. Lozinsky, Moscow  
 1963 Maurice Francon, Paris  
 1963 Sir Howard Florey, Oxford  
 1964 A.G.E. Pearse, London  
 1964 Lord Fleck, London  
 1965 F.H. Smith, York  
 1965 V.E. Cosslett, Cambridge  
 1966 HRH Prince Philip, The Duke of Edinburgh  
 1967 R.D. Preston, Leeds  
 1967 W. Bernhard, Villejuif  
 1968 F. Gabler, Vienna  
 1968 G. Palade, New York  
 1968 J.R. Baker, Oxford  
 1968 K.R. Porter, Philadelphia  
 1968 S.C. Palay, Massachusetts  
 1969 A.C. van Dorsten, Amsterdam  
 1969 J. Dyson, Teddington  
 1969 Professor Brumberg, Leningrad  
 1970 Alan W. Agar, Harlow  
 1970 R.W. Horne, Norwich  
 1970 S.H.C. Tolansky, Englefield Green  
 1970 Sir Charles Oatley, Cambridge  
 1972 M. Pluta, Warsaw  
 1973 Audrey M. Glauert, Cambridge  
 1973 H. Pillar, Oberkochen  
 1973 O. Eranko, Helsinki  
 1974 G. Nomarski, Orsay, France  
 1974 J. H. Scharf, Halle  
 1974 Sir James Menter, London  
 1975 J. Sikorski, Leeds  
 1976 J.S. Ploem, Leiden  
 1977 Sir Peter Hirsch, Oxford  
 1978 Archie Howie, Cambridge  
 1978 E. Weibel, Bern  
 1978 Z. Lojda, Prague  
 1979 W.G. Hartley, Seaford  
 1981 D.G. Murchison, Newcastle



1981 D.W. Pashley, London	2000 Roger Tsien, San Diego
1981 J.V.P. Long, Cambridge	2000 Stan Holt, London
1982 H. Haselmann, Tübingen	2001 M.J. Whelan, Oxford
1982 M. Karnovsky, Massachusetts	2001 Sumio Iijima, Nagoya, Japan
1982 R. Castaing, Paris	2002 Gerard L'E Turner, Oxford
1983 A. Thäer, Wetzlar	2002 Patrick Echlin, Cambridge
1983 H. Hashimoto, Osaka	2005 Paul Hirst, Oxford
1984 A.V. Crewe, Chicago	2008 Harald Rose, Darmstadt
1984 C.F. Quate, Stanford, California	2010 Brad Amos, Cambridge
1984 K.C.A. Smith, Cambridge	2013 John Hutchison, Oxford
1984 Tom Mulvey, Birmingham	
1985 Sir Aaron Klug, Cambridge	
1987 D. McMullan, Cambridge	
1987 E. Ash, London	
1988 C.P. Leblond, Quebec	
1988 G. Binnig, Munich	
1988 H. Rohrer, Switzerland	
1988 J.N. McArthur, Cambridge	
1988 S. Inoue, Massachusetts	
1989 B. Clive Cowen, Oxford	
1989 Brian Ralph, London	
1989 P.N.T. Unwin, Cambridge	
1989 Sir John M. Thomas, Cambridge	
1990 T.A. Hall, Colchester	
1990 Walter McCrone, Chicago	
1993 Hellmuth Sitte, Saarbrücken	
1993 N.A. Kiselev, Moscow	
1994 M. Petráň, Plzeň, Czech Republic	
1997 Savile Bradbury, Oxford	
1998 Peter J. Evennett, Leeds	
1998 Sir Harold Kroto, Brighton	
1998 Tony Wilson, Oxford	
1999 Osamu Shimomura, Boston	
2000 G.A.D. Briggs, Oxford	



## About the author

John Hutchison's involvement with the RMS started 40 years ago when his micrograph entry won first prize in the 1974 competition. He was awarded a Certificate and the Glauert Medal by the then President Gerard L'E Turner.

John joined the Materials Sciences Section in 1984, and later the Electron Microscopy Science Section. Following a six year stint as Executive Honorary Secretary, he was elected President for the period 2002 – 2004, during which time he had the opportunity to present Gerard L'E Turner with an Honorary Fellowship, almost 30 years after receiving his own competition prize from him!



**Inspiring the next generation.....**