

RMS on show at the Royal Society

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As part of its 2023 summer science exhibition, the Royal Society installed a special display devoted to historical microscopy. The exhibit marked 100 years since one of our Fellows, Henry Taverner, presented his invention, the stereoscopic photomicrographic nosepiece, at a summer soiree. He also showed stereoscopic images of a water mite. He had earlier read a paper describing this apparatus to the RMS in 1906, publishing it in the *Journal of Microscopy* (JRMS 1906 p260).



Figure 1. A photomicrograph of a water mite, captured by John Hutchison. The bug was mounted on a slide in 1907 by London firm Clarke and Page.

Taverner presented two of his devices to the RMS, where they safely remain in our Collection, currently held in Oxford University's Science History Museum. We were approached by the Royal Society earlier this year with a view to our lending some of Taverner's items for their historical microscopy display. This, however, was not feasible, but our own replica microscopes in the McCormick Collection would have been ideal for this purpose. Unfortunately the dates for the Royal Society's summer science exhibition in London clashed exactly with our own mmc2023 in Manchester,

where all eight instruments in our Science Heritage Collection (see my article from *infocus* issue 57, March 2020) were on display for the first time, arousing great interest. We also had a number of antique slides which people could examine with these microscopes and also state-of-the art instruments kindly provided for the Learning Zone by various manufacturers.

Our recently acquired antique slide collection contains a large number of "bug" slides ('Bugs up Close', *infocus* issue 69, March 2023), one of which actually contains a water mite, prepared by the London firm Clarke and Page in 1907.

We were able to record a micrograph of this bug (Figure 1) using an old microscope, and provide it to the Royal Society for its summer display, along with several other images obtained from old slides, and also one submitted to the 2023 RMS International Scientific Imaging Competition. These formed the basis of the "Under a microscope" feature in the exhibition, as shown in Figures 2, 3 and 4.

We are pleased to report that more than 10,000 members of the public visited the exhibition over the summer, and enjoyed seeing micrographs from slides prepared over 120 years ago. A highlight forming the backdrop of the display (page opposite) is an image of a sheep tick, prepared by John Barnett in around 1870 – you may also recall this image in my earlier *infocus* report (Bugs up Close).

UNDER A MICROSCOPE



Figure 2. The 'Under a Microscope' display cabinet, containing objects and images provided for the Royal Society's summer science exhibition in London.



Figure 3. Another view of the 'Under a Microscope' display at the Royal Society's summer science exhibition.

LOOKING CLOSER

The year 1923 was at a mid-point in the history of microscopy: fifty years after Ernst Abbe discovered the resolution limit of optical microscopes, forty years after the first photomicrographs combined camera and microscope and a decade before the electron microscope was invented. The Royal Society *conversazioni* promoted some of the latest inventions by optical instrument-makers which were key to supporting scientific advances in the period.

Conrad Beck of the successful microscope-makers R & J Beck, presented a new illuminator for opaque objects. Beck improved on previous designs used to magnify specimens that require indirect light. The same issue exercised the National Institute for Medical Research which demonstrated the latest techniques to render 'dark-ground illumination', experimenting with a microscopic interferometer.

Image (clockwise from top left)

William Lawrence Balls and H A Hancock, Photomicrographs of cell-wall structure of cotton hairs, 1922. *Proceedings B*, vol. 93.

Photomicrograph of mahogany wood, from 1910 slide, unknown maker. Image courtesy of John L Hutchison. © The Royal Microscopical Society.

Photomicrograph of succinic acid, Andrei Sawitski, 2021. © The Royal Microscopical Society.

Photomicrograph of water mite, from 1907 slide by Clarke and Page. Image courtesy of John L Hutchison. © The Royal Microscopical Society.

Many exhibitors relied explicitly on microscopy for their work.

The instrument-maker and passionate microscopist Arnulph Henry Reginald Mallock FRS (1851 – 1933) presented his inventive way of mounting specimens using styrax, a highly refractive medium. Others showed photomicrographs of crystals, cotton balls, wood, and water mites.

The molecular models presented by Sir William Bragg FRS (1862 – 1942), also remind us that his son, the crystallographer Lawrence Bragg FRS (1890 – 1971), would produce the first usable X-ray microscope images by the 1940s.

Figure 4. The display featured this eye-catching poster, containing information about the advances in microscopy which had been made by 1923 – the year in which RMS Fellow Henry Taverner presented his invention, the stereoscopic photomicrographic nosepiece, to the Royal Society at a summer soiree. It also featured photomicrographs of (clockwise from top left) the cell-wall structure of cotton hairs (William Lawrence Balls and H A Hancock, 1922); mahogany wood from a 1910 slide (John Hutchison); and succinic acid, submitted to the RMS Scientific Imaging Competition by Andrei Sawitski (2021).

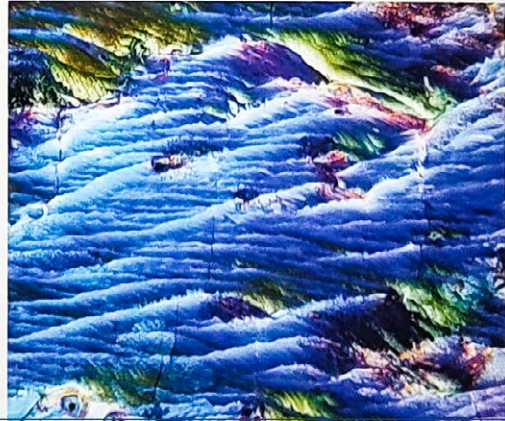
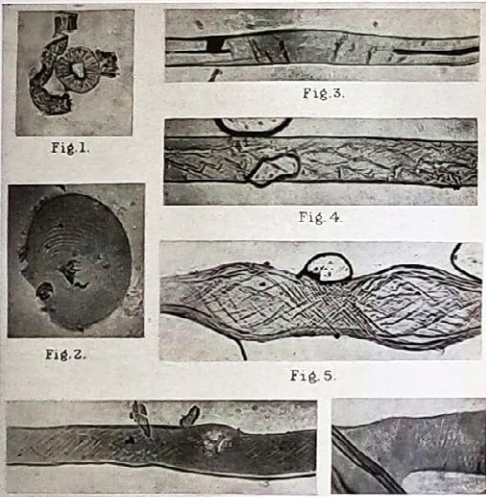




Figure 5. The RMS display at September's Royal Society event to celebrate the work of Dutch microscopist Antoni Van Leeuwenhoek, 300 years after his death. The display featured replica antique microscopes from the McCormick Collection and an original copy of Robert Hooke's 'Micrographia'.

This display remained in place until a second event was organised by the Royal Society in September, this time to mark the 300th anniversary of the death of Antoni Van Leeuwenhoek, a Dutch microscopist whose simple, hand-held microscopes using glass beads as objective lenses produced astounding images (See Brian Ford's article 'Seeing what Leeuwenhoek saw', *infocus* issue 68, December 2022). In support of this meeting we were, this time, able to provide four microscopes from our Science Heritage Collection to form an impressive display, along with an early 19th Century pocket microscope recently donated by one of our Fellows,

Mr Dunman. The collection also included an original copy of Robert Hooke's famous "Micrographia", from the royal Society's own Library.

The organisers asked us if someone would attend and give a lecture on the development of the RMS from its early days in the mid-19th century. It was my privilege to present a talk with the title: "The Royal Microscopical Society – Where it came from and where it's going". It was good to point out that we are the world's oldest microscopy society, and also a truly international one, with over 300 of our 1,350-strong membership from overseas.

Associated with the Royal Society's 'Leeuwenhoek' conference was an evening event open to the public – a discussion and Q&A session titled 'From Leeuwenhoek to the electron microscope'. It was chaired by Dirk van Miert, director of the Huygens Institute for the History and Culture of the Netherlands, and featured absorbing talks from Katharine Cashman and Matthew Cobb, who each explored the development of microscopy and its applications in their respective areas of research.

The presentations were followed by a live Q&A, during which audience members – both in person and online - joined the conversation. I was delighted to be joined by our new RMS Chief Executive, Sali Davis, at both this event and the reception which followed (Figure 6).

Guests at the reception heard from Professor Sir Richard Catlow FRS, a former Foreign Secretary and Vice-President of the Royal Society and Laura van Voorst Vader, Education & Science Attaché, Dutch Embassy. Dr Sietske Fransen, Max Planck Research Group Leader from the Max Planck Institute for Art History, also spoke about the excellent relationship enjoyed by the UK and Dutch Microscopy sector. Dr Fransen spoke of how essential it was to ensure that

we preserve the rich heritage that has been created for future generations, and how events such as the celebration of van Leeuwenhoek's work, helped to preserve that history.

We would very much like to thank our colleagues at the Royal Society for inviting us to be part of these events, and hope to strengthen our links further with future collaborations.



Figure 6. John Hutchison with RMS Chief Executive Sali Davis at the Royal Society's Leeuwenhoek event.

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