

SEM Diaries - 26

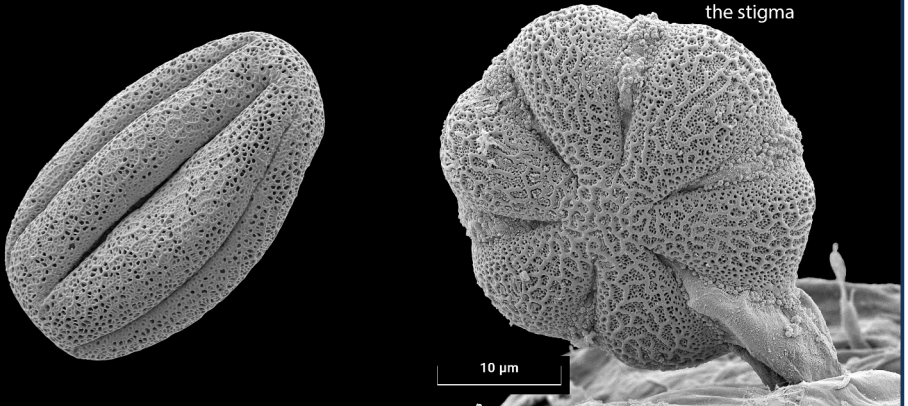
More on Pollen, and that Book

Jeremy Poole

Self Heal
(*Prunella vulgaris*)



Note the pollen
tube penetrating
the stigma



Composite image showing two phases of pollen (dehydrated on the left and hydrated on the right), and a photo of the originating plant species.

In SEM Diaries - 25 I mentioned that I had been collaborating with another PMS member to produce SEM images of pollen. I also mentioned that collaborating with other people was much more productive than working alone. Well, one outcome of this collaboration is that I have now made over 150 stubs of pollen this year. Put another way, I sort of got carried away by having a new subject to image, and went about collecting pollen

from as many wild flowers (and less wild ones too) from local fields, nature reserves (shhhh) and my own garden.

At the start of the collaboration I had no idea that there were two states of pollen, so when I looked at the first results after preparing pollens using my centrifuge, I assumed the results were “wrong”. I sent the images to my collaborator, more in despair than any hope, before receiving the reply that they were just what she



One half of the tabletop display. There are a further six photos on the reverse.

was expecting. What I had not realised is that there are two states of pollen. The dehydrated state, as it waits on the anthers to be dispersed by insects or the wind, and a hydrated version, which it converts to once it has been transferred onto a stigma.

One result of my new-found enthusiasm was that I decided to collate my results in a way that would make a good display for a “gossip” meeting, and also an attractive gallery on my website. (Who knows I might even produce another photobook, devoted to pollen!) My idea was to take images of dehydrated and hydrated pollen of a particular flower and merge them into one image, together with a photo of the species of flower from which the pollen derived. The frontispiece to this article shows a typical result. In this case, I was lucky to find a pollen grain that had already started the process of fertilising the receiving flower.

As well as creating a web page I had photographic prints made, and even went so far as to mount each print in a window mount and assemble these onto a tabletop display. I had intended to show these

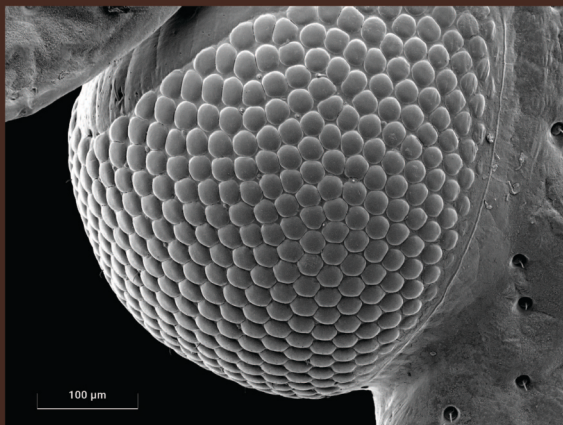
at a planned microscopists’ meeting at the end of July. Sadly, this was cancelled, but I shall now display these photos at the PMS meeting in October.

I shall not deny that this ended up being a great deal of work. Not only did I need to explore areas of Photoshop with which I was not very familiar, but I also had to remind myself how to use my mount cutter. I got there in the end, although my collaborator is now questioning whether the pollen I identify as coming from *Ranunculus sp.* is anything of the sort!

The photobook has also been a great deal of work. In fact, only this morning, as I write this in mid-August, a friend commented (in a WhatsApp message) that I have been working on it for “so loooooooooooooooooong”. One of my problems is that I cannot help tinkering - either with the text or to improve the quality of the images. In fact it has been so long since I decided to do this that I had forgotten when I actually started work on this project. Consulting my emails, I now discover that it was on the 28th February 2021 that I ordered paper samples from Blurb, the printers I had selected, and I

Big Pictures of Small Things

A Personal Selection of Scanning Electron Micrographs



Prepared, imaged and post-processed by

Jeremy Poole

The front cover of the book.

think the book is now complete and ready to go, so it has been just over six months (at the time of writing) from conception to an acceptable finished article. I have had four different proofs printed, in two different formats, and my last quality control action was to show it to one or two interested members at the Leeds Microscopical Society meeting on the 7th August. The feedback was very positive. I received one suggestion for a change to the text, which I incorporated the following day. I then read through the entire text and made a few minor changes in other areas. As I said, I cannot help tinkering!

The design I made for the cover is shown above. Inside, the book is laid out to have a single whole page image on each left hand page while the right hand page can have up to four quarter page pictures on it. Normally there are three images, a

small amount of text, and captions. There are three, more textual, chapters at the end describing how an SEM works, how I go about processing my images and a specification for my SEM.

Overall there are almost exactly 100 micrographs, displayed over 63 numbered pages.

I had never really intended to sell the book; rather, I had anticipated using it as Christmas presents for family members (who would probably prefer a couple of bottles of wine) and also sending it to the manufacturers of my SEM. However, several people at the Leeds meeting asked me how much it would cost and how can they obtain a copy. If I take a punt and order, say 30 copies (including the ones for "friends and family") then I could sell them for about £44 per copy plus postage. This is not exactly cheap (but wonderful

Green Shield Bug - Ostioles of a fifth instar and an adult

As previously stated, at the time of transition from fifth instar to adult the locations of the ostioles (scent gland openings) move from the dorsal to the ventral side, to be replaced by the wings. In the adults there are two ostioles, one each side, located between legs 2 and 3. There is a region surrounding each ostiole, known as the "evaporative area", which is designed to retain the scent on the ventral surface of the bug.

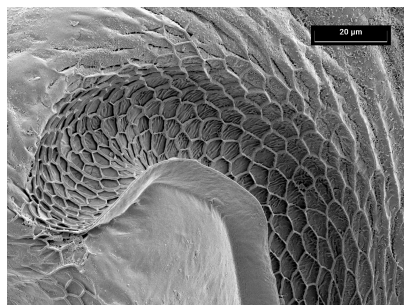
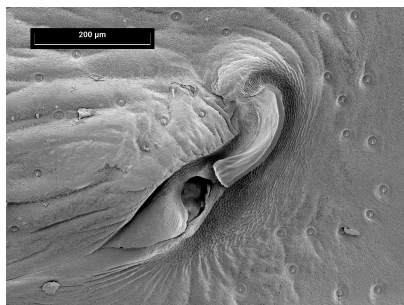
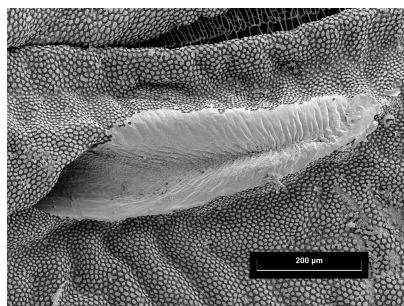
Facing Page: A detailed view of the evaporative area of an adult shield bug. This image is a "stack" of four individual exposures to achieve the desired depth of field.

Top Right: Ventral view of part of the abdomen of the adult shield bug, showing the leaf-shaped ostiole, surrounded by a small part of the evaporative area.

Bottom Left: This shows the middle right ostiole on the back of a fifth instar.

Bottom Right: Enlarged view of a part of the evaporative area on the back of the instar.

Both the images below are focus stacks of multiple exposures.



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Layout of a typical right hand page, showing the mix of text, captions and pictures

value, of course). Feel free to get in touch if you are seriously interested in buying a copy.

So what else has been happening in the world of my SEM over the last three months? Well not a lot, really. I have made pollen mounts for my website and display, and imaged a replacement wasp head for the book, but that is about it. In fact, keeping the SEM in standby mode

causes the pressure in the chamber to gradually rise, so I do switch it to normal operating mode occasionally, simply to pump down the chamber again.

In fact, once I have uploaded this edition of Diaries I shall set about mounting some spider material that I desiccated yesterday, so hopefully normal use is about to resume.