A New Phytopia

Rob Kesseler

> **For art to continue this traditional task of making nature aesthetically accessible to a wider public, at least three things are necessary: first, nature requires mediation to an audience because that audience cannot appreciate it unaided; secondly, the art which mediates nature must not be relentlessly formal and abstract in its intentions; thirdly, nature must be available to the artist as a subject to study.**[1]

Fig. 1. Hippocrepis unisiliquosa. Horse-shoe vetch fruit [SEM] - diameter 18mm.

Fig. 2. Larix deciduas. Larch (left) male and female cones (right) pollen grain, completely deydrated and folded in [SEM x 1500].

At a recent conference held jointly at the Linaean Society and Institute of Mechanical Engineers on *Colour in Science, Nature and Art,*[2] the audience was treated to a spectacular array of colourful forms and images. Feather patterning in hens, fluorescing squid, iridescent butterfly wings, pollen, wood sections and leaf structures, the seemingly limitless variety matched only by the number of scientists willing to devote the whole of their lives in the quest to better understand and marvel at their chosen subject. However what became apparent during the proceedings was the epistemological difficulty in finding a suitable language in dealing with such spectacular diversity. This became increasingly apparent at a microscopic level, where the images became more abstract and difficult to place within personal experience other than in terms of looking like art.

As Simon Park succinctly put it in a recent article; *"It is a delightful paradox that the normally invisible has an enduring influence on what can be our most profound visual experiences".*[3]

It is a feature of the human and scientific mind that it seeks to find reasons and explanations for everything it is confronted with, put simply in the words of the Scottish moral philosopher George Turnbull, *"What is it? What is it for?".*[4] However when faced with trying to convey the aesthetic appeal of an image, the usual fallback position often becomes one of comparison. So a stained vascular wood section is likened to a Paul Klee painting, polarized mineral sections become reminiscent of the work of Kandinsky. In her influential research into the problematics of visualizing science throughout history and the effects of an oral visual culture in favour of a text centred one, the art historian Barbara Maria Stafford identifies the difficulties when she states that, "*Magnification drives to the centre of a major aesthetic problem faced by all natural history description. What do you do with things that are neither one thing or the other".*[5]

It is tempting to assume that things were a little simpler pre Darwin and natural selection when most were happy to give Divine hand the credit, but well before this in the late eighteenth century, Henry Baker, like many microscopists of his time, was transforming what he saw as an *"ornamental miscellany into a kind of art botany".*[6] Examining magnified amber salt crystals, Baker described the

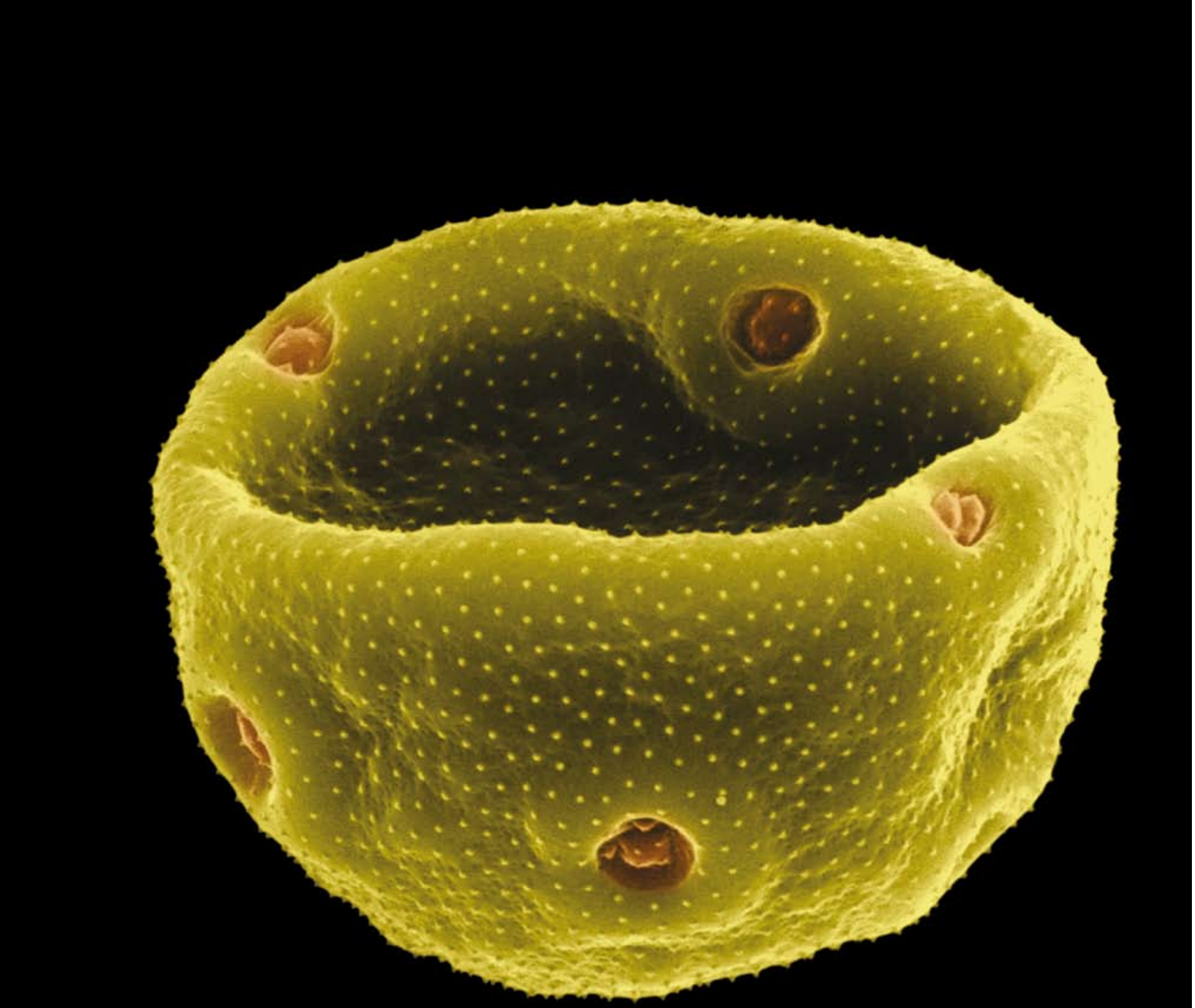

Fig. 3. Plantago lanceolata. Ribwort Plantain (Plantaginaceae) - multiporate pollen grain which is completely dehydrated and folded inwards like a deflated ball [SEM x 3000].

images as a *"Gilpinesque topography in which 'pretty Shootings', sprigs of fir or yew, and downy feathers of a bird divided and subdivided until they painted a 'Winter Scene of Trees without Leaves'".*[7]

It was apparent that as the microscope increasingly exposed a new landscape of fantastic forms, language was subverted in an attempt to adequately describe everything it revealed. Fanciful descriptions compete with arid lists, so that Carl Linnaeus could describe the corolla of petals as *"curtains of the nuptual bed"* at the same time as developing his Latinized classification system. His binomial nomenclature, whilst becoming the bedrock of botanical classification left little room for a wider vocabulary and clearly did not find unanimous approval. Raoul Francé, a true lover of plants, described his views of Linnaeus's efforts thus: *"Wherever he went the laughing brook died, the glory of the flowers withered, the grace and joy of the meadows was transformed into withered corpses whose crushed and discoloured bodies were described in a thousand minute Latin terms. The blooming fields and the storied woods disappeared during a botanical hour into a dusty herbarium, into a dreary catalogue of Greek and Latin labels".*[8]

One of the early exceptions to this problem was Johann Wolfgang von Goethe, a man blessed with the ability to coherently span more than one discipline. His belief in the poetic power of experiencing and describing nature first hand enabled him to anticipate Darwin's theory of organic development in his definitive work in *The metamorphosis of plants,* and in so doing developed a language to describe it with the invention of words such as morphology. In devolving the universal magnificence of plant structure down to general principles he stressed nature's method of: *"producing in accord with definite laws, a living structure that is a model of everything artistic".* [9]

The proselytizing Victorian writer and artist John Ruskin would have been in sympathy with Goethe's

views and the role the artist plays in revealing nature. In one of his Lectures on Art delivered at Oxford University, he stated his beliefs: *"for the great scientific men are all so eager in advance that they have no time to popularize their discoveries, and if we can glean after them a little, and make pictures of things which science describes, we shall find the service a worthy one".* [10]

Given this early precedent, perhaps it is not surprising that in the twentieth century, as artists began to break up the visible world into gestural abstractions, reflecting the work in contemporary microscience, that their work became a visual metaphor for explaining the spectacle of images produced. But this is tricky territory, for it is but a small step from inferring that an image looks like an artist's creation to one where they become classified as art. If it has all the visual characteristics of art then it must be art. Artists would claim that it is a matter of intention and the visual seductivity of a scientific image is no measure of any artistic status. In the same way, the implementation of scientific processes used by an artist in the creation of an artwork does not make the result science, albeit it may have useful or even important contributions to make within the scientific arena.

This is a rambling introduction to my own experience as an artist, working with botanical scientists at Kew over the past eight years and reflections on the developing nature of my practice during this time. In a previous issue of *infocus Magazine,*[11] I explored the historical background to the role that developments in photography and microscopy played in revealing the hidden world of plants. I did this through reference to the images I had produced for two collaborative books *Pollen, the hidden sexuality of flowers*[12] and *Seeds, time capsules of life.*[13] Having just completed the third book in

Fig. 4. Malva syvestris. Common Mallow [SEM x 4800 - acetolysed].

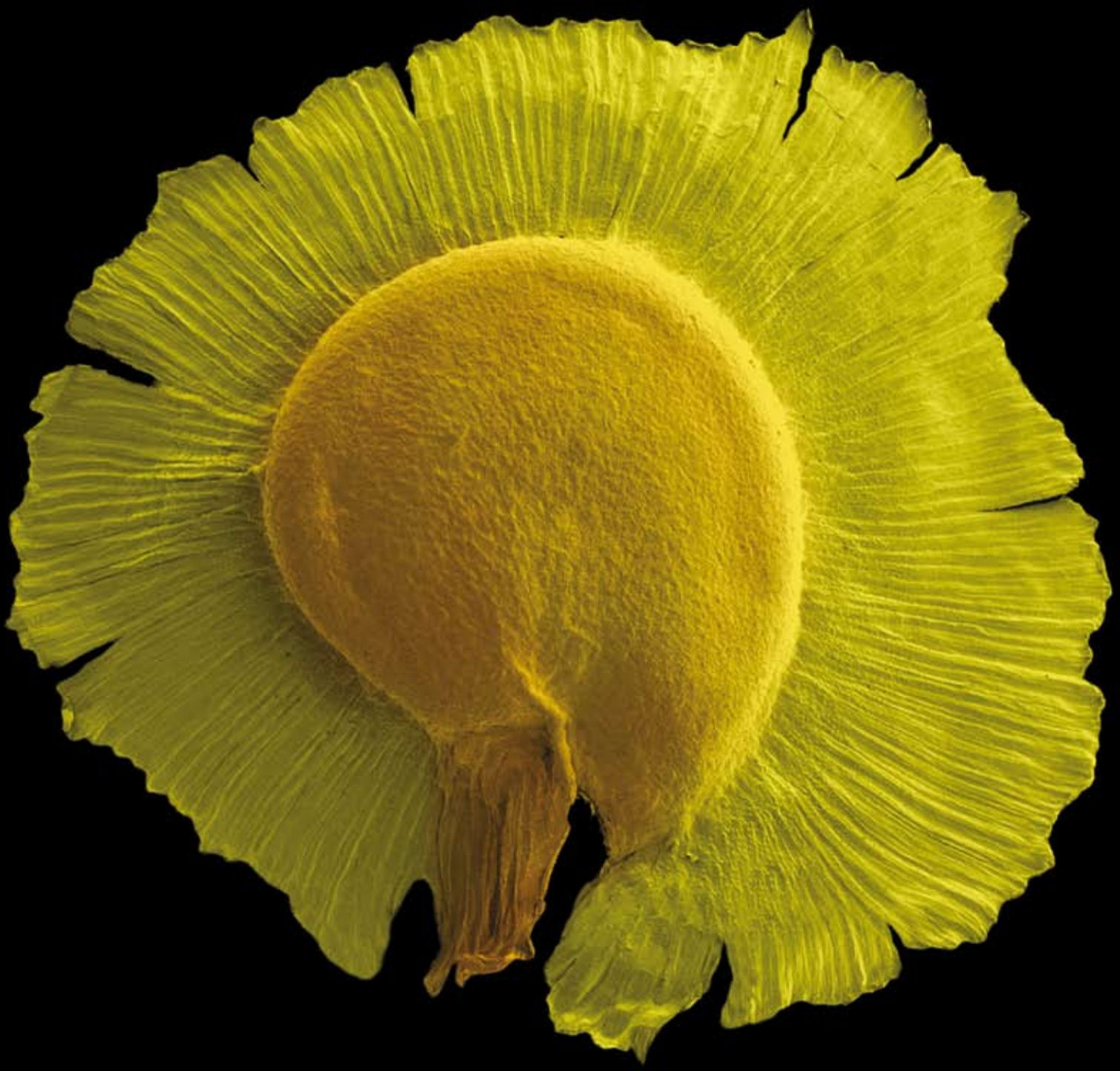

Fig. 5. Spergularia.Greater sea spurrey [SEM] - 1.5mm long.

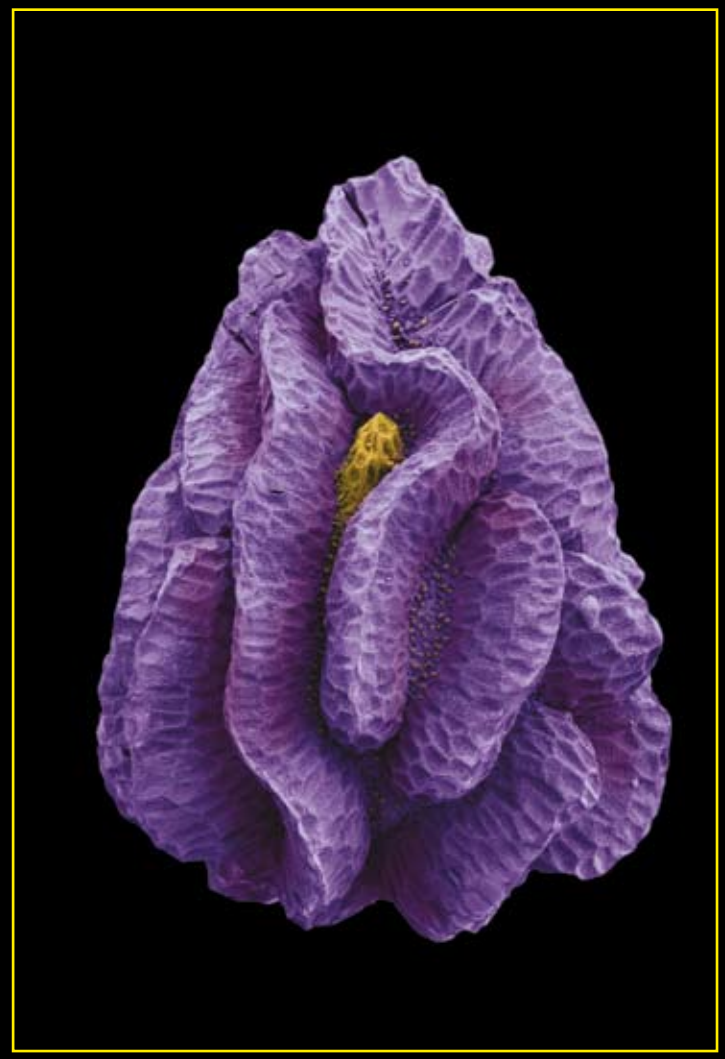

Fig. 6. Cymbalaria muralis. Ivy-leaved toadflax [SEM].

Fig. 7. Codonocarpus cotonifolius. Desert poplar [SEM] - 2.7mm long.

the series, *Fruit, edible, inedible and incredible*, it is useful to consider how my attitude and methods of creating the images has evolved during this time. Before any creative or scientific considerations, there are very practical influences on how the images evolve. Pollen grains are minute, requiring high magnification to reveal their structures, with one full frame at low magnification on the SEM capable of showing hundreds of specimens. Seeds, being larger tend to fill or spill out of the frame and fruit being larger still can result in having to take, at times, over forty shots to capture the entire specimen, in a way subverting what the SEM was developed for.

At the start of my collaboration with palynologist Madeline Harley, perhaps out of deference to the exactitudes of the scientific community in which I was working, I was mindful not to take too many liberties with how I used the images. My colouring of the samples was simple and reflected what I felt to be the gentle complexity of the material itself. Samples were selected for their character not always in a fully hydrated form. Sometimes collapsed forms revealed sculptural qualities of lesser importance to the scientist but which resonated with my own observations of the plant from which the original specimen was taken. This is a highly important part of my practice. As well as for collecting purposes, I spend many hours in the field, looking at, photographing, drawing, smelling flowers for the sheer enjoyment of the experience and as a way of getting close to nature. The translation of this experience into the manipulation of the images becomes osmotic, intuitive and expressive more than analytic.

Fig. 8. Calotis breviradiata. Short-rayed burr daisy [SEM] - 2.8mm long.

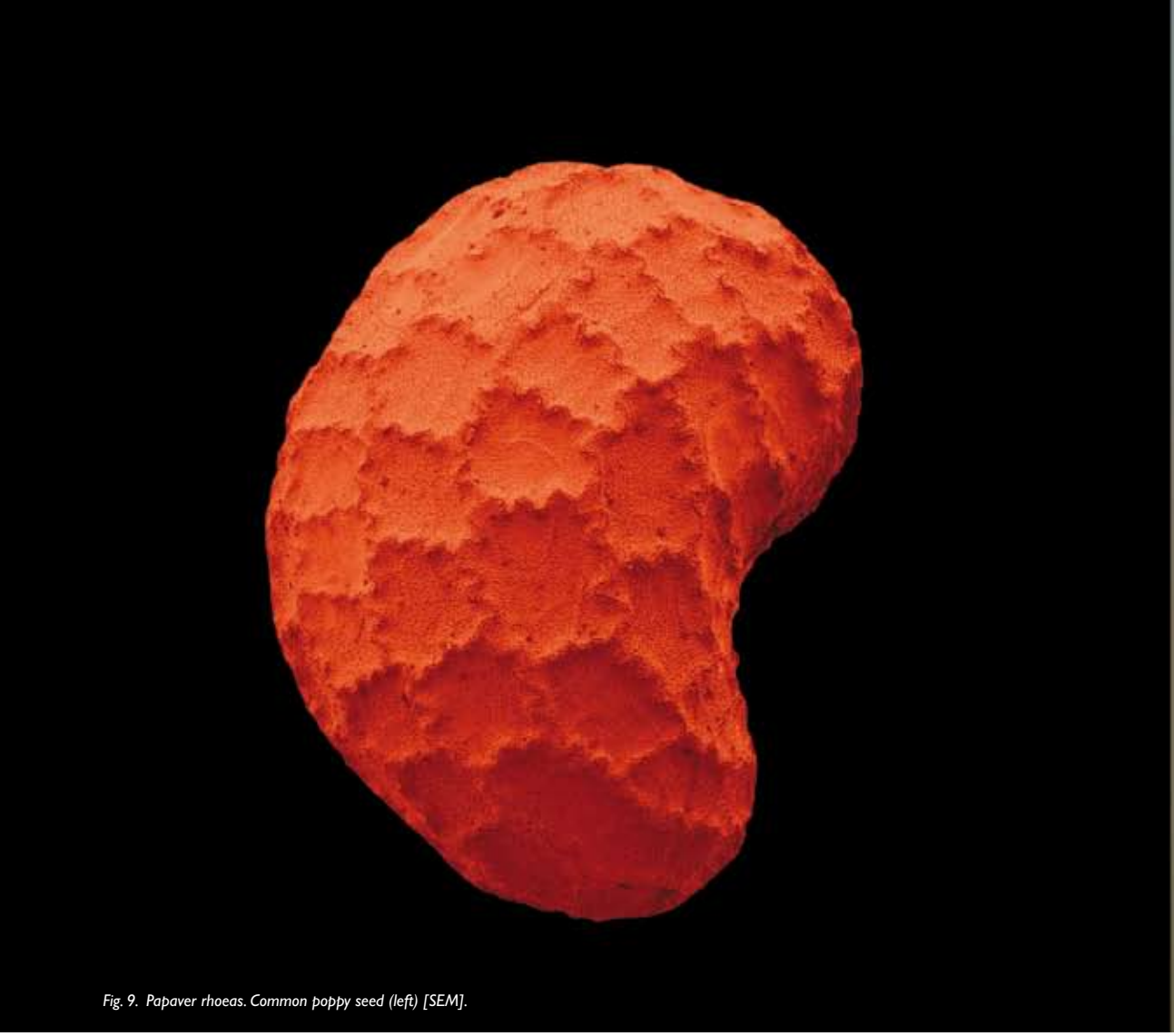

Fig. 9. Papaver rhoeas. Common poppy seed (left) [SEM].

It is more in the spirit of William Wordsworth:

Sweet is the lore which nature brings;
Our meddling intellect
Mis-shapes the beauteous forms of things;
– We murder to dissect.

Enough of science and of art;
Close up these barren leaves;
Come forth, and bring with you a heart
That watches and receives.[15]

Working with seed anatomist Wolfgang Stuppy on the second book I felt it was important not just to follow the same recipe as with pollen but to explore a more adventurous chromatic palette, taking advantage of the high definition offered by the SEM and reflecting the extreme diversity of the forms. This diversity offered other challenges; the near impossibility of always finding perfect specimens particularly with feathered or spiked seeds. The marvels of contemporary graphic software programmes however have enabled me to develop a range of reconstructive surgical skills to a highly sophisticated level (although I do not think Wordsworth would have approved of such meddling!).

The development of my latest book, on fruit, also with Wolfgang Stuppy offered further challenges. While some fruits are only a few millimetres in diameter, the majority are far in excess of what might fit in an SEM. In between, we were able to find a collection of fruits just on the limit of what could fit in the SEM chamber but which required multiple shots necessitating complex reassembly. The young strawberry fruit (Figure 19) was 1.2cm in diameter and was reconstructed from 39 individual sections correcting distortions of parallax and repairing damaged sections prior to cleaning up distracting backgrounds, adjusting tonal balance to enhance the form prior to colouring. As with all the fruit images this colouring process is slow and painstaking business, working with a pen and graphic tablet, building up and erasing through successive layers of colour over many hours with the same control and sensitivity that I would use with a paintbrush on paper.

The final result is one in which the manipulative hand of the artist, aided by the creative application of diverse technologies has intervened to produce an image autonomous from science but with that disturbing sense of hypereality that science can evoke. It is this other worldliness that distinguishes the result from a functional specimen, however alluring it might be. Historically the work of the finest botanical artists has risen above the mere recording of specimens for scientific purposes and in creating this new body of work I am striving towards communicating the same sense of wonder within a contemporary context.

Fig. 10. Citrus hystrix. Kaffir lime- longitudinal section through flower bud

Fig. 11. Hippophae rhamnoides. Sea buckthorn fruit with peltate trichomes [SEM] - length 9mm.

Fig. 12. Citrus margarita. Kumquat - cross section through fruit [SEM] - diameter 2.1cm.

Fig. 13. Krameria erecta. Pima rhatany - barbed spines covering the single-seeded indehiscent fruit [SEM] - 8mm long.

Fig. 14. Galium aparine. Stickywilly – whole plant showing the fruit of the stickywilly formed by two united carpels that break apart into two separate achenes when ripe [SEM].

Fig. 15. Medicago polymorpha. Toothed medick fruit [SEM] - diameter 9.5mm.

Fig. 16. Cimicifuga americana. American bugbane, fruit [SEM] - length 12.5mm.

Fig. 17. Scabiosa crenata. Fruit [SEM] - diameter 7.2mm.

Fig. 18. Fragaria x ananassa. Garden strawberry [SEM] - diameter 1.2cm.

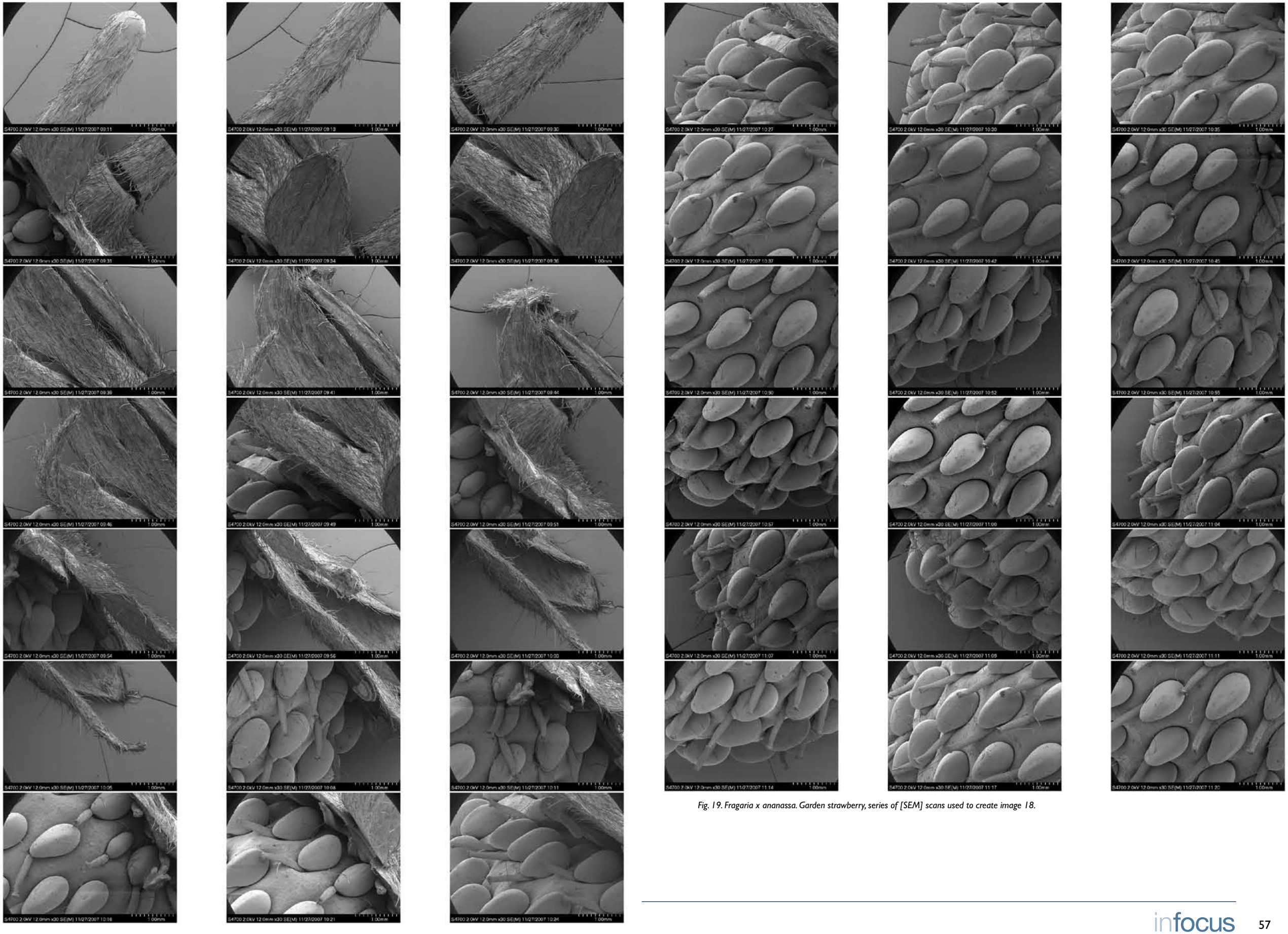

Fig. 19. Fragaria x ananassa. Garden strawberry, series of [SEM] scans used to create image 18.

Fig. 20. Ficus villosa (Moraceae). Villous fig, longitudinal section of fruit [SEM] - diameter 12mm.

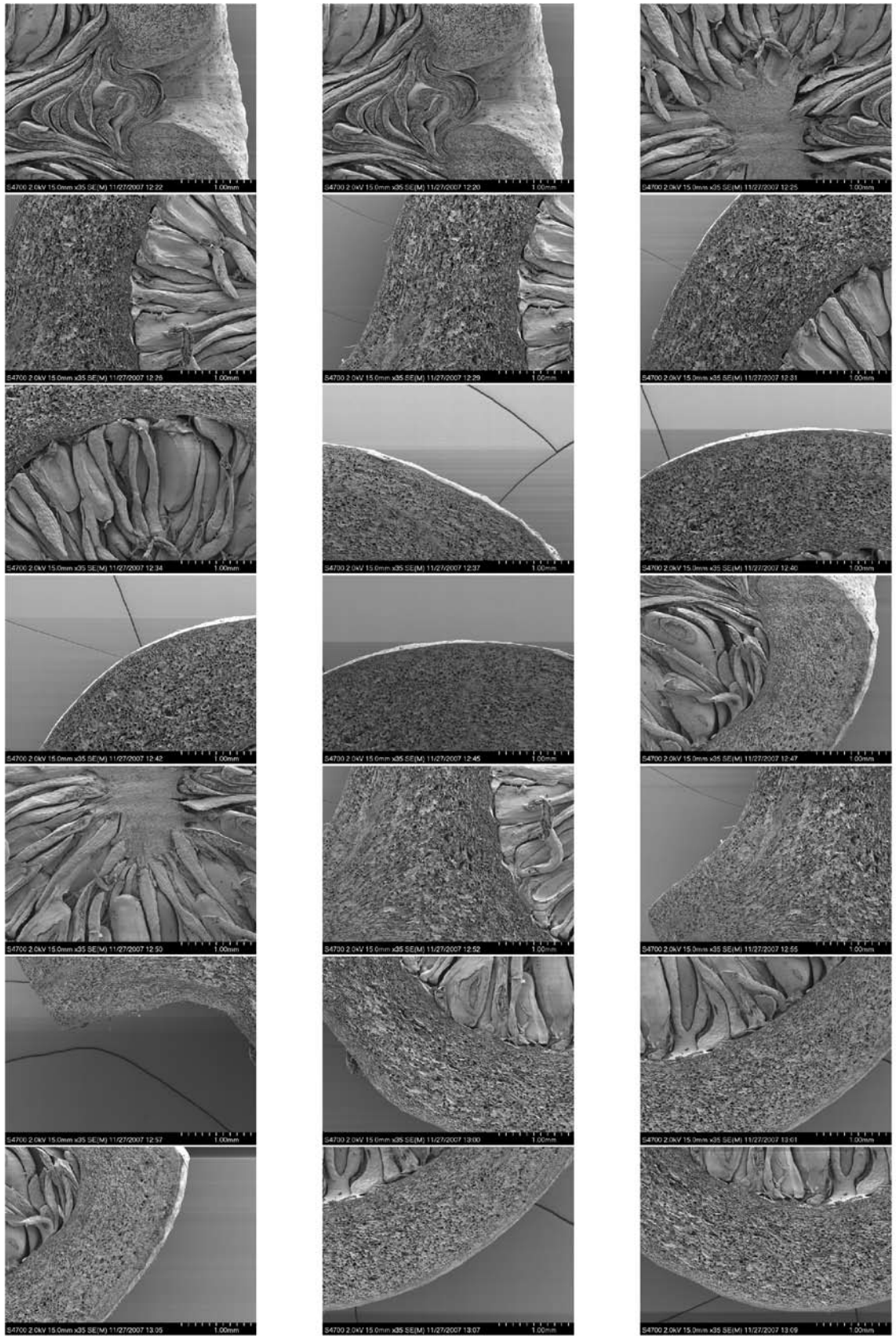

Fig. 21. Ficus villosa (Moraceae). Villous fig, series of [SEM] scans used to create image 20.

Work form this series, focussing particularly on the life of trees, will be shown as part of the Kew festival this summer in a solo exhibition, Canopy, to be held in the Nash Conservatory.

[1]T.J. Duffey, Natural beauty without metaphysics, published in Landscape, natural beauty and the arts, Cambridge University Press, 1993

[2]Colour Design and Engineering, Colour in plants and animals. Linnaean Society and The Institute of Mechanical Engineers

[3]Simon Park, The aesthetic microbe, Prokary Art and Eukary Art, Microbiology Today, August 2007

[4]George Turnbull, Observations upon Liberal education, In All Its Branches: Miller 1742

[5]Barbara Maria Stafford, Good Looking, essays on the virtue of images, MIT Press, 1996

[6]Ibid., at 3

[7]Ibid., at 3

[8]Peter Tomkins, Christopher Bird, The secret life of plants. Penguin, 1973

[9]Ibid., at 3

[10]John Ruskin, Lectures on Art, delivered before the University of Oxford, George Allen, 1870

[11]Rob Kesseler, The power of X2, a botanical collaboration, infocus Magazine, RMS, Issue 2, June 2006

[12]Rob Kesseler & Madeline Harley, Pollen the hidden sexuality of flowers, Papadakis, 2004

[13]Rob Kesseler & Wolfgang Stuppy, Seeds, time capsules of life, Papadakis, 2006

[14]Rob Kesseler & Wolfgang Stuppy, Fruit, edible, inedible and incredible, Papadakis, 2008

[15]William Wordsworth, extract from, The Tables Turned, 1798

Pollen, the hidden sexuality of flowers
Rob Kesseler & Madeline Harley
ISBN: 13: 978-1901092-67-7

Seeds, timecapsules of life
Rob Kesseler & Wolfgang Stuppy
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Rob Kesseler & Wolfgang Stuppy
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Rob Kesseler is a visual artist and Professor of Ceramic Art & Design at Central Saint Martins College of Art & Design. His work inhabits a territory where Design, Fine Art and Applied Art overlap. Within a very diverse range of outputs, his work examines the natural world and its place within contemporary society through the interrelationship between the Arts and Sciences.

In 2001 he was awarded a three year fellowship from NESTA (National Endowment for Science, Technology and the Arts), to work with microscopic plant material in the herbarium at Kew. In recognition of this work he was recently elected as a Fellow of the Linnaean Society.

His work has been exhibited widely with solo exhibitions at Kew, the Victoria & Albert Museum London, Science Oxford, The City Museum, and Art Gallery Stoke, and in group exhibitions across the UK and Europe. Recent public commissions include a major glass installation for The University of Oxford Botanic Garden, an award winning park landscaping project in the London Borough of Barking and a series of sculptures for Sustrans, the UK Cycle network along the route between Dover and Folkestone. His belief in the power of art to engage popular interest in the sciences was confirmed by the diverse press coverage following the publication of *Pollen, the hidden sexuality of flowers,* written with Dr Madeline Harley and *Seeds, time capsules of life,* with Wolfgang Stuppy from Kew. In 2007 both books were awarded gold medals at the Independent Publishers Awards in New York and have been featured in wildlife magazines, gardening magazines, beekeepers journals, arts magazines, national and international press and on two BBC websites.