[From Eryngium, 2017, volume 13, pp. 3–9.
Eryngium is the journal of the Institute for Analytical Plant Illustration; ISSN 1756–7688.]

The Role and Value of Botanical Illustration Today

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Introduction

In October 2017, IAPI was contacted by an illustration student studying at the University of South Wales. She asked if we could answer some questions about botanical illustration to contribute to research for her dissertation on "The Power of Visual Literacy: Why Illustration is Crucial for Our Understanding of Biology, Historical and Contemporary". We thought that our answers to some of the questions would be of general interest and might even provoke further discussion on the subject.

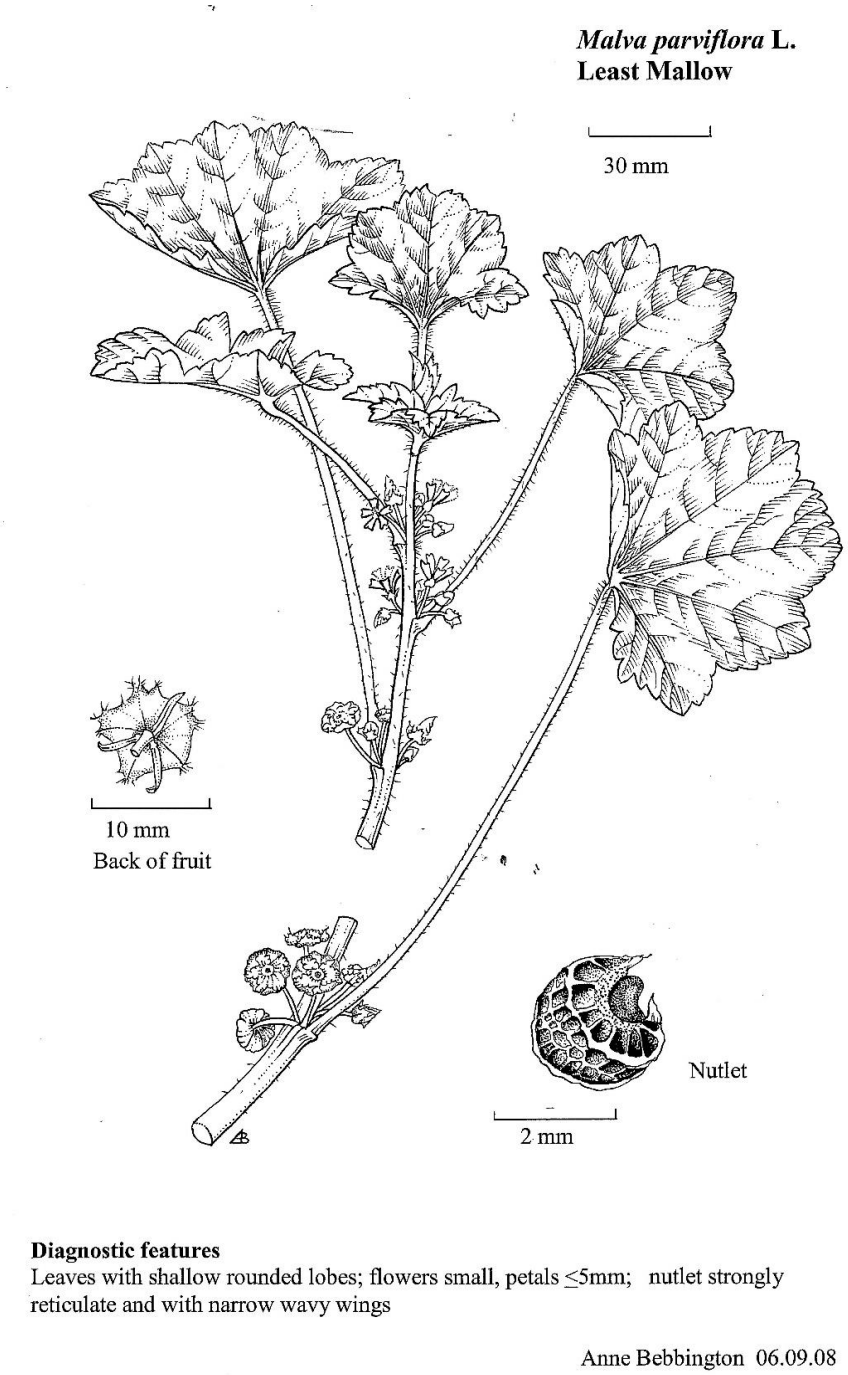

Figure 1. An example of a pen and ink drawing designed to show diagnostic features, in this case of least mallow (*Malva parviflora*). Scale bars are provided so that the reader can obtain an accurate idea of the size of parts of the plant. Note that scale bars remain in proportion when the illustration is reduced in size for publication, unlike multiplication factors such as ×½ or ×⅕ which become inaccurate.

How is botanical illustration used today?
Many floras (books for identification of plant species) use botanical illustration alongside descriptions in words. In popular floras the illustrations are often in colour, to give an immediate impression of the plant. Scholarly floras generally use pen and ink to illustrate particular details at an exact scale if not life-size (Figure 1).

Botanical artists are employed in universities and botanic gardens. For instance, botanists working at the Royal Botanic Garden Edinburgh employ botanical artists to illustrate plants for books and scientific papers. The botanist Martin Gardner commissioned the work of three Turkish artists to illustrate his book on the Plants of the Woods and Forest of Chile (see website www.chileanplants.rbge.org.uk). Another example is Anita Walsmit Sachs, who works for the Herbarium at Leiden Botanic Garden in the Netherlands.

The illustration collection at The Royal Botanic Gardens, Kew is a working resource, accessible and available for use by visiting researchers as a reference tool alongside the preserved herbarium specimens. It is arranged systematically by plant family in the same way as the herbarium collection. The collection documents the visual characteristics of plants and has a global reach, recording plants from around the world. The collection is ordered by artist and origin and includes work by masters of botanical illustration such as Georg Dionysius Ehret, Franz Bauer, and Ferdinand Bauer, through those such as Walter Hood Fitch in the 19th century, to the work of contemporary illustrators contributing to publications such as Curtis's Botanical Magazine and Kew Bulletin. There is also a collection of photographs recording plants and their uses. For further information see the website (www.kew.org/science/collections/illustrations-and-artefact-collections).

What can be learnt from it and why is it necessary?
Drawing a plant is the best way to understand it. This requires close and accurate observation of detail, and an understanding of how parts, e.g. flowers or leaves, join up and sit in relation to one another. This leads to questioning about what special features it might be exhibiting which help it to survive in its natural habitat. A lot of information can be conveyed in a single-page drawing because features seen at different seasons can be brought together, most commonly the sequence from bud through flower to fruit (Figure 2). It is also important to record plants from around the world for information when fresh specimens are not readily available to study.

Why has it not been superseded by photography?
Different species of plant are identified by diagnostic features but these may not be present on a single specimen at the same time, and some may need magnification. Drawings can easily be made from several specimens (to see the natural variation from plant to plant), from different points of view and at various magnifications. By drawing from several plants at different times of year, it is possible for the botanical artist to make sure that all the diagnostic feature are shown in a single illustration. This is more difficult for the photographer. The artist can make a skilled judgement of what to show; the camera simply records what is there in the specimen to hand. The artist has complete control of the background to the plant; either absent (white) or another part of the plant by careful composition, for example to show pale-coloured flowers against green leaves.

However, drawing and photography can work together. Botanical artists frequently photograph their specimen for use as reference material as they draw. It is easier to record plants in their natural habitat quickly by a photograph than to draw them. Photographs of insect behaviour around the plant give scientific information about how the flower structure relates to successful pollination.

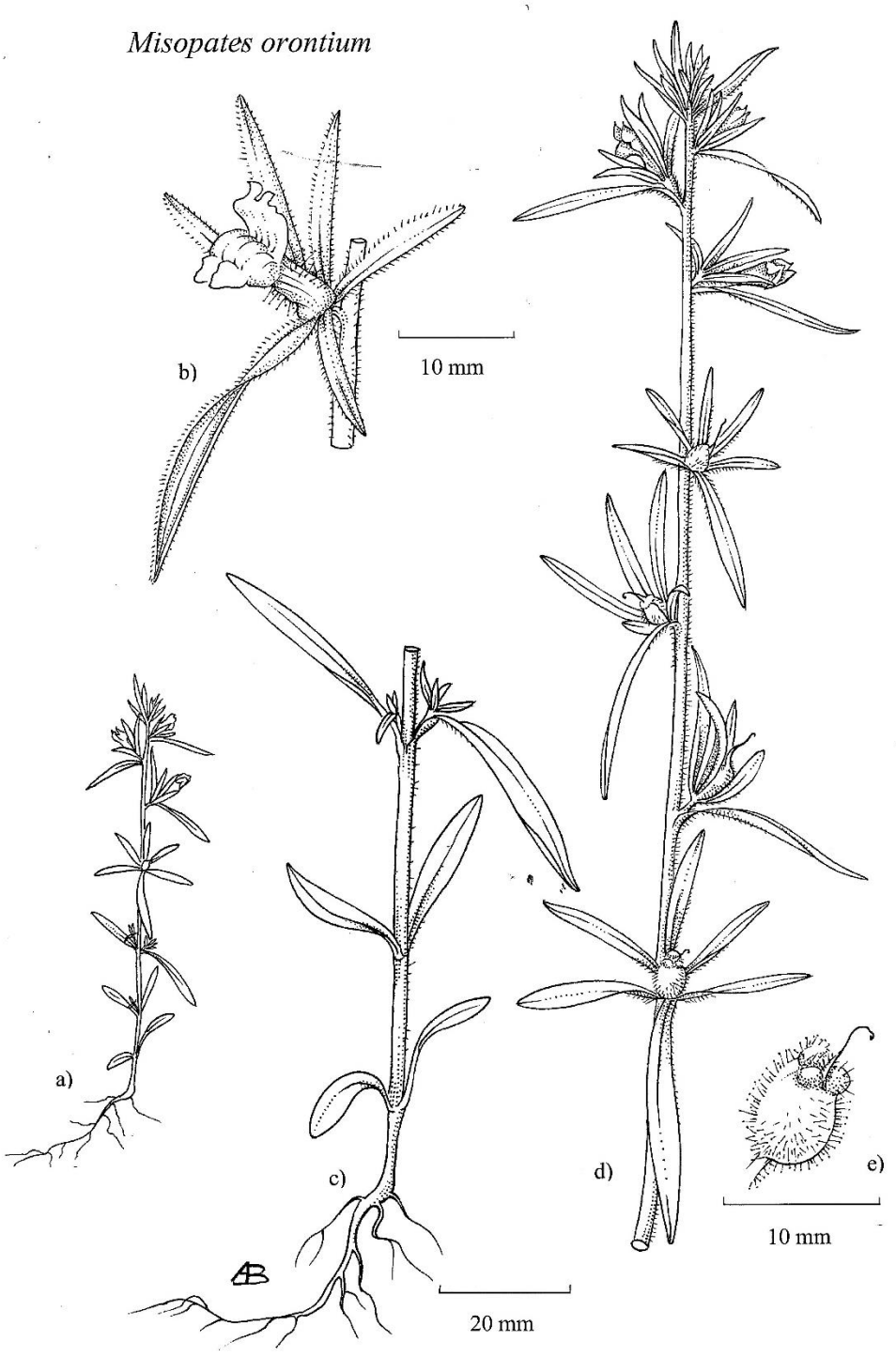

Figure 2. This drawing of the snapdragon (*Misopates orontium*) shows the whole plant on the left at reduced size, for an overall impression, the plant at flowering in the main drawings, the flower enlarged at top left, and detail of the fruit at bottom right. Note that the root system is also illustrated, something particularly difficult to record by photography.

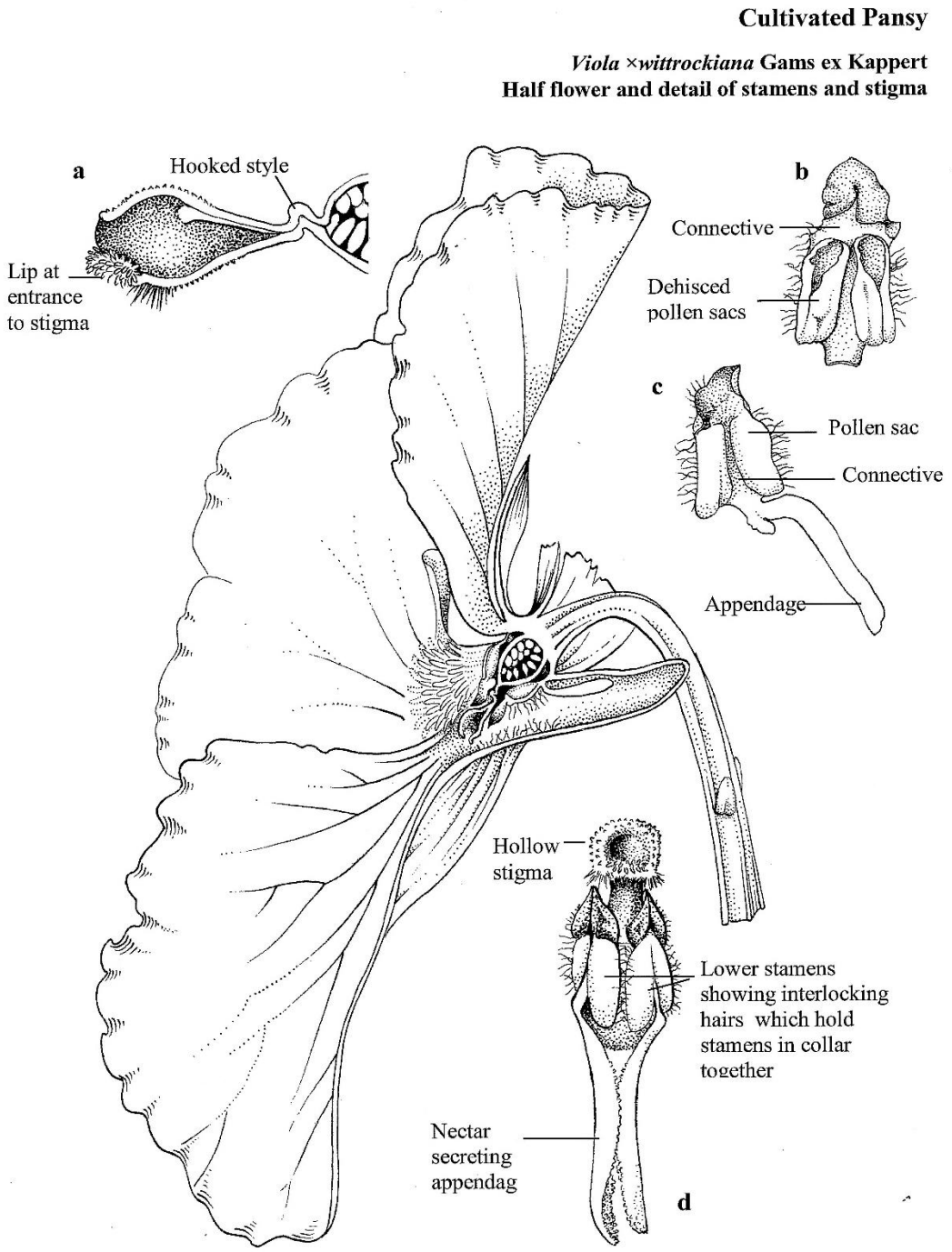

Figure 3. An example of a botanical illustration (by Anne Bebbington) making much use of dissection and magnification to show details of flower structure in pansy (*Viola ×wittrockiana*).

How could an illustration come to seem more truthful than the real thing?
A lot of information, including dissections and magnified drawings, can be shown clearly in a single drawing (Figure 3). More than one specimen might be used to portray a 'typical' portrayal of the plant. This accuracy and detail may not be seen by looking at a single random specimen of the plant.

How would you describe the relationship of a botanical illustrator with photography and digital methods of illustration?
Botanical illustrators are concerned to record plant structure accurately for scientific purposes and, as mentioned above, they make use of photography in this task. Sometimes photography alone is good enough. Illustrations composed by manipulation of digital images can be a powerful method of recording plant structure, suitable for digital media with links to other sources of information, ability to zoom in and out, and to rearrange the composition on the page. Niki Simpson (website www.nikisimpson.co.uk) is the master of this: she uses digital photography to prepare illustrations which give information about a plant on the lines of a herbarium specimen. She finds that her work combines the best of the old with the demands and technologies of the new. Niki's work is held in high regard by botanical illustrators in IAPI. Niki's effectiveness as an illustrator with digital images is no doubt informed by her earlier career as a traditional botanical illustrator.

Why must the information be communicated through visual imagery rather than text?
The human eye and brain is highly skilled at visual recognition, and even experienced botanists will sometimes admit to looking at the pictures first when identifying an unknown plant from a flora, then confirming with details in the text. Illustrations are especially important where there are language barriers which hinder or prevent the use of the text alone.

To whom is this visual language targeted?
Apart from the scholarly use of botanical illustration, many people enjoy the beauty of plants and this can be recorded by botanical illustrators particularly when working in colour. Informing and educating the general public of the beauty and value of plants is vital to promoting respect for plants and the natural environment, and consequently support for conservation of biodiversity. Botanical illustrations can often be found in display panels and leaflets of nature reserves.

How do the illustrations vary for different audiences?
Usually pen and ink drawings are employed in scientific work (Figure 4, overleaf). General publications about plants and flowers use photography or watercolour illustrations. Oil paint is not generally used but one exception is Raymond Booth who produced a book on the Flora of Japan in 1992 called Japonica Magnifica.

Botanical art covers the whole range from high art to technical drawing (Figure 5).

An abstract or impressionist piece of art	←	Aesthetic and emotional input	—	Botanical knowledge, scientific rigour	→	A technical illustration for scientific purposes

Figure 5. Botanical art lies along a spectrum linking science and art.

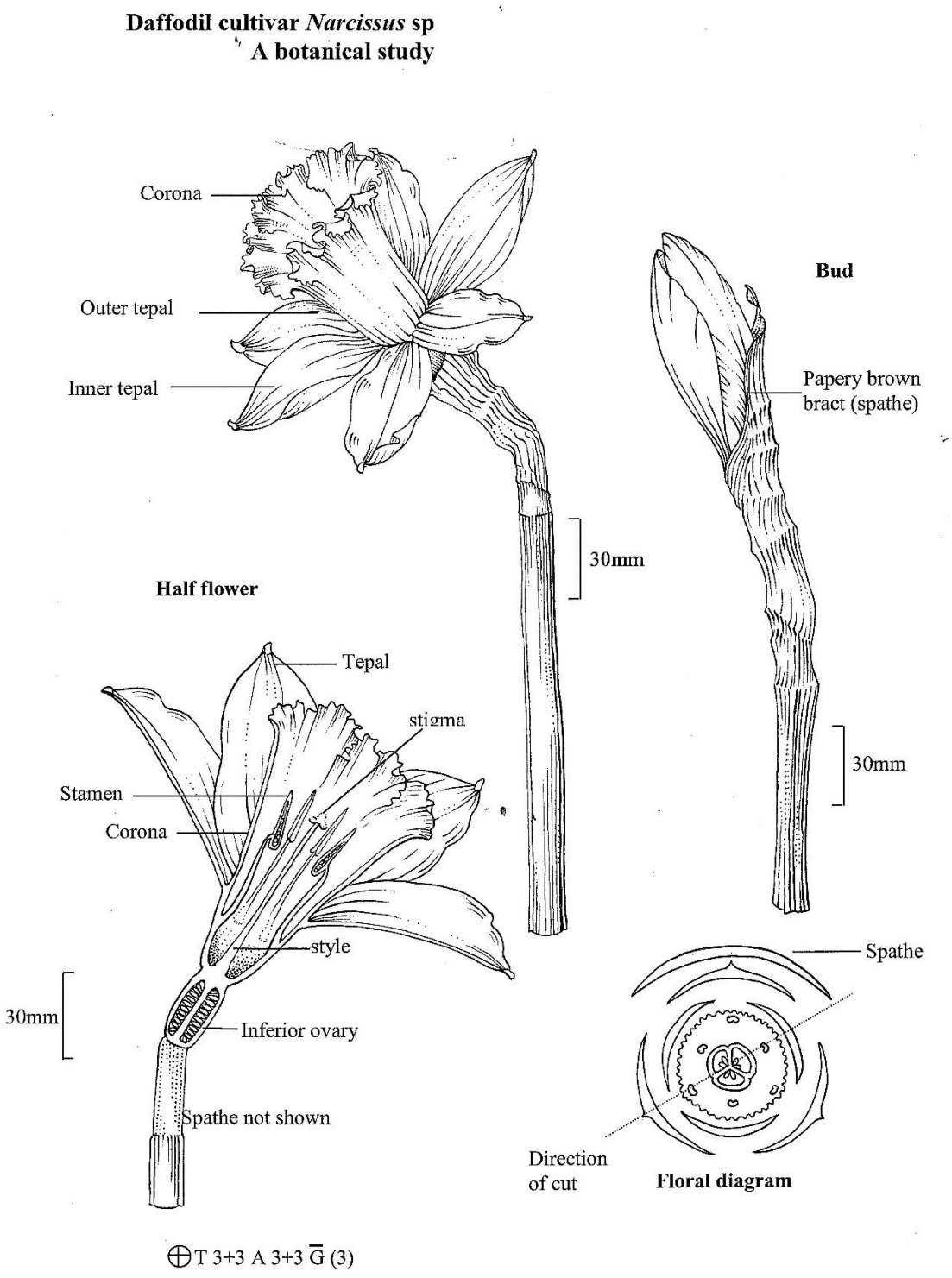

Figure 4. The floral formula (bottom left), floral diagram (bottom right) and half-flower (left) are employed in this illustration to describe the structure of the flower in daffodil (*Narcissus* species).

How has historical botanical illustration impacted on the understanding of botany and on contemporary botanical illustration?

Early botanical illustrations, for example in herbals, were crudely drawn often with little understanding about how the plant grew and reproduced itself. Artists copied illustrations that had already been drawn by other artists so that illustrations became distorted and unrecognisable.

As soon as artists began to look at plants with understanding an advance was made. Artists with scientific training often set the standards, particularly on expeditions, and drawings became an important part of the story of the plant. Botanical texts of the late 19th century, such as Kerner and Oliver's "The Natural History of Plants" and Strasburger's "Text-book of Botany", have excellent botanical illustrations contributed by a number of different artists. More recently, in the 1950s Stella Ross-Craig was commissioned to illustrate the British flora. She had been interested in botany from her youth and studied at the Thanet Art School. She began work in 1929 as a botanical illustrator and taxonomist at the Royal Botanic Gardens, Kew and was a contributor to the Curtis's Botanical Magazine. Her illustrations are regarded as classics and the books are highly sought after by collectors.

Conclusions

Botanical illustration continues to be the best method of recording plant structure for several purposes: identifying plants, understanding how structure relates to function, and capturing sequences of development such as flower to fruit or leaf expansion. Illustrators are skilled at selecting features to portray, magnified and dissected when necessary, and in arranging them on the page. Their work appears in scientific publications, floras for the general public, and in display and publicity materials for conservation of biodiversity. Photographs are a vital tool nowadays to record fleeting appearances or events (e.g. pollination by an insect) which the illustrator can use later. In addition, botanical illustrations are frequently of high artistic value, thus perpetuating the long history of illustrating plants for pleasure as well as for science.

Bibliography

Bebbington, A. 2014. Understanding the Flowering Plants. Ramsbury, Wiltshire (Crowood Press).

Bebbington, J. 2012. Insect Photography—Art and Techniques. Ramsbury, Wiltshire (Crowood Press).

Kerner von Marilaun, A. & Oliver, F.W. 1894. The Natural History of Plants (first edition in English). London (Gresham).

Leech, L. 2011. Botany for Artists. Ramsbury, Wiltshire (Crowood Press).

Oxley, V. 2008. Botanical Illustration. Ramsbury, Wiltshire (Crowood Press).

Pinhey, S. 2014. Botanical Illustrator's Handbook. Ramsbury, Wiltshire (Crowood Press).

Strasburger, E. *et al*. 1898. A Text-book of Botany (first edition in English). London (Macmillan).

Collections of original historical botanical artwork

The Library and Herbarium, Royal Botanic Gardens, Kew
The Marianne North Gallery, Royal Botanic Gardens, Kew
The Natural History Museum, London
The RHS Lindley Library, London
The Victoria and Albert Museum, London
The Fitzwilliam Museum, Cambridge
The National Museum of Wales, Cardiff
The Royal Botanic Garden, Edinburgh

Contemporary botanical illustration

The Shirley Sherwood Gallery, Royal Botanic Gardens Kew.
Society of Botanical Artists (website www.soc-botanical-artists.org).