

DRAWING PLANTS

Ten pointers to botanical illustration

Many non-professional botanists enjoy drawing plants in black-and-white. Botanical artist ROSEMARY WISE offers some advice to get you started and obtain the best results.

Drawing plants is one of the joys of botany, and something that anybody can try. Art has been a part of botany since earliest times, and even today the camera has failed to supercede botanical illustration. For showing details of plant structure, whether in a field guide or botanical monograph, line drawings are essential. They are also a most beautiful and decorative art-form. Above all, they can give the artist great pleasure.

1. Drawing vs photography

The camera sees and records all, but in botanical illustration all is often too much. Selectivity is the name of the game. For example, a drawing may emphasize small diagnostic characters. However good the photographer and the camera, tiny dissections of flowers or other inconspicuous parts can never be enlarged as successfully as in a drawing. This is where the botanical illustrator really scores!

Think of a plant, with clusters of leaves close together on the stem. To draw all of these makes for a very confused, over-busy



illustration. It is perfectly acceptable to omit many of the leaves, but of course essential to show all their bases to give an accurate idea of what was there originally. There are several ways of doing this (see above).

A drawing should be characteristic of the species depicted. Substitute any less than perfect flowers or leaves, as a result of

insect damage, disease or death, with healthy ones from the same position on another plant – if it is not possible to reconstruct the damaged ones. Material from different seasons can be shown on a single plate, especially when working from dried herbarium material. This is possible too using living material, but just takes longer to complete!

2. Accuracy is essential

The botanical illustrator aims to produce a drawing or painting typical of the species and correct in all detail. It should be possible for it to be used alone, as in a field guide, or to complement a scientific description. It is often the tiniest details that distinguish one species from another, and it is the ability to recognize and portray these that produce a successful botanical drawing. Everything needs to be measured, not just lengths and breadths. Are hairs present, and of what type? How many sepals, petals, stamens or leaflets in a pinnate leaf? And so on.

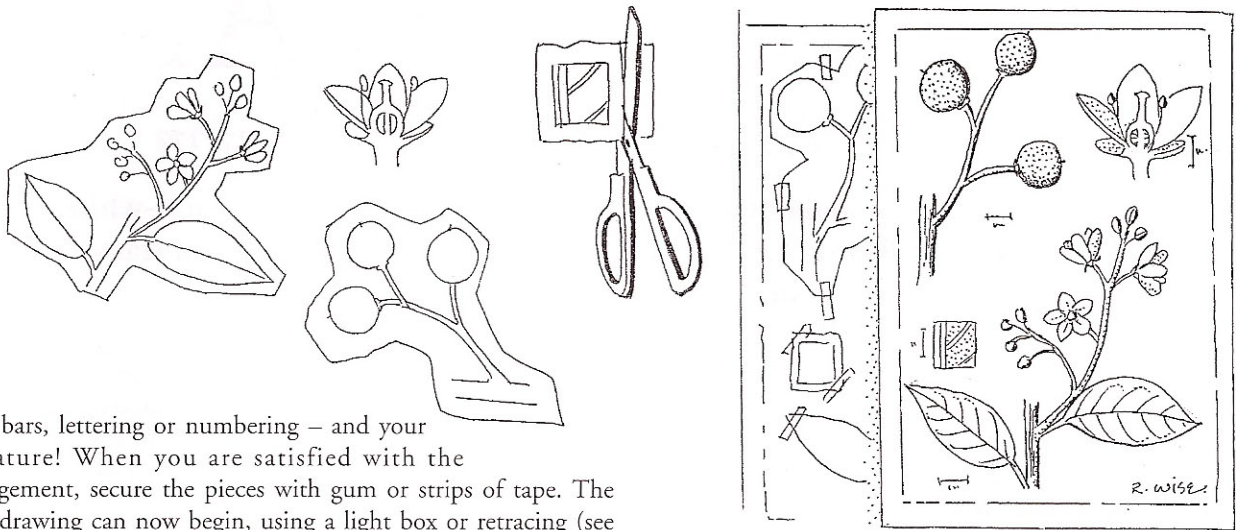
Veins do all sorts of strange things. Some peter out before reaching the margin, while others extend to meet it or even overlap it, forming small points. Others curve on round to meet the vein above, simply or in a series of loops. Even the spaces between secondary veins differ between species. A lot to show, but all important.

3. Composition

A drawing needs to be pleasing on the eye and well balanced. This is where the artist takes over from the scientist. When planning a full plate, first consider what to include. To help with this, if possible read a description of the plant to ascertain whether any features need special emphasis. If the drawing is to be published, it is useful to know the ultimate page size. A blue non-repro pencil is best to denote the border. Bear in mind that this limits the extent of the artwork, not the page, so images should touch but not go over it. Most botanical illustrators work at a half or a third larger than the final size, as reduction of the drawing before printing gives a sharper image.

After deciding what is to include, draw everything on to white or tracing paper. At this stage it is not necessary to add fine detail. Cut out all the individual pieces and arrange them within the ruled border on a sheet of 'rough' paper, allowing room for

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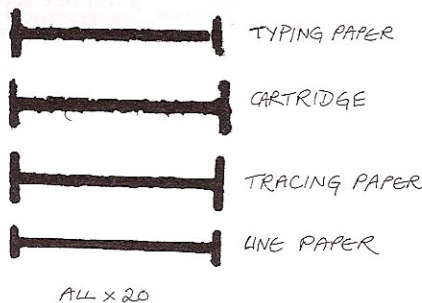


scale bars, lettering or numbering – and your signature! When you are satisfied with the arrangement, secure the pieces with gum or strips of tape. The final drawing can now begin, using a light box or retracing (see drawing techniques) to transfer the layout on to the paper.

4. Materials for best results

Lead and blue non-repro pencils are available in propellor form. Otherwise, a well-sharpened HB pencil is perfectly adequate. You need a ruler for measuring, and ideally a microscope slide backed by graph paper (easy to make) for smaller measurements. Modern technical pens, such as Rötring and Staedler, that have replaced old-fashioned 'dip' pens, come in a variety of nib sizes. Kept clean, they give constant lines and do not blot.

Good quality line paper or board, or plastic tracing film, are ideal for ink work. A hard, smooth surface (see right) produces good clean lines that reproduce well. Cartridge paper, with a rougher surface, is suitable only for pencil drawings. To correct a mistake, pencil can be rubbed out with an eraser. Tipp-Ex or an equivalent will cover ink on line paper. Errors on papers with an extra-hard surface can be carefully scratched away with a sharp blade.



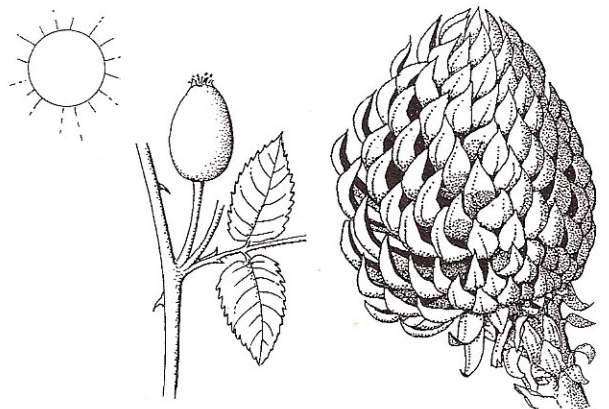
It is best to have technical pens in at least four different nib sizes: 0.1, 0.2, 0.3 and 0.4 mm are recommended. Filmy petals and papery leaves need a fine outline such as that produced by a 0.1 mm nib, whereas large, leathery or succulent leaves need a bolder outline – a 0.4 nib is acceptable. The same applies to the differences between delicate, slender stems and woody twigs.

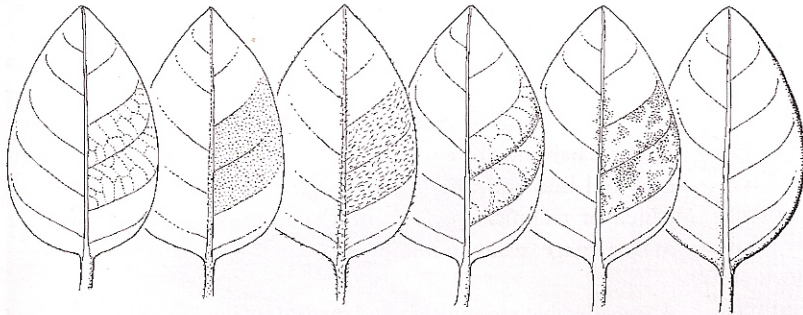
5. Drawing techniques

When all parts have been sketched in pencil and a mock-up prepared (see 3. Composition, above), the image needs to be transferred to the selected line paper or board for the final drawing. If a light box is unavailable, place a new piece of tracing paper on top, large enough to cover the mock-up, and retrace all the parts on to the one sheet. Turn this over and apply an even, overall layer of pencil shading. Lay the sheet – right side uppermost – in position over the line paper and with a ball-point or 0.3 mm technical pen carefully trace all the outlines. This transfers the image to the chosen paper. Constantly comparing the drawing with the plant specimen, tighten up all the lines – and then ink in. A good tip to check a drawing before this final step is to hold it up in front of a mirror. Discrepancies in draughtsmanship show up all too clearly!

When drawing in pencil on line paper, do not press hard. This not only causes permanent grooves but also inhibits the flow of ink lines crossing them. With both pen and pencil, try to draw continuous lines rather than a series of sketchy ones. Drawing parallel lines for stems, stamen filaments and cut surfaces is certainly not easy but does come with practice.

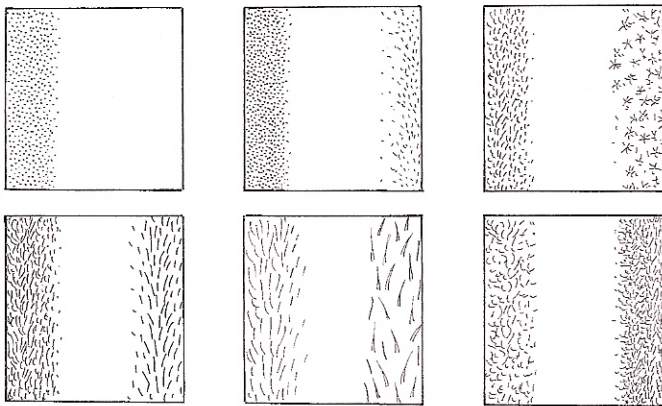
By convention botanical artists assume the light source comes from the top left of the page. To show this, use a narrower nib on the lighter (i.e. left hand) side, and a larger size on the darker (i.e. right hand) side. This gives an impression of roundness, especially when some shading is used. Whether shading is by stippling or hatched lines is down to personal choice, but a disadvantage of the latter is that small lines can be confused with





hairs. The 0.2 or 0.3 mm nibs are best for stippled shading. Keep the pen fairly upright to give uniform dots. Remember that the eye is confused by too much shading.

Leaves vary greatly in texture and hairiness. They can be thick or thin, and the leaf surface hairy, downy, scaly, flat, wrinkled, shiny or dull (see below). To represent this on every leaf is not necessary: in fact one part of a single leaf may be sufficient (see above).



6. Drawing for publication

Draw to the correct page size, if known, enlarged by a third or a half. If not, a finished plate with a 10 x 14 in (25 x 35 cm) border is a good all-rounder! Reduction sharpens the image, but note that too much shading can so easily become a mass of solid black. A good tip is to reduce finished artwork by photocopying, giving an idea of its final appearance. The necessary reduction should be added as a note to the printer (e.g. "To 1/3").

Published drawings either state magnifications in the caption or scale bars need to be added, ruled at right angles to the borders and no more than 3 cm long. When adding letters, numbers or names to a plate, consider how legible they will be once reduced. It is more elegant to use letters or numbers no thicker than the average line width of the drawing.

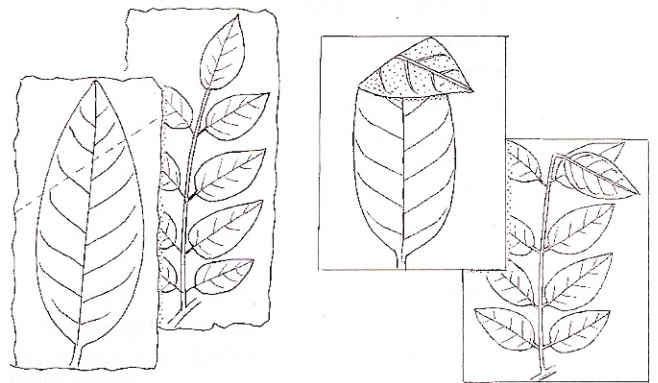
7. Drawing from herbarium specimens

The botanical illustrator usually depends for plant material upon dried herbarium specimens. These need to be drawn as seen. For

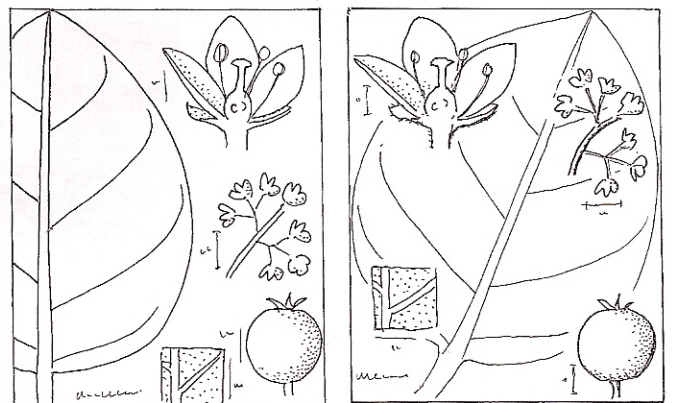
a start, unless you know the plant well, reconstructing it may give completely the wrong impression. Second, say the plant is extremely rare or comes from a remote region. How many people are actually likely to see it growing?

It may be necessary to include a very large leaf or leaflet life-size. If the leaf is too long, trace the complete leaf. Fold the tracing paper so the leaf will now fit – not only is the complete leaf shown, but both surfaces as well (see below). If the leaf fits in lengthways, first, draw the complete leaf in pencil onto the plate. Superimpose the rest of the drawing and complete it in ink, leaving a gap of 2–3 mm between the leaf and the other parts. Then ink in the outline and secondary veins only of the leaf with a fine nib. If the leaf is symmetrical, only just over half of it need be shown (see bottom illustration).

Remember that herbarium specimens are precious and often cannot be replaced. Take great care when handling them,



especially if tracing the plant directly. Only dissect material if you have permission to do so and then re-attach the dissected parts to the sheet in a packet. For the drawing, write the name of the collector and, where known, the number of the collection, either under the drawing or on the back, with the magnifications.



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8. Drawing from living material

When drawing living material, unlike dried specimens, you can use perspective. However, to show the correct measurements of a typical leaf, portray at least one relatively flat and face-on. Keep shading to a minimum and be selective with it. Remember plants wilt quickly once cut, so beware of drawing exactly what you see if this has happened. Relatively few plants naturally look like the much-loved Snowdrop (*Galanthus nivalis*) with flowers hanging down!

9. Making and drawing dissections

Dissections of floral parts can be important additions to a drawing. Tiny details of the flower may distinguish one species from another. If a description is available, ensure that the dissection and text measurements correspond.

Ideally one should examine several flowers. If only dried material is available, this can be rehydrated. Place flowers in a pyrex beaker with a little water. Bring to the boil and simmer gently for about a minute. A woody fruit will take longer. A tiny drop of detergent may assist. Examine the flowers, noting the number of petals and other parts, and decide where the cut should be made. Do this with a very sharp blade and decisively. A sawing action will produce a ragged edge which might obliterate finer details of the flower structure. While a microscope is essential for very small flowers, a hand lens is usually sufficient. When drawing, the convention is that all cut surfaces must be left white, with no detail added. Parts should be measured with absolute accuracy, but a certain amount of stylization is permissible. It may help to sketch a floral diagram of what is seen when looking into the flower (see below).

A plate can look wrong if a dissection is too large and dominant. When planning to reduce by a third or a half, the dissection should be no larger than 6 cm high.

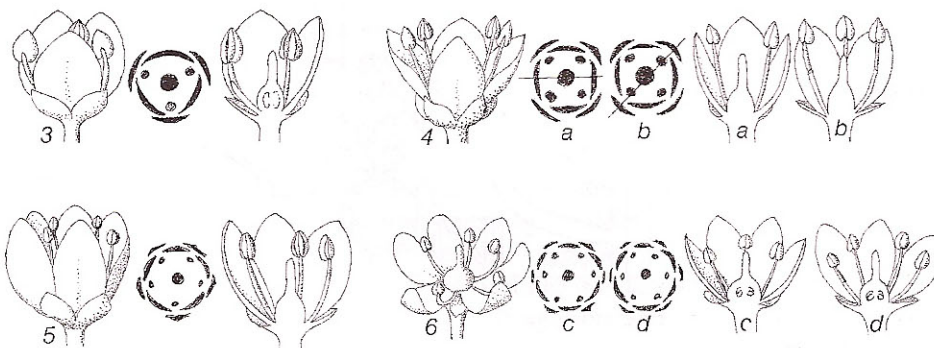
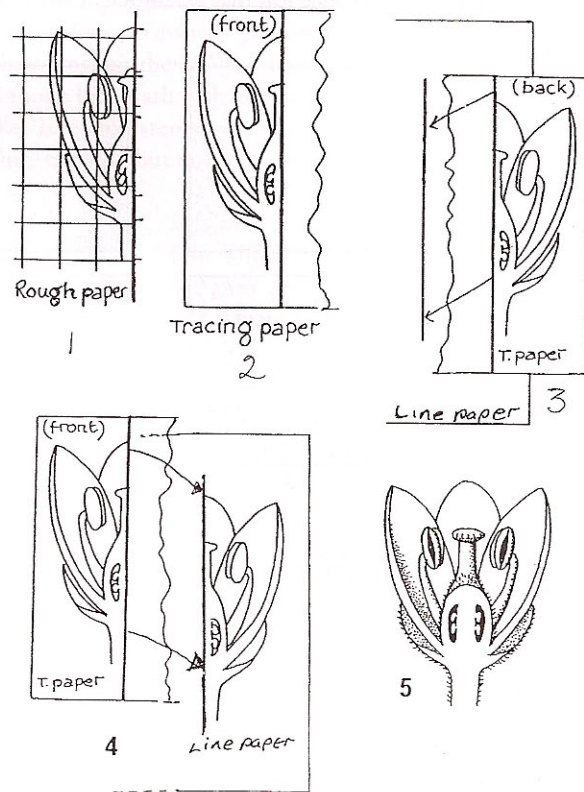
10. Tracing – an acceptable short cut

Tracing is not cheating! And it is generally much more accurate to trace dried material than to draw by eye, especially for leaf

shapes. When adding a dissection of a symmetrical flower, rule a vertical line on your 'rough' paper' (see below). It may be easier to draw in a grid to correspond with the chosen magnification. Draw in half the flower only. Trace this and the ruled line, turn it over and line up, superimposing the vertical line. With a sharp pencil or technical pen, go over the outlines. This creates the mirror image, ready to ink in.

A considerable amount of time spent drawing plants involves just looking carefully at them. You will perhaps be surprised at the wonders of detail you will see – tiny splashes of colour, the various types of hairs or glands, and the many ways that veins vary – all of which can so easily be taken for granted.

Good luck and away you go!



Rosemary Wise is botanical artist in the Department of Plant Sciences, University of Oxford and also works for the Royal Botanic Gardens, Kew. She is the author of *A Fragile Eden*, an illustrated book on the endemic plants of the Seychelles.