Botanical Prints of Yesteryear

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Plant illustration ranges from the purely botanical to the purely artistic. Between these two extremes lies a vast body of drawings and paintings with a combined scientific and aesthetic appeal; botanical records which are at the same time works of art.

There is a wealth of splendid botanical illustrations with which the general public is largely or wholly unacquainted. The extremely difficult and technical craft of botanical illustration requires the illustrator to be both scientist and artist; he is expected to convey an aesthetic impression, and at the same time provide the botanist with accurate information on color, texture and structure.

The greatest flower painters have been those who have found beauty in truth; who have understood plants scientifically, and who have seen and described them with the eye and the hand of the artist. A great botanical artist must have a passion for flowers.

Botanical illustrators were a rare breed, hardy adventurers, as well as individuals who could combine scientific accuracy and artistry with the ability to fit large, awkward plant specimens into a suitable format.

Processes of illustrations are generally divided into three methods: the first is the relief method, where everything on the block or plate is cut away leaving only the surface to be inked and printed. The second is the intaglio process whereby the line to be printed is cut into a groove on the plate. The ink fills the grooves and is forced onto the paper when both the plate and the paper are put through the press. For the third process, the image is drawn (not cut) on to a surface. This method is called *lithography*.

To make an illustration using the woodcut technique, a drawing was made on a plank of hardwood. The wood used was smooth grained, such as cherry, maple or lime, and was cut along the grain. The wood was then cut around the drawing, leaving a raised image on the block. It was a simple and inexpensive process, but had limitations, for it could not readily reproduce the subtle shadings or differences in emphasis.

With an engraving, the image was cut or incised on a smooth and polished copper (and later steel) plate using a tool called a *burin* or *graver* to engrave the design. This is a short, thin bar of highly tempered steel, the cross section of which is triangular so that a diagonal cut across one end makes a "V" shaped point.

When an engraving was completed, the entire surface was covered with printer's ink, and then wiped off. The ink remained only in the carved or recessed lines of the drawing. A piece of slightly moistened paper was pressed against the surface of the plate in the press. The pressure then molded the paper into the engraved lines, and when removed, the ink stood out in tiny ridges on the paper.

Etching is primarily a process of producing the sunken line without the use of a graving instrument. In making an *etching* the artist commences with a smooth polished copper plate. The plate is covered with a protective coating or 'ground' of wax or asphaltum which, when hard, is smoked to darken it. Upon the plate thus prepared, the artist makes his drawing with a needle pointed instrument, exposing, but not necessarily cutting into the copper. By making his drawing, the etcher has much more freedom of individual expression.

When the drawing is complete, the metal of the plate gleams in every line through the protective ground. The next step is the 'biting' of the lines, which is the effect of

From left to right, *N. albo-marginata, N. sanguinea,* and *N. rafflesiana.* From *Flor des Serres*

N. villosa. From *Flor des Serres.*

Sarracenia drummondii (S. leucophylla). From Flor des Serres 10:1071

an acid upon the metal of the plate. The plate is then placed in an acid bath, and the acid allowed to remain and eat away the metal to the depth and breadth of the lines, as may be desired.

These etchings were cheaper to produce than engravings, and therefore were more frequently used in illustrations. Engraving and etching were sometimes used together on the same plate. If a passage required strengthening or a shadow is to be darkened, it is often done by adding engraved lines to an etched plate.

The lithography process was discovered in Germany in 1797 and was developed by 1826, but did not completely replace engravings or etchings until about 1845. In this process an image was drawn on a piece of flat, fine grained limestone with a grease pencil. Then greasy ink, when applied to the water dampened stone, adhered only to the drawn image, which was then transferred to a piece of paper.

It was the lithograph that enabled the artist to draw directly onto the stone, instead of giving his work to the engraver, who then had to cut the design into the metal. Later, a specially prepared zinc plate was used. The illustrative book publishing in the early 19th century owed its tremendous expansion to this innovative, inexpensive technique. Lithography proved much more flexible than engraving, and a skilled lithographer could work much faster than an engraver.

Each method produced a black and white print. Although black ink was standard, sometimes green or red was used as a foundation color. Subtle water colors were then meticulously applied by hand.

This became such a large cottage industry, that a strong labor organization with quality control was developed to deal with the quantity of prints to be produced. A crew of colorists, which were usually women and young girls with an artistic aptitude and who were paid by piecework, worked at tables. Individuals would apply a single color to each black and white print. Delicate camel or sable hair brushes with just a few hairs in them produced the highly detailed work seen in the finished botanical print. An artist's proof served as a guide and the head colorist sometimes added the finishing touches.

One colorist would work on hundreds of prints from the same plate, adding a color at a time, one print after another, mechanically. An expert colorist, working full time, could color several hundred prints in a week depending upon the number of colors and the degree of surface detail of the image.

To prevent obscuring the finely engraved lines, transparent washes of colors were preferred. The water colors used were somewhat rich, yet very subtle. At times a coat of gum arabic was added to those parts of the finished print where a glossy sheen was required to emphasize shadows.

Since the publisher exerted considerable pressure to produce quality prints, a creditable level of care and finish was achieved by most of the women. Still there were oversights, and the low wages did not encourage them to surpass in this precise work. A comparison of several prints of the same plate will often reveal slight variations in the coloring or uneven quality.

By the late 1800's most paper was made from wood pulp. However the paper used for these early botanical prints was made primarily from cotton and linen rags, the traditional source of a strong alkaline paper that stays white and flexible for hundreds of years and often did not discolor. Publishers and printers hailed a complex new process that made paper from wood pulp as a great advance. Chemical bleaches whitened the ground pulp, and a highly acidic alum-rosin sizing kept the ink from bleeding on the page. However, after a few decades, this structurally weak acidic paper began to yellow and turn brittle, which eventually changed or darkened the pigment.

Curtis's Botanical Magazine, a scientific journal renowned in its field, celebrated its 200th anniversary in 1987, making it the oldest surviving botanical journal with hand-colored prints. The *Botanical Magazine* was issued at monthly intervals, each issue

containing three hand-colored engravings with accompanying text.

Curtis's was priced at three levels: uncolored, partially colored, and then the full coloring. In the partially colored, sometimes just a portion of the inflorescence and a leaf would be tinted, as a means of reducing costs.

There were a number of other botanical journals which produced high quality hand-colored prints of botanical specimens. Some of the best known are: *Botanical Register* (1815-37), *Flore des Serres* (1846-57), *Paxton's Magazine of Botany (1834-49), Loddige's Botanical Cabinet* (1817-32) and *Andrew's Botanical Repository* (1797-1811).

Growing CP in Queensland

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During June of 1992, we moved into our 5 acre property in Hervey Bay, near Maryborough Qld that we had purchased some 18 months earlier. Our move had been delayed by the sale of our house falling through and the need to find a new buyer.

Between March and May 1992, I had taken 4 truck loads of our things to the property, including all my carnivorous plants. I had prepacked the pots into polystyrene boxes so as to make transporting them easier. In all, just over two trailer loads made the 1400 kilometre journey, and the tuberous *Drosera* in packets came up with us in the car in June.

During the spring of 1991, I had been visited by Brian Denton, secretary of the Australian CP Society, who had mentioned seeing Robert Gibson's *Sarracenias* floating in polystyrene boxes in a dam at his parents' property. I decided that this would be a good idea, so I used this method of watering the Sarracenias, VFT and a few other species. The idea was that as the water level in the dam fluctuates, the boxes remain at a constant depth in the water, enabling the pots to set in about 1 inch of water constantly.

For the rest of the CPs, it was a different story and I built a temporary planthouse for them and set up an automatic watering system consisting of a timer and pump. The neighbours kindly kept an eye on this for me in my absence and fixed a small fault that developed with the system.

On arriving, I potted up my tuberous *Drosera* as they had already started growing in small packets in which they had been stored. Despite their late potting, most plants grew reasonably well this season. The climate here is quite a bit warmer than at Albion Park where I had lived for the past 32 years. However, the winter nights are quite cold, getting down as low as 1 °C on one occasion this year. However, the days are very warm and temperatures under 20 °C are not very common.

It appears that winter here is still cold enough to give plants requiring a winter rest, their dormancy. Sarracenias have started growing in late August, which may be a week or two later than average for Albion Park. The colder nights due to clear skies may prolong the dormancy period, despite the warmer days.

On our property here, we have several native CPs growing; *Drosera burmanii, D. spathulata, D. pygmaea,* a tuberous species in the *D. peltata* complex-*D. spathulata* "auricata", *Byblis liniflora* and *Utricularia lateriflora.* I also found what appears to be a very tiny annual *Utricularia* species, which I have not been able to identify at this stage.