communications that have reached our office for publication in CPN. We hope that we can rely on a steady flow of short notes and other communications in the future. So if you have something to write, do it now!

SHORT NOTES

THE BYBLIS FAMILY
by J.A. Mazrimas

There is a carnivorous plant which is so thoroughly covered by fine, dense tenticular hairs that not only the leaves and stem but also the flower stalk including the calyx is protected. It belongs to the family name Byblidaceae, and I will be discussing the only two members of this family, namely B. gigantea and B. liniflora.

The genus name, Byblis, is derived from mythology and as Roman legend has it the nymph Byblis, a niece of Sol (the sun), shed so many tears of unrequited love that she turned into a water fountain. It is rather interesting that the species gigantea which is given to the larger plant is frequently referred to as the "rainbow plant" because the glandular hairs that are covered with tiny dewdrops usually are reflected by the sun's rays into a spectrum of colors. The smaller species, liniflora, means flax-flowered referring to the resemblance with the slender, erect annual of the Linum genus which has blue flowers.

Byblis gigantea is a plant that grows in moist sandy loam around Perth, Western Australia. Because the seasons are reversed in the southern hemisphere, this coastal city enjoys winter in July with temperatures fluctuating between 48° and 62° F. During this time, hundreds of these plants can be found growing from fifteen to twenty-four inches in height. When summer begins in October, the rainfall diminishes considerably and most of the plant dies back during the hot, dry season. New shoots will emerge from the old perennial root stock as moisture returns in the new season.

The long, linear leaves are usually pale green or yellow-green. At the attachment to the stem, the leaves are three-sided and eventually will reach a final length of eight to ten inches. New leaves are frequently found with swollen reddish tips as they are growing. As mentioned above, all surfaces of the plant are densely covered with glandular hairs which are very efficient in trapping small flies and mosquitoes. Two types of glands are found: the stalked gland captures the insect with its long hairs and sticky secretion and the sessile gland, which lies close to the surface of the stem and leaves, is responsible for the digestion of prey. Thus the plant supports its rapid development by absorption of minerals and nitrogen from the soft parts of the captured insect. It is by this means that the plant is capable of growing in soil with low nitrogen content free from competition of other plants.

In contrast to B. gigantea, the new leaves of Byblis liniflora uncurl in a circinate fashion away from the center of the plant. These leaves are also three-sided at the base and they are capable of reaching a length of about four inches when fully uncurled. Also, I noticed that the stalked glands seemed to be highly variable in length with some of the longer ones about five to six times the length of the shorter type.

The most unusual flower arises singly on long stalks from nearly every axil of every leaf. The flower structure is based on the number five with its five petals exhibiting an iridescent lilac or magenta color in the case of B. gigantea and a pale blue color for B. liniflora. The brilliant yellow anthers provide striking contrast to the petal colors. During the daylight hours, the flower opens, especially on bright sunny days, but closes up in late afternoon. This cycle is repeated for two to three days until the flower closes permanently after pollination.

As mentioned earlier in CPN I, 38 (1972), Byblis seems to have a method of pollination unlike any other carnivorous plant. The stamens which are unequal in size are bent into a definite curve and directed toward the stigma. When pollen is released from the anthers through apical pores by vibrating them vigorously, a cloud of the yellow pollen dusts the purple stigma very efficiently. The availability of this pollen seems to be dependent on warm temperatures and several hours of sunlight falling on the plant. Perhaps in nature, not only insects but also birds and animals brushing against the flowers can vibrate the flowers sufficiently to elicit this response. This will assure self-pollination which results in viable seed.

After pollination, the seed capsule enlarges rapidly as it is protected from parasitic insects by the glandular calyx during development. In B. liniflora, the seed capsule becomes transparent near maturity and a few days later, it splits open to release the seeds to the ground. In the case of gigantea, the larger species prefers to hold onto the seed inside the capsule until the entire plant dries up. The entire capsule with seed firmly inside falls to the ground. Later, in the hot sun, the capsule splits open releasing numerous small black round seed possessing irregular wart-shaped testa.

Growing B. liniflora from seed is relatively easy since the seed germinates readily when

sown on a peat-sand mixture. It grows rapidly in strong light and warm temperatures around 80° F. The plant prefers good drainage, and I like to fill a third of the pot bottom with perlite and the rest with a mixture of perlite and peat or sphagnum. In cultivation, I can grow this plant as a perennial although in nature, it seems to grow as an annual. After growing it for a year or more, the stem becomes very long and cannot support the weight of the top growing portion any longer. One can cut the stem and repot the top portion which roots very easily while the bottom half will send out new shoots. Leaf cuttings will also yield new plants if placed on the surface of peat moss.

Growing B. gigantea from seed used to be very difficult until recently. It was reported in CPN III,33 (1974) that fire was a factor which released inhibition of germination. Recently, I tried the fire method which I carried out in the following manner: I sowed the seeds on the surface of a wet mixture of sand and peat. Then I crushed up three disposable paper towel sheets and set them on top of the pot and lighted them with a match. After the flames died down, I watered the pot thoroughly and observed the hot surface steaming. About three weeks later, I observed the first seedlings growing and several more popping up each day for several months thereafter. These were transplanted into the same system as for B. liniflora. Watering should be limited and the plant grown on the moist side but never overly wet. As the plant grows larger toward maturity, it should remain almost dry between waterings. This species also enjoys a very sunny, warm location throughout most of the day. Propagation can also be performed using large root cuttings which yield small green shoots. However, these cuttings are very susceptible to black rot and so this method is not as reliable as the above.

BRIEF OBSERVATIONS ON NEPENTHES MIRABILIS

by Bill Hanna:

A nurseryman up in the Queensland state of Australia wrote to me the following notes about Nepenthes mirabilis. The area known as Cape York Peninsula is as large as Victoria, but here and there in suitable wet boggy places one comes across N. mirabilis. I have not seen it growing further south than 150 miles from Cape York, but then I have not been looking for it and perhaps it does not occur further south. It does not seem to be fussy about location, growing as it does sometimes right beside a beach or 50 miles inland. But what it appears to demand in Australia is a boggy piece of ground, in contrast to New Guinea where I have seen it growing in areas which seem to have set as hard as cement on steep mountainous slopes around Bulolo. Also, it can be found growing in the blazing sun with no shade at all, when the whole plant takes on a reddish hue and the plants remain quite short; or it may be seen on creek banks where it struggles up the broadening trees to a height of 50 feet. These, I imagine, must be very old plants. The only preference it seems to express is that it requires a very poor growing medium, if it is to produce its very variable pitchers which sometimes are as long as twelve inches.

by A. C. Woodrich:

In Palau, I found these remarkable plants growing commonly and very frequently in disturbed areas of rough path-road running from the village dock to the village abai (community center building). Also, I found plants in the low, cool rain forest and on some road cuts and ditches near the village of Imeelsub near the southwest end of Babelthaup Island (largest island in Palau), Western Caroline Islands.

The local name is Melillik which has no translatable meaning, or Ollenemel a vchll (rain teapot). The "Rubaks" or wise old men who live in this village told me that the stem was used medicinally when pounded to extract juice which is added to coconut milk and drunk for an unnamed ailment. They recognized three types of N. mirabilis: red,green and white pitchers (apparently due to differing light levels). It is interesting that they did not know that insects provided food for the plant.

The smaller, younger plants were growing on road cuts, banks and ditches, while the larger plants (pitchers to about 7-8-9 inches) were growing in open grassy road margins with much grass and sedges to about 2-3 feet in height, sometimes entwining for support. They were associated with many ferns such as Gleichenia linearis, Lycopodium cernun and Lygodium scandens. Larger plants climb nearly to 6-7 feet in small shrubby trees of Melastoma malabathricum with the fruiting stalks even exceeding the height of this tree. The soil is a reddish clayish adobe type with rainfall averaging 150 inches or more a year. The plants grow in poor soils and disturbed areas and especially in savanna grasslands which are burned yearly due to negligence, children, etc.