

SPECIAL NOTICES

Triarch Incorporated (Botany Department, P. O. Box 98, Union Street, Ripon, Wisconsin 54971) wants to purchase some living or fixed materials of Drosera for microscopic slides of the leaf hairs. If you can supply them from your collection, please write to Dr. F. L. Hockman, head of the department.

Tote Em in Zoo, a commercial CP source, has a new mailing address: 5845 Carolina Beach Road, Wilmington, NC 28401.

N.J. author looking for solid data on use of Sarracenia purpurea (or any other Sarracenia) by Indians--especially New Jersey area Indians (Delawares, Lenape and subtribes) as medicinal plants. Suggestions greatly appreciated. Send to Pete Johnson, 137 Welton Street, Second Floor, New Brunswick, N.J. 08901.

CPN BACK ISSUE REPRINTS -- In the March issue, we mentioned that one of our subscribers had undertaken copying back issues of CPN and was offering these for sale as his own private enterprise. He is copying another batch but wishes to wind the whole thing up as promptly as possible. While there is still a chance to obtain these back issue copies, place your order as soon as possible because this will be the last reprint by him. All prices are postpaid surface: U.S., Canada and Mexico--\$6.00 per volume (four issues). Foreign--\$7.00 per volume. Single issues--\$2.00 U.S., Canada and Mexico; \$2.25 each, foreign. Send all orders with payment to: A. ROGER KIRBY, Route 3, Box 470, Granite Falls, NC 28630.

CARL FORST writes in to inform us that Thompson & Morgan of Ipswich, England, have this year opened a branch in New Jersey to handle North American orders. In their 1975 catalogue, they list Nepenthes khasiana seed (stock no. 7254) at \$1.95 per packet. Amazingly, they have also featured this year for the first time "New Hybrid Sarracenia-Mixed" (stock no. 2638) at \$1.35 per packet of approximately twelve seeds! The address for the catalogue which is free is: P. O. Box 24, 401 Kennedy Boulevard, Somerdale, N.J. 08083.

Many people write to us asking for a source of live sphagnum moss. We know of two sources and would like to know more if anyone would like to write us. One is Arthur Allgrove, North Wilmington, Mass. 01887, who sells it in units of one-third cubic foot. Another is John Glennon, Route 1, Box 231, Eureka, CA 95501, who is willing to exchange CP for some.

For those who are interested in trying to grow Nepenthes khasiana from a root cutting for \$10.00, inquire from Jerry Horne, P. O. Box 381675, Miami, Florida 33138.

RECENT LITERATURE

Case, F. W., Jr. and Case, R. B.: Sarracenia alabamensis, a newly recognized species from central Alabama. Rhodora 76(808): 650-665, 1974.

Previously thought to be members of various Sarracenia species in a long and tangled history, the author puts forth a case for separate species designation of these interesting disjunct populations. We have one tactical criticism: we wish the two plates of rather poor herbarium specimens could have been replaced by four half pages of photos of live plants and/or a good species composite drawing.

Chequer, Graeme: Orchids in Plastic. American Orchid Society Bulletin, December, 1974 pp. 1063-1065.

This article deals with the technique used by the author to embed orchid flowers in clear polyester plastic. This method would allow CP enthusiasts to make permanent preserved specimens of species that they have collected, but that refuse to grow indoors.

Cruise, J. E. and Catling, P.M.: Drosera species in Ontario. Ont. Field Biol. 28(1) pp. 1-6, 1974.

The authors describe four species of Drosera: rotundifolia, linearis, anglica, and intermedia and their habitat in Ontario, Canada.

Durand, R. and Zenk, M.: The homogentisate ring-cleavage pathway in the biosynthesis of acetate-derived naphthoquinones of the Droseraceae. Phytochemistry (Oxf.) 13(8): pp. 1483-1492, 1974.

Photosynthesis experiments with radioactive carbon dioxide established that of sixteen Droseraceae species, Drosophyllum lusitanicum incorporated the highest amount of label into the dye, Plumbagin. Labeled Tyrosine fed to the latter species also incorporated label into Plumbagin with high efficiency. The degradation of tyrosine to acetate by Drosophyllum is not due to epiphytic bacteria since the same results were found in sterile grown plants and sterile suspension cultures.

Frank, D. H.: Early histogenesis of the adult leaves of Darlingtonia californica. Am. J. Bot. 62: 116-132. 1975.

A microanatomical and histologic study.

Hilchrist, A. J. and Juniper, B. E.: An excitable membrane in the stalked glands of Drosera capensis L. Planta (Berl.) 119(2): 143-147. 1974.

The plasmalemma adjacent to the tracheid becomes highly modified when milk proteins are fed to the gland of D. capensis. The surface of the membrane grew and evaginated outwards forming a bleb into the cavity of the tracheid and pinched off. In this manner amino acids are shunted quickly from the digestive gland to the tracheid and down the plant by a form of stimulated "exocytosis."

Lowry, J. B.: Effect of drought on Mt. Kinabalu. Malay Nat. J. 26(3-4), 178-179. 1973.

The author discusses the effect that severe drought had on plants growing on Mt. Kinabalu, North Borneo, especially on Nepenthes lowii.

Standley, Paul C.; Williams, Louis; Gibson, D. N.: Flora of Guatemala. Fieldiana Bot. 24 Part 10(3/4) 153-466. 1974.

Three genera of the Lentibulariaceae, giving keys, synonymies, vernacular names, uses, descriptions and illustrations are given in this article along with plants from seven other families that are not carnivorous.

Toekes, Z.A. and Woon, W.C. and Chambers, S.M.: Digestive enzymes secreted by the carnivorous plant Nepenthes macfarlanei L. Planta (Berl.) 119(1): 39-46. 1974.

At least two proteases are present in the secretion of pitchers of N. macfarlanei, a major one with a MW of 59,000 and a minor one with a MW of 21,000. The major one is termed Nepenthesin and had strikingly similar properties to the animal enzyme, pepsin. Lipase activity was also demonstrated.

(Because the following article was originally in Spanish and we thought it would be of great reader interest, Joe Mazrimas has made a more extensive summary than usual.)

Brewer-Carias, Charles: Observations on the ecological niche of Heliamphora. NATURA No. 48-49 (1972) and Carnivorous Plants of Cerro de la Neblina. NATURA No. 6, 17-26 (1973)  
IN SPANISH

These two articles were written by Dr. Brewer-Carias, a well-known naturalist and photographer, who traveled with G.C.K. Dunsterville and Julian Steyermark in 1970 accompanying a team of government surveyors to the extreme southern border of Venezuela on the border with Brazil where they found a mesa of sandstone rising some 3000 meters (10,000 feet) in elevation above the hot Amazon forest floor. This area is so primitive that it was not until 1953 that Basset Maguire and other botanists explored the area geographically and published their findings in The Geographical Review 45, 27-31 (1955). Because these strange mountains were constantly shrouded in clouds and mist, the name Highland of the Mists was given to this area.

From their campsite at 2000 meters (about 7000 feet), Steyermark viewed a vast variety of plants with a steep degree of endemism which is often characteristic of adaptations to extreme altitude under the influence of extreme environment over millions of years. Brewer-Carias made an extensive photographic study of the ecology taking some 1500 plates in the hopes of making a graphic record of some mechanisms that carnivorous plants use to capture insects in the natural state.

The soil in this area consisted of a thick vegetal layer of peat about 4 meters (12 feet) thick. It was acid in pH, poor in nutrients and cold in temperature which favored carnivorous plants of the genera Drosera, Utricularia and Heliamphora. Utricularia humboldtii was found growing in water that accumulated in the vase of the giant bromeliad genus Brocchinia. This plant grows to about six feet in diameter and the Utricularia can be found growing between the leaves of the plant in lightly shaded spaces. U. humboldtii has circular leaves of 3-7 cm. in diameter (1-2.5 inches) with stems that grew up to 40 cm. in length (17 inches). It has showy, large, beautiful rose-colored flowers.

Drosera rotundifolia was found growing on soil rich in sand and humus in locations which were constantly wet and exposed to the direct rays of the sun. This species grows in a small rosette some 3-4 cm. in diameter. Its brilliant red leaf color gives the impression that someone has spread fresh strawberries over the area.

The species Heliamphora is endemic to the region of what is called the Pantepui or high mesa of the Bolivar and Amazonian Territories. In the Highland of the Mists, the scientists found two kinds of Heliamphora plants which probably are distinct species that occupy distinct habitats. One lives in a marshy ground embedded in it so that its opening is perfectly level with the surface in the manner of a little crater. The other species grows in sufficiently dry ground that is slightly inclined and forms a pitcher that reaches about 1.5 meters (almost 5 feet) in height which must be supported by the surrounding vegetation. The following observations are on this species. First, he observes the function of the various modified parts of the plant pitcher whose individual structures all contribute to the overall function of trapping

and digesting insects. The cap secreted the nectar to attract the mosquitoes in large numbers. Its odor and sweetness had an irresistible attraction for insects. The exterior of the pitcher body feels like velvet with V-shaped hairs that facilitate insects trying to climb to the top. Meanwhile, the hairs in the interior portion pointed downward with the result that insects inside the opening were not permitted to escape. Hairs with different structure and stiffness were observed in different areas of the pitcher wall to serve various functions.

Observations were also made on the maintenance of the water level within the pitcher. It seems that the level of water established itself about 1 or 2 cm. below the pore in the side of the pitcher. Using some simple experimental methods, the author determined that certain long hairs caused the water to drain out by capillary action to the outside wall and run down the side. This drainage was aided by the elongations of the base of the leaf which extends exteriorly up to the fissure and acts like a siphon which empties the water inside until it establishes a new level.

Finally, one interesting observation was made concerning the digestive process which is believed to be mainly bacterial in nature. In the base of the pitcher, many insect carcasses were found in a thick and viscous mass. It was semi-liquid in consistency, and swimming in this mass were found various white nematodes 1 cm. long by 1/2 cm. wide. These nematodes lived between the hairs of the pitcher walls and the author postulates that these creatures might live symbiotically with Heliamphora and that in digesting the insects they excrete some elements utilizable by the plants.

#### ADDITIONAL READING

Ort, Paul: Expedition of the Brazilian-Venezuelian Boundary Commission to Cerro de la Neblina. Garden Journal 15, 199-203. 1965.

Maguire, Basset. Geographical Review 45, 27-51. 1955.

Maguire, Basset. Geographical Review 49, 566-569. 1959.