Cultivating Drosera Linearis (Goldie)

by Jim Korolas, 36 Eastlea Cr., Agincourt, Ontario, Canada M1T 3A6

Before I discuss cultivation and propagation techniques, it would be most beneficial to discuss my observations of *D. linearis* in natural habitat.

The habitat preferred by most carnivorous plants is acid conditions but *D. linearis* is usually found in soil of pH 8.0, although there are some exceptions. Schnell, in his book *Carnivorous Plants of the United States and Canada*, discusses in brief *D. linearis* and its preference for alkaline soil. I have seen large colonies of *D. linearis* along the western shore of Bruce Peninsula of Georgian Bay in Lake Huron which were growing in slightly to moderately acidic soil. In the same locality were an abundance of *D. rotundifolia* and large *S. purpurea* ('terraenovae'). In cultivation, *D. linearis* grows well in acid soil as it does in alkaline soil.

The surrounding vegetation in a typical bog are *Sarracenia purpurea purpurea var. ripicola* (a nomenclature preferred by some Ontario botanists for the specimens found in the Georgian Bay area) and *Drosera rotundifolia* and *D. anglica* as well as various small grasses and non-sphagnum mosses which are all important as competitors to *D. linearis*. In alkaline bogs, the population of *D. linearis* is so large that it is difficult to walk without crushing them. The alkaline medium gives a competitive edge to these plants where other CP are scarce.

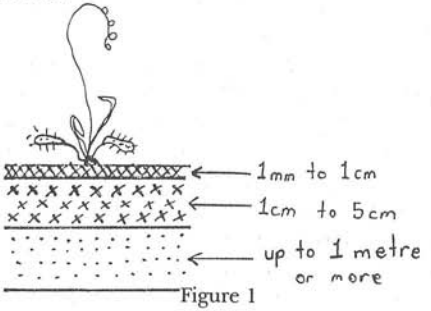

Figure 1

The soil composition where *D. linearis* is commonly found is made up of three distinct layers (Fig. 1). The top layer is peat, where most of the roots are. The second layer is peat and sand, where some roots are found. The bottom layer is sand. At this time I do not have have any data on the pH of each layer but I intend to acquire this in the future.

The temperature conditions where these plants grow naturally vary from extremely cold to very hot: 30 to 40 degrees Celsius in summer, and -5 to -15 degrees Celsius in the winter. (See Fig. 2.) Precipitation in this area is high es-

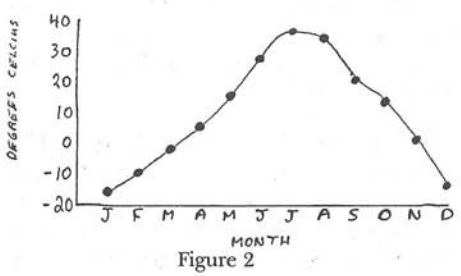

Figure 2

Utricularia

Micheal Depaz (18, Rue J. Henduchx, 4391 Berloz, Belgium) sends these slides of various *Utricularia*. The flower scapes of *U. tricolor* were initiated during the cold winter temperatures in the greenhouse (5° C) and 12 hours of light a day. They form as early as February but they grow very slowly, and the flowers open in July-August *U. dusenii* undergoes the same conditions, but the flower scape appears much later. However, it grows much faster and flowers about the same time. Plants are growing in German peat.

U. tricolor: flower height about 1 cm
U. dusenii: flower height about 2.5 cm
U. dichotoma: flower height about 1 cm

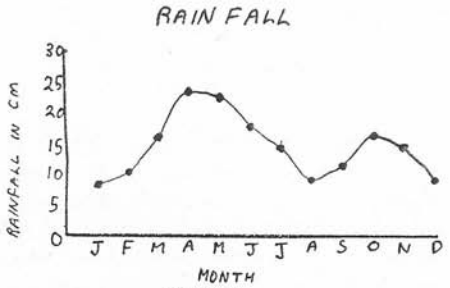

Figure 3

pecially along the shores of Bruce Peninsula so that a rainfall of 15 cm per month during summer is normal. The winter dormancy lasts anywhere between six to eight months.

In cultivating this *Drosera* in my house, *D. linearis* is kept with all my other CP. The plant receives direct sunlight in summer of about 6 hours. The plants are grown in living sphagnum moss in clear plastic cups containing two plants per cup and no drain holes. I keep the medium very wet, to the point where the water is clearly visible at the surface. One can also use peat moss or dried sphagnum as alternatives.

The medium used for seed germination is made up of a 50/50 mixture of sand and peat with a layer of fine chopped sphagnum on the surface. The seeds are sown on the medium, and then placed in the refrigerator for 4 weeks followed by a freezer treatment for 4 months and finally a two week refrigerator treatment before being placed in an area receiving a minimum of 6 hours of sunlight.

The most difficult factor in dealing with *D. linearis* is the dormancy period. I found that beginning in September, one must place the plants in an area where sunlight is limited to 4 or 5 hours per day, and temperatures are below 18° C. After two weeks of this, the plants can be placed in the refrgerator in their pots which should be only damp, and covered with a plastic bag. This dormancy period should last until late April. The refrigerator temperature is approximately 38° F, and the freezer is about 10° F.

Lighting conditions for seed are the same as for adult plants: full sun in a southern window. The seeds are sealed in a cup with a plastic bag on a damp peat medium. I have not had fungus

(Continued on page 27)

Toothwort (continued from page 17)

Genlisea and those of the *Lathraea* and the question of the secretion of enzymes and the catching of prey. I examined over 100 leaves of the *Lathraea* but nowhere did I find the remains of any prey or living organism. The absence of the ubiquitous protozoa, mites, nematodes and other organisms in the cavities of the leaves is not favourable for animal life and the Toothwort thus protects the inner surface against the harmful influence of organisms from the soil. Maybe the enzyme mentioned by Heslop-Harrison has an effect here.

The trap of *Genlisea* would then differ in principle from the "trap" of *Lathraea* only in the fact that *Genlisea* has a mechanism preventing its prey from escaping which *Lathraea* does not have. Therefore, the inner part of the hollow leaves of *Genlisea* kills the prey whilst that of *Lathraea* probably repels it.

Despite the similarity between the leaves of *Lathraea* and those of *Genlisea* and the fact that both belong to the related families Scrophulariaceae and Lentibulariaceae, I have not found any signs of carnivory in the Toothwort.

References

Danert, S. 1973. Urania Pflanzenreich. Hohere Pflanzen 2. Leipzig, etc.

Heslop-Harrison, Y. 1976. Carnivorous Plants a Century After Darwin. Endeavor 35/126: 144-122.

Managetta, G.B. 1897. Orobanchaceae. In Engler, A. et Prantl, K., Die naturlichen Pflanzenfamilien, vol. 4, sect. 3b. Leipzig.

(Received 8/17/81)

Schnell, Rt. 4, Box 275B, Statesville, NC 28677.)

Thompson, J.N. 1981. Reversed animal-plant interactions: The evolution of insectivorous and ant-fed plants. Biol. J. Linnean Soc. 16:147-155.

In this interesting article, the relative ecologic strategies of plant carnivory and another insect-plant relationship, the mutualistic one of tropical ant-plants, are discussed in evolutionary terms. It is concluded that while both guilds have similar environmental stresses in terms of soil nutrient deficiencies, CP are primarily adapted for "what they do" because they are mainly herbs growing in wet soils, or vines in close, wet forests (e.g., *Nepenthes*), whole ant-plants are mainly vines or other kinds of plants in open areas or canopies, often reasonably dry. The theory that such plant-insect relationships occur in evolution multiply suggests that plants as a whole have limited responses to nutrient lack in soils or water.

Dionaea muscipula
Photo by Thomas Carow

WANT ADS

When submitting Want Ads, please be sure to print clearly for best results and to eliminate mistakes. Please circle the correct letter before each item (Want, Trade, Sell or Buy). Want ads are limited to carnivorous plants, terrariums, greenhouses and moss. There is a charge of ten cents per item, with no limit to the number of items you may submit per issue.

Send coin or check to:
Arboretum, Want Ads
California State University
Fullerton, CA 92634

Bruce Lee Bednar (25 Lake Court Loop; SSS Ocala, FL 32672) [TS] red tube *flava*, giant Okee *minor, rubra gulfensis, rubra wherryi, rubra* × *alata, rubra* × *leuco, rubra* × *psitt, rubra* × *purp, psitt* × *leuco, psitt* × *minor, purp* × *leuco, purp* × *flava, purp* × *alata, alaata* × *leuco,* and many more. [WT] *Nepenthes* plants or cuttings, *Heliamphora*.

Grant Birmingham (88 Sturocks Rd.; Christ-Church 5; New Zealand) [WTB] *N. rajah, N. villosa, N. northiana,* any New Caledonian CP, any *Heliamphora, P. vallisnerianaefolia, D.* × *collinsiae, D. alba, D. ramentaceae, D. banksii, D. indica, D. arenicola,* plus any other uncommon CP. [T] *D. arcturi* (NZ), *D. stenopetala, D. spathulata* (NZ), *D. adelae, P. mexicana, U. monathos,* plus other NZ and Australian *Drosera.*

Joseph P. Cantasano (2717 Jerusalem Ave.; North Bellmore, NY 11710) [WB] *Cephalotus.*

Mark Forster (c/o Buckley Hutton; 167 Collins St.; Melbourne; VIC 3000; Australia) [BT] seed of *Nepenthes spp.* (except *mirabilis, khasiana*), *Byblis gigantea, Drosera regia, Heliamphora,* Mexican pinguiculas, *Polypompholyx.* [T] seeds of *Drosera auriculata, D. peltata,* small seedlings of *Darlingtonia californica* (Australia only).

Steve Smith (Rd. #1, Box 296; Kirkwood, NY 13795) [ST] rooted *Nepenthes* cuttings, Mexican pinguiculas, *Drosera,* and *Utricularia* plants. Send SASE for current list of species available. Include your list if interested in trading.

Drosera (continued from page 20)

problems, as the full sun and low moisture level seem to keep this problem to a minimum. The seeds should germinate in four weeks with a 60% success rate (lower if the plant is self-fertilized). When seedlings are three weeks old, they are placed in plastic pots in the same medium as adults and treated as mature specimens.