

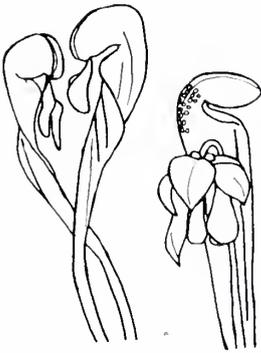
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CARNIVOROUS PLANT NEWSLETTER

VOLUME 10, Number 1

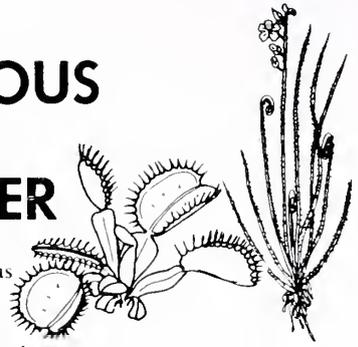
MARCH 1981





CARNIVOROUS PLANT NEWSLETTER

Official Journal of the
International Carnivorous
Plant Society



Volume 10, Number 1
March, 1981

COVER

Byblis gigantea white flowered form from a plant grown by Allen Lowrie. It is hoped that seed will soon be available. Please turn to page 14 for more details. (Ed. note: Ref. front and back cover—slides did not reproduce well due to insufficient color saturation.)

Photo by Allen Lowrie

The co-editors of CPN would like everyone to pay particular attention to the following policies regarding your dues to the ICPS.

All correspondence regarding dues, address changes and missing issues should be sent to Mrs. Kathy Fine, c/o The Fullerton Arboretum, Dept. of Biology, California State University, Fullerton, CA 92634. **DO NOT SEND TO THE CO-EDITORS.** Checks for subscriptions and reprints should be made payable to CSUF FOUNDATION-ARBORETUM.

All material for publication, comments and general correspondence about your plants, field trips or special noteworthy events relating to CP should be directed to one of the co-editors. We are interested in all news related to carnivorous plants and rely on the membership to supply us with this information so that we can share it with others.

Views expressed in this publication are those of the authors, not necessarily the editorial staff. Copy deadline for the June issue is May 1, 1981.

CO-EDITORS:

D. E. Schnell, Rt. 4, Box 275B, Statesville, NC 28677

J. A. Mazrimas, 329 Helen Way, Livermore, CA 94550

T. L. Mellichamp, Dept. of Biology, UNCC, Charlotte, NC 28223

Leo Song, Dept. of Biology, California State University, Fullerton, CA 92634

BUSINESS MANAGER: Mrs. Kathy Fine, c/o The Fullerton Arboretum

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Editor's Corner

The CPN co-editors get many letters from concerned subscribers imploring us to take an active part in preserving a threatened local bog or other CP stand, or wishing us to announce that a CP area is doomed and everyone should come and rescue the plants.

Concerning the first question of attempting to preserve a threatened area, it has been the experience of most conservationists that as much local or state activity as possible should be exercised at first rather than people or organizations from outside the area being called in. First of all, many local residents who have doubts about preserving such an area may immediately bridle at the concept of "federal," "national," and "outsider". Local people are much more amenable to their own. Also, there are often many local or statewide organizations that are closer to your problem and should be contacted first. The very efficient Nature Conservancy (a private but nationwide organization) has state named local chapters (such as North Carolina Nature Conservancy) that may be willing to help if not actively attempt to purchase the property. Also, many states now have a Heritage Program. The Audubon Society has many local chapters and they may be interested in the property as part of their sanctuary program. Many communities and states have lay or mixed botanical clubs and wildflower societies or clubs, often with well-established plant rescue operations. Finally, some combinations of the above can be effective. We know of instances where local chapters of national groups have been successful. Combinations (such as Nature Conservancy and Audubon) have secured lands, and even small countywide nature clubs have saved lands by persuading donation by the local owner! Thus, local attempts should be vigorously pursued through all channels possible prior to calling on a national effort. University botany departments in your area can help you with a list of local organizations and chapters of conservation groups.

Seed Bank

To send seed: Please remove seed from the seed capsules and place it in small envelopes (preferably paper so that they dry out enough to prevent mold). Label with the origin and date of collection, including habitat if it is exotic. Fold the envelope over once or twice before taping so that the seeds don't stick to the tape. After the seed is received it will be placed in smaller packets; donors will be informed of how many packets they have donated. A donation of 10-19 packets earns one free seed packet of comparable rarity, with one free for each additional 10 packets.

Do not ask to trade for seed from the bank. Everyone will have to buy all but their

free packets. When you send seed, indicate whether it is for the seed bank, for Patrick's seed project or for a personal trade. The seed bank is separate from his collection.

To order seed: Please enclose payment. List the seeds desired and an equal number of substitutes in order of preference. If requested, Patrick will add any cultural instructions of which he is aware. Patrick will answer all letters and orders as quickly as possible; if you receive no response within two weeks (U.S.) to a month (outside U.S.) please write again. Each issue of CPN will include an update of the inventory. Cost per packet: 50¢. (Number of packets is listed if less than 15 are available). (Address next page.)

SEED BANK INVENTORY

PATRICK DWYER (St. Michael's Episcopal Church
49 Killean Park, Albany, NY 12205)

Byblis liniflora, *Darlingtonia californica*, *Dionaea muscipula*, *Drosera adelae* (5), *D. aliciae* (4), *D. arcturi*, *D. auriculata* (6), *D. binata* "T" (4), *D. brevifolia* (2), *D. burkeana* (5), *D. burmanii* (Taiwan), *D. capensis*, *D. capensis* (narrow), *D. capillaris*, *D. capillaris* (long), *D. cuneifolia* (5), *D. erythrorhiza*, *D. filiformis filiformis*, *D. filiformis tracyi* (10), *D. indica* (white) (4), *D. intermedia*, *D. macrantha* (10), *D. montana* (15), *D. pellata* (10), *D. planchonii* (6), *D. pygmaea* (2), *D. rotundifolia*, *D. spatulata* (5), *D. spath.* (Kansai), *D. spath.* (Kanto), *Drosophyllum lusitanicum* (10), *Nepenthes khasiana*, *N. mirabilis*, *Pinguicula alpina*, (10), *P. caerulea* (5), *P. lutea* (15), *P. vulgaris*, *Sarracenia alata*, *S. flava*, *S. leucophylla*, *S. minor*, *S. oreophila* (15), *S. psittacina* (5), *S. purpurea purpurea*, *S. purpurea purpurea heterophylla* (5), *S. purpurea venosa*, *S. purpurea venosa* "Louis Burk", *S. rubra alabamensis*, *S. rubra gulfensis*, *S. rubra hnesii*, *S. rubra rubra* (5), *S. rubra wherryi* (10), *Sarracenia sp. & hybrid mix*, *S. mix*, *Utricularia gracilis* (2), *U. graminifolia* (5), *U. resupinata* (5)

SPECIAL ANNOUNCEMENTS

We are now soliciting petitions for the nominations for the Society officers-President, Vice-president and Secretary. All nominees must be Society members as well as the signatories on the petitions. To qualify for nomination, each candidate must have at least 25 signatures. A person can nominate only one candidate/office. Please send all petitions, which can have any number of signatures, to J.A. Mazrimas; 329 Helen Way; Livermore; CA 94550; USA. Names will be checked against the master member list and tallied. Those candidates with at least 25 non-repetitive signatures will be listed on the ballot to be sent with the June issue. Please be sure that petitions are clearly marked as to office. All nominations must be received by 15 May 1981. This procedure is part of the transition process and therefore does not exactly follow the by-laws.

Please note that membership in the Society is on a calendar year basis only. We cannot accept applications on a billing basis except for institutional members (ex. Universities, colleges, libraries, botanic gardens/arboreta, etc.). Your cancelled check is your receipt. It is planned that membership cards will be issued and this will serve the purpose of a receipt in the future.

CORRECTION

JEFF GROTHAUS [1265 Iliff Ave. Cincinnati, Ohio 45205] writes: In *CPN* December '80 some of my comments were used in the News & Views section. There is an error in the 4th paragraph. The line as it appears reads: ". . . plastic film for this purpose and am pleased with the results." It should read: ". . . plastic bags in an effort to provide a humid environment for his or her CP. I have just started using a clear plastic film for this purpose and am pleased with the results." As you can see an important part was omitted.

We have received many requests regarding the back issues for Vols. 1-4. Our stock is temporarily exhausted. We will announce in *CPN* when they will be available as well as ordering information. Please delay any orders until then.

News and Views

Cliff Dodd II [c/o The Aku Tiki Inn, 2225 S. Atlantic Ave., Daytona Beach, Fla. 32018] writes: I am writing you as to the results of the trip to Sabah, Malaysia and the plants collected there.

First, let me say I did not get anything like the amount of different species I had hoped, but did find some plants and a few interesting facts you might be interested in. The first few trips were with a guide in the lowland areas near Kota Kinabalu where we turned up *N. mirabilis*, *gracilis*, and *rafflesiana*. These were growing under two types of conditions as far as I could tell. They were either covered by tall grass (and therefore difficult to find) or growing out of small cracks in the rocks completely exposed. In both cases the soil they grew in consisted of red clay very similar to that found in N. Georgia. *N. rafflesiana* was in bloom and had very attractive reddish-brown flowers in a tight cluster. Unfortunately it was too early in the year for seeds. I also found one plant of *N. mirabilis* in bloom. The flower was rather ugly, a tall-spike with greyish colored sepals. I did not see any hybrid plants, possibly due to different blooming periods with each species, however the guide said on occasion he had seen natural hybrids in the area.

I spent one night at Headquarters on Mt. Kinabalu which was the best part of the trip. Weather was cool and rainy in general but the mornings were nice and you could walk down paths cut out of the jungle. Plant collecting was forbidden within the park, but the guide said he knew an area outside the park that contained some nice plants. The next day we drove into another mountain range not far from Kinabalu to have a look. We saw the usual lowland species on the way up, but at 3000 ft. it got very cold and I was told there would be other species here. The guide said for some reason this area of the mountain range always was wet and cold, indeed it was as cold as the park which was some 2000 ft.

higher. We stopped here to try and collect a *Platynerium coronarium* in a dead tree, but we had no ropes to control which way the tree fell when cut and it plunged, Staghorn and all, into a canyon beyond reach. Still we went higher and at 4000 ft. began looking for *Nepenthes*. Here we found *N. alata*, *fusca*, and several intermediate hybrids. I was overjoyed. Also, we found a species I am totally unfamiliar with. It has long funnellform green pitchers covered with short white hair, dark purple stems, a narrow lid (like *fusca*), and a few purplish spots toward the mouth of the pitcher. We managed to collect four cuttings of this plant and left the roots in the ground so it could grow back. It looks very similar to *N. x 'Superba'*, when it pitchers I'll send some pictures to you.

The guide also gave me some other plants, some he had planted at his home: *N. tentaculata*, *N. x hookeriana* (am uncertain of I.D. but the new leaves are covered with long orange hair and it is definitely not *N. ampullaria*), a nice large section of *N. ampullaria* with several rosette pitcher emerging from the ground, and many other species of various plants: Rattan, *Alocasia cuprea*, *Asplenium nidus* and other ferns and a nice ginger which unfortunately did not survive the journey.

I had hoped to get *N. lowii* and *rajah* but could not. I did see a collection of dried *N. rajah* pitchers and they were huge, even after they had dried out. Also I was given pictures of a good many species from the mountain and a new species that was discovered in the lowlands. I wish I had a copy of this one to send you. The pitchers are the size and shape of *N. rafflesiana* upper pitchers, but they are cream-yellow and are always found hanging in pairs, *two* per leaf/petiole!! I was told they grew far from where we were and that if he collected some at a future date he would send a few to me. I only hope it survives postage.

At the park they had various species

planted in the orchid garden and one sign caught my eye, *N. x louvilosa* (*lowii x villosa*) a hybrid I'd never heard of. The bad thing was that the plant was gone, stolen by a collector according to the guide. He said there were many species planted out that had "mysteriously vanished" this unique one among them. In fact the only two plants I saw that were left were *N. fusca* and one gigantic specimen of *N. burbidgae* which was some thirty feet up a tree. There was one pitcher near the ground and I took a photograph of it.

For those at CPN who are interested in the ecology of Mt. Kinabalu, there is an excellent book available through the parks department. It is called *Kinabalu, Summit of Borneo*, and is \$9.80 U.S. It is in English and has many pictures of the flora, fauna, geology, and early exploration of the Mt. beginning with Sir Hugh Low. Four *Nepenthes* are pictured in color plates; *edwardsiana*, *lowii* (showing development from immature pitcher with peristomes to mature ones), *rajah* and *villosa*. There are drawings of several more and a short section on these plants. (They name *N. maxima* as occurring there as well as *N. fusca*). For information about the book write: Hon. Secretary, P.O. Box 547, Kota Kinabalu, Sabah, Malaysia.

PHILLIP JACOBS (Huddle Park Nursery, Club Street, Linksfield, Johannesburg 2192, South Africa) reports that according to an entry in a flora of South Africa, *Aldrovanda* was once recorded years ago from the Okavango Swamp area near Botswana, South Africa. There is no update on whether it has been seen recently.

DAVID KAROHL (515 E. Essex, Kirkwood, MO 63122) was an AFS exchange student in Switzerland during the summer of 1980. His exchange family enjoyed hiking and on one occasion at about 2000 meters, he encountered white flowered *Pinguicula alpina* growing prolifically on a sloping, moss covered field kept constantly moist by melting snow higher up on the slope. A few large plants were present. The slope is part

of a ski resort near Elm. On another occasion, he discovered *P. vulgaris* growing in a moor at about 1600 meters. Azaleas and some other alpine plants were present. Both the floral exhibition called GRIEN 80 and the Botanischer Garten der Universitat Zurich had impressive CP displays. Plants were growing outside in 2.5 x 1.5 meter cases set about 1 m off the ground. The sides were wire mesh (vandal problems? - - ed.), and sloping plexiglass was used as the top, presumably to prevent hard rains from displacing plantings. However, each sloping roof had a downspout leading down into the planting medium thus providing rainwatering. Species included *Darlingtonia*, *Sarracenia purpurea*, *S. flava* variants, *S. leucophylla*, *Pinguicula gypsicola*, *P. caudata*, *Dionaea*, *Drosera pygmaea*, *D. spathulata*, *D. capensis*, *Cephalotus*, *Drosophyllum*. David's primary interest is CP with a strong secondary interest in orchids, and sundews head his collection with about 25 species.

NEIL MORRISON (2818 Little John, San Antonio, TX 78209) would like to let others know about his carnivorous plant garden. He is growing *Droseras* and *Sarracenias* mainly, e.g. *D. filiformis*, *S. rubra*, *S. alata* and *S. psittacina*. He notes that *D. filiformis* requires good drainage such as in a medium of one half sand and one half Canadian peat. Remaining sundews and *Sarracenias* do well in long fiber sphagnum.

DON SCHNELL writes: Our intrepid correspondent DALE SPEIRS of Calgary, Alberta sent an interesting article from an 1875 issue of *Botanical Gazette* (1:66-67). It is actually a review of other current periodicals in which is mentioned an article in the *October American Naturalist* by Prof. WJ Beal entitled *Carnivorous Plants*. The usual genera are listed along with *Silene* spp. which often crops up in the older literature in this respect. However, another genus we had not before considered was also discussed in some detail, this being the species *Martynia proboscidea*. As often happens over time, the genus has now been changed to *Proboscidea* in the family *Martyniaceae*, two rather common

and widespread species being *P. louisianica* and *P. parviflora* in North America. The genus is most recognized for its peculiar fruit from which the common names "unicorn plant" and devil's claws" are derived. The fruits are often pickled as food. Prof. Beal apparently felt that the densely glandular character of vegetative portions of the plants (similar to *Silene* in this respect) was an indication that it was carnivorous, and he went so far as to calculate the prodigious numbers of small insects trapped by one large bushy plant. He placed small bits of beef on some experimental plants and "in some cases" the pieces disappeared. He further observed that trapped insects lived but a short period of time although often held by as few as one to four hairs. So, you folks living near good patches of *Proboscidea* look into this and let us know. At worst, you could end up with some interesting pickles.

STEVE SMITH (Rt. 1, Box 296, Kirkwood, NY 13795) has found what may be an answer to the algae problem in growing *Aldrovanda*. He had previously used the tea made by



Aldrovanda

Photo by J.A. Mazrimas

soaking Canadian peat in hot water, but this and many other methods result eventually in an overgrowth of algae and severe decline in the *Aldrovanda*. He is now trying a solution of ½ teaspoonful of tannic acid in ½ gallon of water. If algae starts to grow from the original innoculum, he adds ½ teaspoon of tannic acid additional once a week until the algae turns yellow and dies. Meanwhile, so far, his *Aldrovanda* culture is considerably rejuvenated with budding and new growth. Steve will keep us posted on how this new method works over the long run.

BILL WEBBER (3526 Belle Ave., Roanoke, VA24012) sent along a large photo from a travel brochure on China. The photo is of the Summer Palace in Peking and shows a large portion of the pond in the palace, and in the pond is what appears to be a very luxuriant growth of some yellow flowered species of aquatic *Utricularia*! The picture is clear enough to discern the genus with reasonable certainty, but not the species. If anyone has any idea what species of *Utricularia* grows in the pond of the Summer Palace in Peking, please let the editors know.

STEPHEN E. WILLIAMS (Dept. of Biology, Lebanon Valley College, Annville, PA 17003) wishes to make the following correction in his *Dionaea* article which was in CPN 9:65ff (Sep, 1980), specifically in the last paragraph on p. 65: "... I should have written classes instead of phyla since all the organisms I was talking about are in the phylum Arthropoda. Even though my traps do catch slugs and snails in the greenhouse on occasion and I suspect they do so in the field as well, the statement has to be put down as a slip of the pen."

SARA ZART (9548 McVicker Ave., Oak Lawn, Ill. 60453) writes: Growing carnivorous plants in the home or in a greenhouse is nice, but there's something really special, exciting, to see them growing in the wild.

One summer my family and I went on
(Please see N & V-Zart P. 20)

IN REPLY TO THE ARTICLE ON "CANNINGTON SWAMP"

by Allen Lowrie
6 Glenn Place
Duncraig, 6023 Western Australia

The Cannington Swamp I wrote about in my article "Cannington Swamp R.I.P." is not the Yule Brook Botany Reserve in Kenwick. The Cannington Swamp I wrote about is in Cannington about 8 miles away from the University's reserve.

I don't "suggest" that Cannington Swamp is disappearing. I'm saying it "is" disappearing, and fast.

The road that runs through the middle of Cannington Swamp was once the only destruction. Now all one side of the road is housing. The *D. zonaria* patch is a huge sand pit. The best *Byblis gigantea* patch has a storm water drain right in the middle of it. The remaining swamp will also be housing, judging by the proposed road layout.

Yes, I believe the plants can be moved to a place where they will be admired. If they weren't removed they would be

gone forever.

D. species "Lake Badgerup White," an unnamed pygmy *Drosera*, is a perfect example. If Steve Rose had not collected this *Drosera* five years ago, it would not be common in cultivation all over the world today. *D. species* "Lake Badgerup White" is no longer found in the wild. A market garden has taken over its habitat.

What people don't realise is that most of the rarer plants are confined to small scattered habitats all over Western Australia. If people like myself didn't make small collections of these plants, they could be lost forever. I would suggest that some of the plants found in Cannington Swamp in Cannington are not found on the Yule Brook Botany Reserve in Kenwick, and vice-versa.

MORE ON PREDACIOUS FUNGI

by Glenn Claudi-Magnussen
26861 Quevedo Lane
Mission Viejo, CA 92691

In my last article about predacious fungi (CPN 9:401980), I concentrated on the various methods used by these fungi to capture their prey. This article deals with several other diverse, but equally fascinating, aspects of these fungi, including the formation of traps, the presence of toxins in some fungi, and the classification of these organisms.

Although much of the confusion which used to surround the classification of predacious fungi has been cleared up in

recent years, there are still some points of confusion. To begin with, it is still unclear whether fungi belong in the Kingdom Plantae, in the Kingdom Protista, or in their own kingdom. Also, the validity of several genera. The same is true for a few species which are so similar that they may just be varieties of the same species. As with the carnivorous Angiosperms, there are probably some species which have yet to be discovered, too.

Unlike most carnivorous plants, the

predacious Hyphomycetes generally do not form traps in pure culture. The introduction of nematodes will cause the traps to be produced, as will the introduction of sterile water in which nematodes have lived. Several other things have been found which will stimulate trap formation, including horse serum, rain water, an ethyl alcohol solution, and contact with glass. The name "nemin" is often given to the substance which *naturally* induces trap formation, although this substance has not yet been isolated and identified.

It seems practical to follow the plight of a nematode encountering a Hyphomycete with adhesive traps. On contact with the adhesive (which, by the way, is normally adhesive only to nematodes), the worm quickly withdraws. Nine out of ten times, the worm will escape this way. If it is still held the worm will struggle violently. It may free itself, but even a small branch of fungus stuck to it will often kill the worm. If it cannot escape, the worm usually becomes quiet after an hour or so. Trophic hyphae then enter the nematode's body to absorb nutrients. After about twenty-four hours, the nutrients have been removed and the fungal protoplasm withdraws, leaving only an empty worm filled with empty hyphae. Most species with adhesive mycelial traps have a similar sequence for capturing and digesting prey.

Many mycologists have suggested that some species of predacious fungi produce a toxin which is used to kill prey. The rapidity with which nematodes captured by Hyphomycetes die (usually one to two hours) tends to discredit the old theory that the prey dies from its injuries alone. It has been found that sterile filtrate from nematodes captured by *Arthrobotrys oligospora* and often kills other nematodes, indicating the presence of a toxin in this species. It seems very likely that all or most of the predacious Hyphomycetes possess this same capability. It also appears that at least some of the species with adhesive spores use a toxin to kill their prey. A toxin would serve to decrease the likelihood that the spores are rubbed-off as the worm moves about. The presence of toxins in other species is very

possible, although no evidence has been found to indicate their presence.

The minute size of the predacious fungi makes the various functions that the fungi perform even more impressive. The mycelium of some species is only .003 millimeter in diameter. The spores of some species are less than .002 millimeter in length. Nematodes which are only .6 millimeter long are too large to be caught by many species of fungi. Although the growth of some species may become very extensive, the parts are never large and the traps are generally much too small to see without magnification. In many cases, the entire trapping mechanism consists of from one to three cells.

The predacious fungi have evolved a number of mechanisms to help them capture, kill, and digest their prey. Though some appear similar to certain carnivorous Angiosperms, it is obvious that neither is the progenitor of the other. It is quite possible, however, that both evolved their carnivorous nature in response to similar environmental pressures.

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(Please see FUNGI p. 20)

On Growing *Drosera regia*

by Phillip Jacobs

As to *Drosera regia*, I use clear plastic Take-away food containers with clear lids. These containers are roughly 10 x 7 x 5cm deep and I make drainage holes before putting in a shallow drainage layer of gravel and then filling up to within 1/3 of the top with a mixture of 50/50 sharp sand and sphagnum peat. After sowing, I put on the lid[s] and leave it slightly open at one end for air, and place in a greenhouse with a temperature of about 18 to 27° C. and in a semi-shaded position. I keep the seed very moist without being sodden continually. Germination takes place within 3-4 weeks with fresh seed. I use these plastic containers for all or most of my CP seed sowing as I find that with the initial good soaking of water before sowing, no further watering is needed for a long time which helps to cut down on attention and labor. They are also useful for placing in a refrigerator with seeds which require low temperature treatment to germinate, as again, little, or no attention to watering is required, and they take up very little space and can even be packed on top of each other in the fridge, if space is limited.

I find that *D. regia* needs **extra good drainage** with regular watering to keep the compost very moist—similar to growing the Mexican pinguiculas such as *P. caudata* where I stand the pots in shallow trays, water the plants from the top, and then allow surplus water in the trays to disappear, and the compost to become just moist before adding more water again—I use rain water. The compost which I use for my *D. regia* is as follows:

- 3 parts sphagnum peat
- 1 part Sedge peat [Michigan peat, I believe you call it in the USA]
- 2 parts sharp sand
- 1 part gravel
- Plus, some charcoal nodules.

With good light, the tentacles of *D. regia* become almost black-red in color and this is a good indication of enough light. I give

25-30% shade in this climate here where the sun is very strong due to both latitude and elevation [6,000 ft.]. In nature, *D. regia* grows in a mountain region of the S.E. Cape Province but although the winter temperatures in the locality where they grow can become quite low, in winter the temperatures range from about 40° F. at night up to 65-70° F. during the day. In summer the temperatures can go up to 85° F. or more. I find that the plants go semi-dormant during the cooler winter season with most of the leaves dying down but not completely. I grow my plants with a winter minimum temperature of about 45° F. and this seems to suit them. I find that leaf cuttings are useless for propagation as they rot off rapidly despite any care given them. With root cutting, propagation is easy, but from my experience, there is only a limited time for optimum results and that is when the plants start to grow away vigorously in spring. The roots are thick and black and I find that you can remove 2/3 of roots present without harming the adult plant, provided it is immediately repotted in fresh medium and covered with a clear plastic bag [with holes for ventilation] and stood in a semi-shaded spot until recovered from the shock. I cut the thick roots up in 2-3 cm lengths with a razor blade, and lay them on the surface of a 50/50 sphagnum peat/sand mix and push them into the surface until only the upper face of the root surface is exposed [laid horizontally]. Temperature is kept at 18-25°C. and the medium very moist. After about 6-10 weeks buds develop and often more than one but to a root piece.

Special Request

CPN would like to know if anyone else has successfully grown *Drosera regia*. Please send information for possible publication to J.A. Mazrimas: 329 Helen Way, Livermore, CA 94550.

CARNIVOROPHYTES ON STAMPS AND COINS

by D.C. Speirs
Box 6830, Station D
Calgary, Alberta, Canada T2P 2E7

"Specialize, young man, specialize!"
(With apologies to Mr. Greeley.)

It is not likely that anyone can claim to have a living collection of all the plants in the world. Most serious growers specialize in a particular group, and for readers of CPN that group is obviously carnivorophyts. Stamp and coin collecting is much the same; a particular country or topic will be chosen. Being one such collector, I specialize in botanical stamps and coins, and among those in my collection are the ones which picture carnivorophytes. Such extreme particularity is not too difficult since these stamps are relatively inexpensive, the earliest having been issued in 1962. Collecting the coins is even easier, as only one political entity has ever offered carnivorophytes.

Sarracenia purpurea is the floral emblem of Newfoundland. It was pictured on pennies—"small cents" in the coin trade—issued between 1938 and 1947 by Newfoundland, which at that time was a dominion entitled to its own cur-

rency. (In 1949, Newfoundland joined the Canadian Confederation and became a province thereof.) Seven issues of pennies were minted, the only difference being the date. A complete set can be had for about \$15 at the time of this writing. The number of pennies minted ranges from 300,000 (1940 and 1947) to 2,000,000 (1942) and quite a few are still available. Contact your local coin dealer for further details and prices. (Fig. 1)

There are about a dozen stamps showing carnivorophytes. In slogging through stamp catalogs, one quickly realizes that most philatelists are not botanists, as pitcher plants are commonly listed as orchids, and *Aldrovanda* was placed under the heading "Marine Flora"!

Starting with *S. purpurea* again, it is pictured on a 1966 five-cent Canadian stamp, part of a series depicting provincial floral emblems. This is, of course, the one dedicated to Newfoundland. There are "broken petal" varieties of this stamp, in which defective printing resulted in variation of the flowers. They sell for a premium over the normal stamp. (The difference between judging a plant and a stamp is that the



Fig. 1 One cent Newfoundland coin with *S. purpurea*. Photos by author.



Fig. 2. Five cent 1966 coin with Newfoundland provincial emblem and *S. purpurea*.

former must be in excellent condition to win any prizes, while the latter is more likely to bring home accolades if it is defective!) (Fig. 2)

The Canadian floral emblem series was repeated on postal stationary starting in 1973. Two sets of twelve envelopes were produced, one at the eight-cent domestic rate (Domestogramme), the other at the fifteen-cent rate (Aerogramme). (Figs. 3 and 4) The artwork was completely different than the stamps, *S. purpurea* being shown in habitat rather than as a single plant. The

Canada 8



Postage/Poste

Fig. 3. Close up of inset on 8 cent Aerogramme.

artwork consisted of an imprinted stamp, with the design enlarged and repeated on the back of the envelope. The envelopes first came with a typographical error, which was corrected in the second printing. The inscription on the imprinted stamp read “postage/poste” rather than “postage/postes.”

In 1962, the French overseas territory of St. Pierre and Miquelon issued a 100 franc airpost stamp. (Fig. 5) These islands are near the southern coast of Newfoundland and there are no prizes for guessing that the carnivorophyte shown was *S. purpurea*.



Fig. 5. St. Pierre and Miquelon air mail stamp.



Fig. 4. View of 15 cent Aerogramme.

Pitcher plants, as a generalized group, are the most honored of carnivorophytes in the stamp world. *Nepenthes* species are shown on a number of issues put out by tropical countries. First off the mark was Seychelles, an island republic in the Indian Ocean near Madagascar. In 1970, *N. pervillei* appeared on their 20 cent stamp. (Fig. 6) This species is named after the French botanist Auguste Perville and is endemic to Seychelles. It is a vining plant and almost always associates itself with the tree *Randia sericea*.



Fig. 6. *N. pervillei* on Seychelles stamp.



Fig. 7. *N. pervillei* on Malagasy stamp.



Fig. 8. *N. phyllamphora* on Laos stamp.

Another Seychelles stamp honoring *Nepenthes* appeared in 1978, being a 15 rupee value. Nearby Madagascar (Malagasy) put out two stamps in 1973, also depicting *N. pervillei* (25 and 40 franc values). (Fig. 7) Laos produced (I'm running out of synonyms for "issued") a 500 kip airmail stamp in 1974. (Fig. 8) The pitcher plant shown is *N. phyllamphora*, spelled *N. phillamphora* on the stamp.

Around the other side of the globe in South America is Guyana, home of *Heliconia*. Their 1972 one cent stamp depicts a flowering specimen of *H. nutans*, with

the common name 'Pitcher Plant of Mount Roraima' given as well. (Fig. 9) As an aside, Mt. Roraima is honored on a series of British Guiana stamps put out before independence.

Pinguicula has been shown on stamps twice, both appearing in 1978 as parts of series dealing with nature conservation. Japan portrayed *P. ramosa* on a 50 yen value, and Ireland (Eire) did likewise with *P. grandiflora* on all 11 pence value. (Figs. 10 and 11 respectively)

Of the aquatic carnivorophytes, *Aldrovanda vesiculosa* was pictured on a 20 bani (Please see STAMPS p. 18)

Byblis gigantea

by Allen Lowrie, 6 Glenn Pl.,
Duncraig, 6023.
Western Australia.

Byblis gigantea grows only in South West Western Australia. It grows best in white silica sand areas. *Byblis gigantea* can be found from south of Geraldton to just south of Perth. In the South, it grows in swamps that dry out in the late summer. In the North, it grows on silica sand heaths.

I read with amusement a paperback book on CP when I was in America in June, 1980. The author stated that *Byblis gigantea* in Australia catch rabbits and squirrels as their everyday prey. I can assure your readers this is not so. For a start, we don't have squirrels and secondly, the biggest prey *Byblis gigantea* can catch is small insects—generally mosquitos.

The southern form of *Byblis gigantea* is generally smaller in size compared to the northern form. The flowers of the southern form are generally smaller than the northern form also.

(Please see **BYBLIS** p. 19)



Steve Rose checking out a giant clump of *Byblis gigantea*.



Byblis gigantea northern form in habitat
Photos by author

The British Carnivorous Plant Society

By John Watkins, Chairman

In May 1978 the Carnivorous Plant Society was started in London by a small group of enthusiasts who enjoyed meeting, exchanging plants and observing others' ideas on plant culture. At the inaugural meeting a charter was drawn up which included the following aims: to bring together all those interested in carnivorous plants; to help in their conservation; and to provide enthusiasts with a means of exchanging information on growing techniques and conditions of natural habitat. Together with these horticultural obligations, the society fosters an interest in scientific/botanical research and helps and encourages researchers in any way possible.

The society holds nine monthly meetings per annum, where visiting speakers talk to us about subjects varying from plant culture to field trips and expeditions. Members are encouraged to bring along plants to exchange with other

members or to donate to the raffle. In this way many new members obtain their first plants and long standing members add new plants to their collections. In addition to the nine monthly meetings we generally organise two summer visits, one to a member's collection and another to a natural site of carnivorous plants. This year we were lucky to have Richard Lindsay of the Nature Conservancy Council take us to Thursley Common in Surrey, where we saw *Drosera rotundifolia*, *D. intermedia* and *Utricularia minor*.

We publish two journals per annum; these are distributed to all members. They contain letters and points of interest sent in by members as well as full articles on current research, descriptions of plants and guidance on cul-

(Please see BRITISH p. 22)



The British C.P. Society from left to right: David Taylor, projectionist; Eric Binstead, Secretary; Sandy Balhgal, Librarian; John Watkins, Chairman holding silver gilt medal; Phil Norris, Editor; John Arnott, member.

Horticulturists' Corner

by Larry Mellenchamp

I have been asked several times how to handle a newly received collection of CP's which have come "bare root" from the grower. Normally, you would treat them as you would other types of plants which have been received through the mail or UPS. First, unwrap each plant CAREFULLY and look for broken roots, stems or leaves. Use a sharp razor blade to cut away carefully any damaged parts; if not removed, they will rot soon and mess up the growing medium. If the main stem has been broken, you may be able to root the larger, upper portion if it is a *drosera*. You may also go ahead and plant the lower stem with the roots still intact and see if it will send up new growth. Some CP's have thick, black, brittle roots, like *Drosera capensis*, *D. binata*, and *Cephalotus* (depending on the age); new plants will grow from just these pieces of root if they are long enough (one or two inches have worked for me).

After you have examined each plant, removed damaged parts, and laid out each plant separately, you are ready to pot them up. All of this should be done in a cool, shady place if possible; certainly these delicate plants that have been wrapped up inside a dark box for several days would be shocked by hot, dry air and very bright sunlight; they can be damaged by such conditions. You may need a spray-bottle of water — maybe with a little fungicide — to dampen down the areas to add humidity if the air is very dry. Be careful not to soak the plants or you increase the chances of fungus rot. There is a fine line of optimal humidity that is appropriate for newly planted plants; they like to "rest" in a subdued environment for a few days while they recover from the shock of their trip. Keep it cool, shady, and relatively humid.

Have your potting medium ready. You can use moist peat moss or sphagnum,

mixtures of peat and sand or peat and perlite, or whatever you like for the specimens you are growing. I really can't think of any CP's that would not get off to a good start in plain shredded sphagnum or a mixture of ground peat and perlite (except the aquatic ones, or calcium-loving types, of course). Certainly *droseras*, *utricularias*, *sarracenias*, *nepenthes* and *cephalotus* can go directly into whole long-fiber sphagnum that has been shredded a little by hand to make some of the pieces smaller and soaked in lukewarm water, with the excess squeezed out. This medium is lightweight, well aerated, and holds just enough water. Put each plant into the smallest container that it will fit in without cramping the roots. Too large a container can lead to overwatering; too small can lead to crowding the roots and stunted growth (though that will take a while). It would be better to use a container that is a little too small than one that is too large. Try and gently get the roots in the medium — I wrap a little sphagnum around the roots to make a ball, and then gently push the root ball into the pot, letting it conform to the shape of the pot. The new, healthy leaves should be above the medium, perhaps lying on the surface for *droseras*. *Sarracenias* should have the tips of their leaf bases, or new leaves, just coming out of the sphagnum moss. If necessary, trim a few lower leaves from the *drosera* which have a lot of leaves and then place the roots and a little bit of the lower stem into the sphagnum as described above. Use an instrument such as an old pencil, stick, knife, or straw to dig a small hole in the moss; help position the roots; and then cover back the medium. This keeps your big fat fingers from squeezing the tiny plants in your nervous zeal to plant it right the first time. Usually the plant will recover from

transplanting if they are not crushed, broken, or bruised. They are quick to grow new roots, especially the easy *Droseras*, if the humidity is kept up and the air is not too hot. (Don't put them too near grow-lights, for example.)

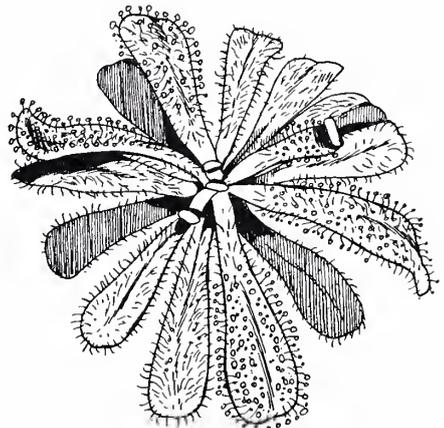
After transplanting, leave the plants alone for a few days; try and not even look at them. You may be surprised after a few days that they begin to perk up a bit and even grow a leaf or two. If nothing seems to be happening after a short time (say, two weeks), then something may be wrong. They probably would have rotted by then if they were going to. If they are still dormant when transplanted, then of course you will have to wait a while until they warm up, or the days get longer, before new signs of growth resume. Winter may be the best time to plant many species, especially *Droseras*, while they are dormant. However, I have read and think it would be true that it is best to transplant anything (especially *Sarracenia*s) during their active growing season, so that they will have the proper conditions to recover quickly from the transplant shock which inevitably happens in forms such as broken roots and bruised leaves. I have found this to be true when separating plants also.

Clumps of *Droseras* or branching *Sarracenia* rhizomes may be separated and the new individuals potted separately to increase the size of your collection or to provide material for trading and selling. This should be done during the active growing season, but I have done it during the early spring while *Sarracenia*s are still dormant without mishap. It is wise to treat the newly cut surfaces with fungicide and to use a very sharp razor blade to make the cuts to prevent infection. Never tear plants apart: you might tear the wrong parts. Make good, clean cuts where you want them. You will have to observe the specimens you wish to divide to determine whether there is sufficient material to separate. Try and make sure both new pieces have some roots and active

growth on them. Flytraps should have begun to form separate growing points with their own root system; *Sarracenia*s should have well separated growing points with their own roots; and *Drosera* should be large enough to have sufficient stem to handle the separated pieces. *Drosera* usually form new roots more quickly if there were none already present, if you keep the young tender plantlets from drying out while they recover and begin growing.

For plantlets which have been produced from leaf cuttings of *Drosera*, Venus' flytrap, or *Pinguicula*, it is important to wait until the tiny plantlets have fully rooted before cutting them away from their "leaf." In fact, it would be better to wait until they are quite large and have very well developed root systems. On *Drosera filiformis*, for example, I have obtained sprouts from one-inch leaf cuttings on a sphagnum surface in 6 weeks, but I would wait another four to six weeks before separating the plantlets. For situations like this, you can experiment with different techniques since you can always grow some more plantlets from another leaf if the first set doesn't make it. You learn best from experience!

(Please see HORT. CORNER p. 26)



D. Hamiltonii
by Jim Miller



Fig. 9. *H. nutans* on Guyana stamp.



Fig. 11. *P. grandiflora* on Irish stamp.



Fig. 10. *P. ramosa* on 50 yen stamp.



Fig. 12. *Aldrovanda* on Romanian stamp.

stamp issued in 1966 by Romania, part of a series on aquatic plants. (Fig. 12)

For those wishing to buy these aforementioned stamps, I list below the catalog numbers. When contacting a stamp dealer, give him the country, year of issue, and catalog number. Be prepared to contact quite a few dealers, as the stamps, while inexpensive, are not easy to locate, most having been absorbed into collections and no longer readily available. You may also have to buy them as part of a set. Scott's catalog is used in Canada and United States, Stanley Gibbon's in the British Isles and pound sterling area.

Before closing out this article, mention should be made of one country which has not yet issued any carnivorophyte stamps, namely the United States. There are any number of species which might be considered for such honors, but one would think the Venus flytrap is the best choice. To the general public, it is *the* carnivorophyte, instantly recognizable. It is solely an American plant found nowhere else in the world, and suitable for the U.S.P.S. policy of honoring subjects related in some way to the U.S.

U.S. American CPN readers might wish to send a letter to the Stamp Advisory Com-

mittee (c/o Postmaster-General, Washington, D.C.) lobbying for a Venus flytrap stamp. The Stamp Advisory Committee considers thousands of design proposals every year, of which only 30 or 40 are accepted, so one should not be too hopeful, but there is no harm in trying. The stamp might be suitable as part of an Endangered Flora series.

Catalog numbers of carnivorophyte stamps

COUNTRY	YEAR	SCOTT'S	STANLEY GIBBON'S
Canada	1966	427	552
(Canadian postal stationery not cataloged, ask for by description)			
Eire (Ireland)	1978	430	423
Guyana	1972	133	542
Japan	1978	1320	?
Laos	1974	C116	394
Malagasy	1973	496	255
		497	256
Romania	1966	1867	3399
St. Pierre & Miquelon	1962	C24	419
Seychelles	1970	280	288

BYBLIS - continued from p. 14

The seeds of *Byblis gigantea* can be germinated by pouring boiling water over them. When the seeds are cool, they can be planted out onto 50/50 peat and silica sand. The main problem with *Byblis gigantea* seedlings is damping off.

The medium I have used with excellent results for growing mature *Byblis gigantea* plants is 50/50 perlite and peat.

In cultivation the plants do not go dormant and die back to a woody stump as they do in the wild. I have noticed that they slow down their growth in the cooler months, but move very fast when the warmer weather arrives in early summer. In the summer months, I stand my plants in water. When *Byblis gigantea* get older, they tend to get rather untidy. When this happens, it pays to cut back the plant com-

(Please see BYBLIS p. 20)



B. gigantea in A. Lowrie's greenhouse.

Photo by Author

pletely, leaving about 4 cm of woody stump in the pot. New eyes will develop, generally more than one. In a very short time, the plant grows again, but this time with better form. a good cut back every year produces better-looking plants with more flowers.

Byblis gigantea flowers are generally dark mauve through to light pink. Some blooms are completely circular and filled in. Others generally the northern form, are more open and star shaped.

Last year I found a rare *Byblis gigantea* that has produced a pure white flower. This plant, I'm happy to say, is growing very nicely for me, and with luck I may get seed from this plant this year. If luck goes my way I hope to get this *Byblis gigantea* var: *alba* to the point where it will be very common in cultivation. (Please see front cover.)

Byblis gigantea is fairly easy to grow and is well worth growing for the fantastic display of flowers it gives every year.

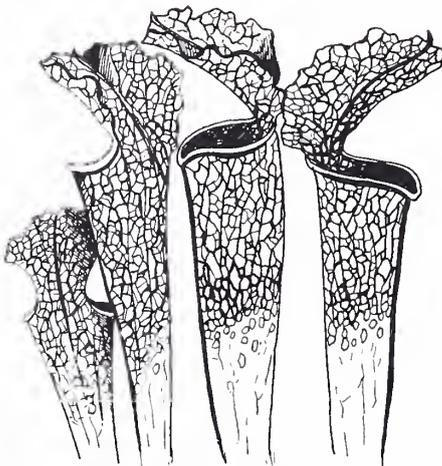
vacation to an island up in northern Michigan. We reached the 13 by 7 mile island by a 3 hour ferry ride from the mainland to the island port. While going down a trail looking for one of the island lakes, we came upon a sphagnum bog. Looking across the bog, you could see the ground covered with *Drosera rotundifolia*, and *D. anglica*. Also, we found *Sarracenia purpurea* in this bog.

While rowing along the bank of another inland lake, we spotted large *S. purpurea* plants with dozens of tall flowers. These plants were large, gorgeous specimens—the largest I've ever seen!

While fishing in another inland lake, we spotted a stand of tiny yellow flowers. Looking closer, we found *Utricularia cornuta* and *U. vulgaris*. Walking along the sandy beach, we came across many patches of *Drosera linearis*, *D. rotundifolia*, and *Pinguicula vulgaris* growing in the sand.

We went to the Biological Station on the island and talked with a man there. A book was written on the bog plants found on the island and so we used a copy to help us identify some of the plants. We came upon a little stream of water, and what a neat place this was! In the stream, on the very shallow edges, we found *Utricularia intermedia* and in the middle of the stream were huge bunches of *U. gibba*, practically clogging the stream.

This was the first time we ever saw CP in the wild, and it was very exciting! It's a special feeling to see these groups of CP in their natural habitat.



Sarracenia leucophylla
Drawing by Jim Miller

FUNGI - continued from p. 9

Lloyd, Francis Ernest, *The Carnivorous Plants*, New York, Dover Publications, Inc., 1976.

Otto, James H., and Towle, Albert, *Modern Biology*. New York, Holt, Rinehart and Winston, Publishers, 1977.

Review of Recent Literature

A Horticultural Guide to Australian Plants, Set 7, 1980. Readers of CPN will recall a review of the previous sets in this loose leaf publication. This set also contains a few carnivorous plants in addition to other interesting Australian plants of horticultural potential. The CP are *Byblis liniflora*, *Drosera adelae* and *D. glanduligera*. The pages are on glossy paper and the format is a very well printed color photo on one side with the text on the other, the latter including derivation of name, range map, habitat and climatic details, description and growing suggestions. For purchase information on this and /or prior sets, write: A Horticultural Guide to Australian Plants, SGAP-Qld. Region. PO Box 809, Fortitude Valley, Qld., 4006, Australia.

Angerillia, N. P. D. 1980. Influences of aquatic plants on colonization of artificial ponds by mosquitoes and their insect predators. Can. Ent. 112:793-796. The plants involved were *Utricularia minor*, *Elodea canadensis* and *Lemna minor*. There were fewer mosquito eggs and larvae in ponds filled with the above plants than in plantless controls, and more predators in the *Utricularia* and *Elodea* ponds than in the *Lemna* and plantless ponds.

Dixon, KW, et. al. 1980. Nitrogen nutrition of the tuberous sundew *Drosera erythrorhiza* Lindl. with special reference to catch of arthropod fauna by its glandular leaves. Aust. J. Bot. 28:282-297. Using ¹⁵N labeled *Drosophila* flies, nitrogen uptake in leaves, stems and daughter and replacement tubers was noted by counts, and was traced thru two seasons of growth. Seasonally, there was transfer of nitrogen back and forth from tubers to vegetative parts. A list of arthropods caught by the species is presented also. Phenotypic variants lacking glandular tentacles oc-

curred sporadically in natural and pot-grown cultures. Plants without tentacles did not absorb ¹⁴C insects. These variants reverted to production of tentacles in ensuing seasons.

Nordbring-Hertz, B. and G. Odham. 1980. Determination of volatile nematode exudates and their effects on a nematode-trapping fungus. Microb. Ecol. 6:241-251. Volatile organics were determined by gas chromatograph, and CO₂, NH₃ and acetic and propionic acids by other methods, as expressed from nematodes. The effects of some of these compounds in trap induction in *Arthrobotrys oligospora*. Generally (somewhat concentration dependent -- see paper), CO₂ inhibited, NH₃ stimulated and the two acids had no effect on trap induction.

ONTARIO NATURALIST, Vol. 19, No. 2, Summer, 1979. It is not often that a review covers an entire issue of a journal or magazine, but this particular issue warrants such consideration. ONTARIO NATURALIST is the publication of THE FEDERATION OF ONTARIO NATURALISTS, an organization to which all Canadian CP enthusiasts should belong, and those Americans in the Northeast or who otherwise frequently botanize in Ontario. The Summer, 1979 issue is devoted to the subject of inland wetlands. The article by Dr. John H. Sparling (pp. 10-17) is alone worth the entire issue. This article is complemented by "Wetland Primer" (pp. 29-34), "centerfold" treatment of excellent photo illustrations of the wetland types described by Sparling. The importance of the two articles lies in the general confusion of when to use such various terms as swamp, marsh, bog and fen, and various subclassifications of these entities. British and Canadian naturalists use the term "fen"

more often than Americans. Thus what we often call a "marl bog" (perhaps colloquially?) is in actuality a kind of fen. Bogs are herein described as originating at pond, lake or stream margins, or upon old fens, and of course contain masses of sphagnum mosses in which certain ericaceous shrubs grow. The whole business of how to classify wetlands is in some disarray. Elsewhere in the issue, Dr. Sparling is described as one of only a half dozen wetlands specialists in Ontario, and even they disagree in some aspects of classifying these vital areas-- what to call any one. This difficulty is partially due, of course, to the nature of wetlands which

may well be composites or spectra of several types intermingled. I would have preferred more than casual mention of the kettle or pond bog, and raised bogs founded on old fens may very often have underlying or adjacent diffuse springs as a water source rather than almost always being restricted to rain. Other than these two minor criticisms, the issue is strongly recommended as "must" reading for those interested in northern wetlands. The discussion, by the way, holds equal usefulness for Americans as well. The issue can be obtained for \$2.00 from the Federation of Ontario Naturalists, 355 Lesmill Rd, Don Mills, Ontario, M3B 2W7, Canada.

BRITISH CP SOCIETY

continued from p. 15

trouble the beginner. Regular newsletters are sent to members to keep them in touch with the society's activities; they also contain points of interest brought up at previous meetings.

For over a year now the society has been collecting books, articles and scientific papers on matters relating to carnivorous plants for the society library. Books are available at meetings, for a loan of a monthly period.

A seed distribution scheme is available for all members. Lists of available seed are sent to members, who can choose the seed they want and send in their orders, together with an S.A.S.E., to the society. Availability of seed is subject to demand and if a particular species is out of stock, we will hold the order until more seed is available. The seed bank is run by a member for other members and is therefore dependent on the membership for seed donations.

Although the central branch of the society has its meetings in London, we now have a South - West Branch, which is situated at the Somerset College of Agriculture and Horticulture, in Cannington, Nr. Bridgwater, Somerset. The branch was formed in February, 1980 and since then

has had two meetings, but aims to have four meetings per annum and intends to start a plant exchange some time in the near future. There are plans for a northern based branch of the the society which would serve members living in the West Midlands.

For two years now, we have been exhibiting as a society at the Chelsea Flower Show. Both times we were awarded Silver-Gilt Medals for our display of carnivorous plants growing in a sphagnum bog setting. This year we exhibited at the Southport Flower Show and were very pleased to be awarded a Silver-Gilt Medal for a similar display.

Since its foundation, the society has had considerable interest from overseas enthusiasts, and we now have members living all over the world. This we encourage as an interchange of ideas and theories, especially since horticultural matters is one of the objects of the society.

The annual membership fee is £4.50. ordinary member, and £4.00, overseas member. A reduced membership fee will be available for members under 16 years of age in 1981. Please direct all membership inquiries to Eric Binstead, Hon. Secretary, 13, Grange Farm Road, Ash Aldershot, Hants. GU12 6SJ, England.

CP SOURCES

Name and Address	Catalog Price	Stock
Carolina Exotic Plants P.O. Box 1492 Greenville, NC 27834	75¢	<i>Dionaea, Drosera, Sarracenia, Darlingtonia, Pinguicula, Utricularia, live Sphagnum</i>
Chatham Botanical P.O. Box 691 Carrboro, NC 27510 Telephone (919) 929-2003	50¢	<i>Pinguicula, Drosera, Dionaea—tissue culture; other tissue cultured CP—inquire</i>
Country Hills Greenhouse Rt. 1 Corning, OH 43730	\$1.50 refundable with order	<i>Nepenthes</i>
Exotic and Bizarre Plant Nursery Wandena Rd. Bullsbrook East; West Australia 6084*	\$1.00	<i>Cephalotus, native Drosera, Nepenthes and CP seed</i>
* North America customers must contact sole agent: Carolina Exotic Gardens.		
Marcel Lecoufle 5, Rue de Paris 94470 Boisse St. Leger France	inquire	<i>Cephalotus, Darlingtonia, Drosera, Dionaea, Pinguicula, Nepenthes, Sarracenia</i>
Carnivorous Gardens P.O. Box 331 Hamilton, NY	\$1.00	<i>Cephalotus, Dionaea, Drosera, Pinguicula, Nepenthes, Sarracenia, Utricularia, Byblis liniflora</i>
Peter Pauls Nurseries Canadaigua, N.Y. 14424	25¢	<i>Sarracenia, Dionaea, Drosera, Utricularia, Darlingtonia, Nepenthes seed, Pinguicula, live Sphagnum</i>
Plant Shop's Botanical Garden 18007 Topham St. Reseda, CA 91335	\$1.00 refundable with order	<i>Drosera, Byblis liniflora, Pinguicula, Sarracenia, Nepenthes, Cephalotus, Dionaea, Utricularia</i>
Whispering Pines Nursery P.O. Box 119 Bastrop, TX 78602	free	<i>Pinguicula, Dionaea, Sarracenia, Cephalotus, Drosera, Nepenthes, Byblis liniflora</i>
World Insectivorous Plants P.O. Box 303 Grant, FL 32949	50¢	<i>Cephalotus, Dionaea, Drosera, Drosophyllum, Nepenthes, Sarracenia, Aldrovandana, Pinguicula, Byblis liniflora, Utricularia, Heliamphora</i>
W.T. Neale & Co., Ltd., B.M. & S. Lamb 16/18 Franklin Rd. Worthing, Sussex, BN132PQ England	inquire	<i>Sarracenia, Dionaea, Darlingtonia seeds</i>

CP SOURCES

(continued)

The co-editors and CPN do not endorse any of the above vendors. This is only being provided as a service to our subscribers. Information correct at time of receipt. Please contact them for further information. Not responsible for omissions. Inquiries for inclusion in future lists should include a catalog/price list of CP available, cost of catalog and address. Send information to J.A. Mazrimas; 329 Helen Way, Livermore, CA 94550.

QUESTION AND ANSWER

Alain Godbout, [38 Rue Labelle, Beauport, Quebec, Province de Quebec, Canada, G1E-5R3] asks: Is *Parnassia* a carnivorous genus or not?

Parnassia (Grass-of-Parnassus) is a northern genus. In the past it has been placed in the Saxifragaceae family. The family is closely related to the Droseraceae and Cephalotaceae, but not very much. Nowadays, the trend is to split *Parnassia* off into its own family, the Parnassiaceae, since it is so different from other members of that family (Alum root, saxifrage, Strawberry begonia, foam-flower, astilbe, etc.)

As far as I know, there has been no legitimate nor conclusive work to show that *Parnassia* is carnivorous. The flowers do produce modified staminodia, which appear to be long-stalked glands. These, for pollination purposes, supposedly lure flies and other insects, thinking it abundant nectar. It is neither nectar nor sticky, but merely a decoy.

I also know of no CP in which parts of the *flower* catch insects, as would be the case with *Parnassia*. even though these staminodia are modified leaves, as are all flower parts, they are not like the vegetative leaves of other CP, which are modified for catching and digesting insects. Usually, the flower parts of plants are very ephemeral, being functional only during pollination, fertilization and seed production. The stamens are particularly short-lived, and so are these staminodia. They probably do not last as long as the tentacle hairs of *Drosera*.

There are plenty of plants which produce sticky hairs, glands, epidermis, etc., which often catch small insects; but they are not actively digested nor absorbed by the plant. In the case of *Parnassia*, I don't even think the staminodia (appearing sticky and glistening) catch insects. Therefore, in conclusion, *Parnassia* is *not* a carnivorous plant, any more than *Stylidium*, *Plumbago*, or the other "sticky hair" genera are. —T.L.M.



S. Leucophylla X *S. Minor*

by Jeff Gold

THE 1981 LIST OF CP BOOKS

Not available through CPN. Order direct from publisher or your local bookshop.

* = books intended primarily for children.

1. Insectivorous Plants, Charles Darwin, AMS Press, 1893, 56 E. 13th St., N.Y., N.Y. 10003, \$27.50.
2. Plants that Eat Insects: A Look At Carn. Plts.*: Anabel Dean, Lerner Publications, 1977, 241 First Avenue, Minneapolis, MN 55401. \$3.95.
3. Plants of Prey in Australia, Rica Erickson, Univ. of W.A., Press 1968: World Insectivorous Plants, P.O. Box 303, Grant, FL 32949, Cloth, \$12.00 ppd.
4. Animals & Plants that Trap*: Phillip Goldstein, Holiday 1974, Holiday House, Inc., 18 E. 53rd St., N.Y., NY 10022. \$5.95.
5. Nepenthes of Mt. Kinabalu (in Eng.), Kurata, S., Sabah Nat'l. Park, World Insectivorous Plants, Box 283, Grant, FL 32949.
6. Carnivorous Plants, F.E. Lloyd, Dover Pub., Inc., 180 Varick St., N.Y., NY 10014, Soft cover (1976), \$4.50.
7. The World of Carnivorous Plants, J. and P. Pictropalo, R.J. Stoneridge, 1974, Peter Paul Nurseries, \$6.30.
8. Insect-Eating Plants*, L. and G. Poole, T.Y. Crowell, 1963, 666 Fifth Avenue, N.Y., NY 10003, \$4.50
9. Plants that Eat Animals*, J.H. Prince, Nelson 1978, Thomas Nelson, 407 Ave. S, Nashville, TN 37203, \$7.95.
10. CP of the U.S. and Canada, D. E. Schnell, John F. Blair, Pulisher 1976, 1406 Plaza Dr., SW, Winston-Salem, NC 27103. \$19.95 + Shipping.
11. Carnivorous Plants, Randall Schwartz, Avon Books (soft cover) 1975, 959 Eighth Ave., N.Y., NY 10019, \$1.25.
12. Carnivorous Plants, Adrian Slack, MIT Press, 1979, 28 Carleton St., Cambridge, MA 02142, \$19.95.
13. Cultivating Carnivorous Plants, Allen Swenson, Doubleday & Co., 1977, Garden City, NY 11535, \$7.95.
14. Carnivorous Plants*, John F. Waters, Franklin Watts, Inc., 1974, 845 Third Avenue, N.Y. NY 10022. \$4.90.

SPECIAL ANNOUNCEMENT

Missouri Botanical Garden, St. Louis, is having its first carnivorous plant show April 25 to May 16 in the Climatron. Approximately 40 different species & hybrids in 8 different genera will be on display.

COMING IN JUNE

- *S. purpurea* variants
A color reference
- The Czech Butterwort
- *Polypompholyx*

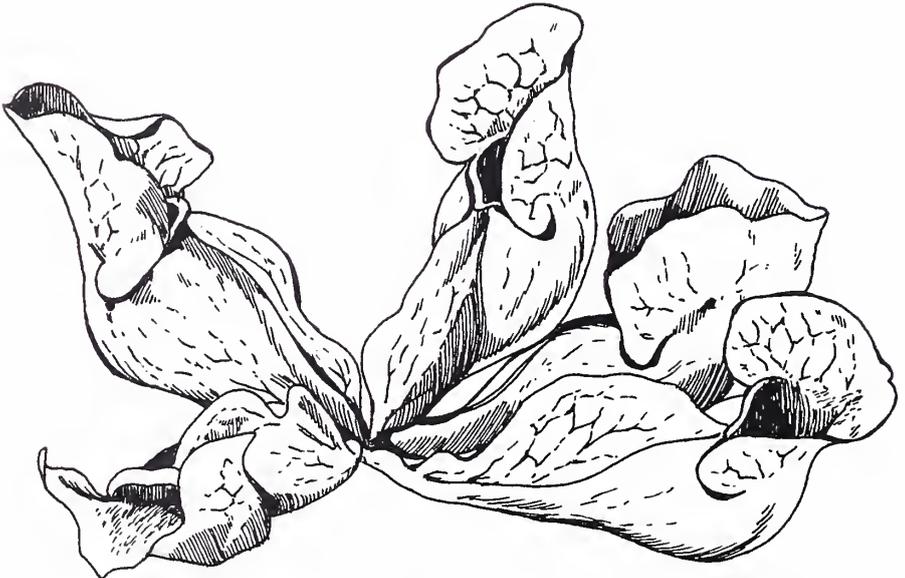
Summary:

1. Work in a cool, shady place. Have medium ready.
2. Remove damaged parts of newly received (or divided) plants.
3. Use a pot just the right size.
4. Place moss around the roots, then put them into the pot; OR make a hole in the medium, place the roots in, spreading them out if possible, cover, and water to settle.
5. Plant so that new leaves are above the medium (sarracenia), or so that lowest leaves are lying on top of medium; remove some leaves if necessary (drosera).
6. Keep under medium humid conditions the first week.
7. Divide plants by cutting with a sharp razor blade.
8. Treat cut portions with fungicide.
9. Treat cuttings as above in repotting.
10. Divide during the growing season if possible.
11. Wait until new roots are present on new plantlets before dividing them.



Double pitcher of *S. alata* X *S. psittacina*

Photo by J.A. Mazrimas



Sarracenia purpurea
Drawing by Jim Miller

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

F. Campbell, 611 8th Ave; Menlo Park, CA 94025. (WB) *D. erythrorhiza*, *D. schizandra*, *D. prolifera*, native U.S. plants, Australian plants *prolifera*, native U.S. plants, Australian plants, *Pinguicula* sps., *Heliamphora*. Plants, seeds, cuttings.

Jeff Dull; 1502 Cedar St.; Elkhart, IN 46514. (WB) *S. purpurea* ssp. *purpurea*, *S. purpurea* f. *heterophylla*, *P. alpina*, *P. grandiflora*, *P. villosa*, *P. vulgaris*, and other northern *Pinguicula*s, *D. anglica*, *D. linearis*, *Cephalotus*.

Michael D. Goddard; 90 S. Yates, Denver, CO 80219. [T] only for other *Nepenthes*. *N. alata* red, *N. cocinea*, *N. ventricosa*, *N. boissiensis rubra*, *N. thorellii*, *N. rafflesiana*, *N. gracillii*, *N. khasiana* all are rooted cuttings. Seedlines - *N. rafflesiana vitatta* X Singapore, *N. chelsonii* X *N. rafflesiana*.

Jeff Gold, 13126 Anza Drive, Saratoga, CA 95070. (TS) plants, seeds, and cuttings of 125 + species of CP, including: *Byblis liniflora*, *Dionaea muscipula*, *Drosera adelae*, *D. aliciae*, *D. binata* (all forms), *D. burmanni*, *D. capensis* (three forms including crestate), *D. filiformis* (three forms), *D. montana*, *D. prolifera*, *D. pulchella* and other pygmy *Drosera*, *D. schizandra*, *D. spatulata* (various forms), *D. whittakeri*, *Utricularia longifolia*, *U. prehensilis*, *U. sp.* (Panama, aquatic), *U. uliginosa*, *Sarracenia minor*, *S. psittacina*, *S. purpurea* f. *venosa*, *S. rubra* (Gulf); computer listing sent on request (send S.A.S.E. for quickest response); (WB) miscellaneous CP and other unusual plants, tissue culture supplies.

John H. Hummer, 1705 N. Quebec St., Arlington, VA 22207. [TS] **Sarracenia oreophylla*, **S. rubra-wherryi*, **S. rubra-jonesii*, *S. oreo* X *alata*, *S. oreo*, *S. alata* X *leucophylla*, **S. purpurea* X *leucophylla*, **S. purpurea* X *minor*, **S. purpurea* X *rubra-wherryi*, *S. psitt.* X *rubra* X *leuco.*, *S. psitt.* X *minor*. * species in limited quantity.

Cliff Owens; 717 SE 16th St.; Ft. Lauderdale, FL 33316. (WB) *S. flava* variants #2, 3, 4, 5, and 6 of CPN 9(2): 42-43 (1980), *N. rafflesiana*, *D. prolifera*, various *Sarracenia* hybrids.

Patrick Riley; 195 Goldsmith Road, Pittsburgh, PA 15237. (B) *Cephalotus* (p), *B. gigantea* (s), *Dionaea* (s), *D. regia* (ps), *D. adelae* (p), *D. indica* (ps), *D. spatulata* X *D. capensis* (ps). Any ps. *Heliamphora* (ps), Mexican *pinguicula*s (ps), *N. X chelsonii* (pc), *N. fusca* (p), *N. tenticulata* (p), (ps) of the following—*P. planifolia*, *P. primuliflora*, *P. ionantha*, *P. vulgaris*, *P. grandiflora*, *S. X formosa*, *S. X courtii* and *S. X exornata*. (p=plants, s=seeds, c=cuttings).

Adrian Slack; Barton St. David; Somerton, Somerset, England. (WTB) *D. prolifera*, *D. schizandra*, *D. arcturi*, *D. petiolaris*, *D. miniata*, *D. drummondii*, *D. cistiflora* scarlet flower. *P. X kewensis*, *U. cornuta*, *S. leucophylla* yellow flower.

Harald Weiner; Kaiserstr. 74; 3250 Hameln I; West Germany. (WB) *N. villosa*, *N. edwardsiana*, *N. truncata*, *N. decurrens*, *N. philippinense*, *P. macrophylla*, *P. macroceras* ssp. *nortensis*, *P. imitatrix*, *P. elongata*, *P. agnata*, *P. pumila*, South American sps. of *Pinguicula* & *Drosera*, *D. ramentacea*, *D. affinis*, *D. andicola*, *D. platypoda*, *D. cistiflora*, *D. pauciflora*, *D. flexicaulis*, *D. chrysolepis*, *Heliamphora heterodoxa*. Will be able to offer ca. 140 sps. and forms of CP.

Bill Webber; 3526 Belle Ave.; Roanoke; VA 24012. [WTB] *S. purpurea* ssp. *purpurea* f. *heterophylla*. [T] only, *Byblis gigantea*, *Polypompholyx multifida*, *Drosera heterophylla*.

Sara Zart; 9548 McVicker Ave.; Oak Lawn; IL 60453. [WTB] any *Heliamphora*, *Pinguicula grandiflora*, *P. mexicana*, *P. moranensis*, *P. macroceras*, any tuberous *Drosera*, *Utricularia radiata*, *U. racemosa*, *Drosera schizandra*, *Nepenthes* X *boissiensis rubra*.



Byblis gigantea normal magenta flower form in habitat.

Photo by Allen Lowrie

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