

The Truth About Carnivorous Plants is Hard to Find . . .

by

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And so it is. My name is Thomas Hanley and I have been growing Carnivorous Plants (CPs) for about 4 years. As with many people, it was simple fascination with one of nature's unique forms that held my attention. Fascination quickly gave way to the challenge of providing the specific conditions carnivores require. This, more than any other factor, has provided the opportunity to tie many aspects of my life into one enjoyable avocation which incorporates quality control, specialized systems, computers, and my true vocation: Illustration. Initially, given a few discarded

Sarracenia purpurea and *Dionaea muscipula*, the plants did well with only long fiber peat moss and distilled water (Fig. 1).

During this growing season the plants seemed to thrive and flower in simple containers. I based this success on the regularity of my watering and care taken that heat exposure did not reach extremes.



Fig. 1. *Sarracenia purpurea* and *Dionaea muscipula* in pot culture.

Preparing for the 1993 growing season, I realized that to provide specific care would require more detailed information. The ability to locate this information, I found, appears to be the most difficult aspect of raising CPs, as the following inquiries indicate:

Nurseries: While many local nurseries sell limited CPs each spring as an oddity, they are generally not inclined to provide specific information support due to limited resources or other market-driven agendas.

Libraries: Typically, only books geared for children are available without special orders from main branches. These books are usually overly simplistic, no longer current, or inaccurate.

Book Stores: Book stores can be very helpful in searching for existing titles on any subject. Given a little time they can find most ISBN titles. Obtaining a copy is another matter. Many books are no longer in print. A bigger problem is that, if the book is from a publisher not supported by their parent company, the book will be unavailable.

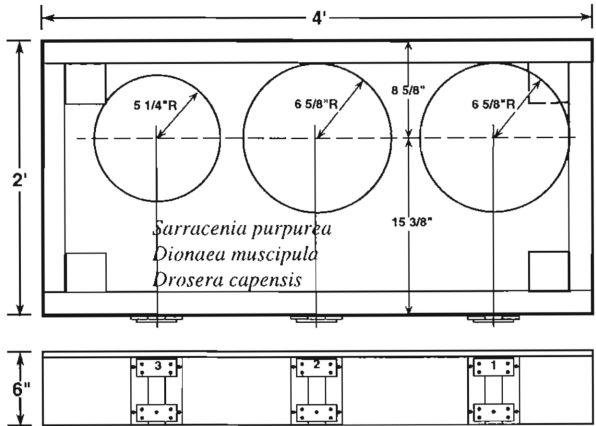
Garden Clubs: Many fine gardening clubs and societies are available to help on most subjects, but usually CPs lie somewhere outside their areas of expertise. Few home gardeners would want to recreate a

bog or swamp.

CPN: The CP Newsletter has been the best directional source of information to date. Luckily, a friend gave me a magazine article about Phil Sheridan's work with CPs. The ICPS was listed as a contact for more information.

After wintering in the garage with reduced watering, all plants were cleaned, crowns split if necessary, and transplanted into three large pots containing peat and vermiculite. A dedicated structure was then built to provide a safer, more accessible habitat for the plants.

During this growing season, several of the plants slowly decayed. I attributed this to the effects of top watering which caused compaction of the soil. Since I watered with filtered rain water, nothing suggested salt or mineral build-up. Time-lapse photographic experiments in progress did not permit repotting; as a result, soil compaction progressed and fungus became more of a problem due to a lack of oxygen.



Dedicated Structure Built in 1993

Gordon Cheers' book *Carnivorous Plants of the World* offered some insight into my problems. Unfortunately, it was not obtained until late November. By this time I had written a short article including a questionnaire and mailed it to individuals who had submitted material to the **CP Newsletter**. A high percentage returned detailed replies. Of greater note was that **Jerry B. Stahle, Sr.**, called long distance from New York to personally ensure I received the information needed most. Mr. Stahle provided a wealth of information on soil preparation, seed stratification, and care of *Dionaea* and *Drosera*. My thanks must go out to him!

Applying this information, the *Sarracenia purpurea* were cleaned, sprayed with fungicide, and placed in cold storage for winter. *Drosera* seeds obtained from **Tom Johnson** at the **ICPS Seed Bank** also began stratification using Mr. Stahle's directions.

Spring 94 arrived presenting the opportunity to correct past mistakes and move forward. Winter had been put to good use locating any books or material available. Of all the titles listed in the CPN book list, three could be obtained: *Carnivorous Plants of the World* by **James and Patricia Pietropaolo**, *Carnivorous Plants of the United States and Canada* by **Donald E. Schnell**, and *Carnivorous Plants - Care and Cultivation* by **Marcel Lecoufle**.

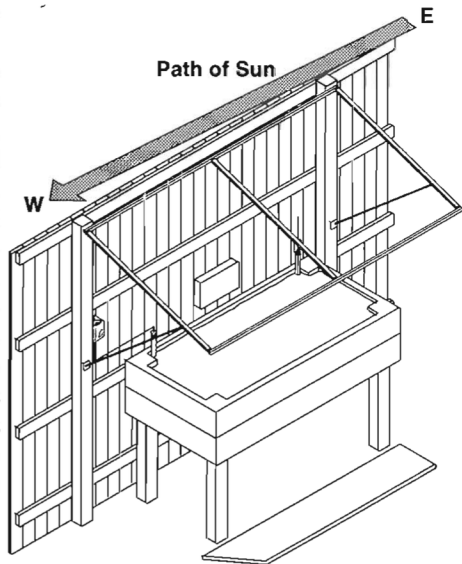
After digesting the new information, I decided to convert the past season's structure into a simulated bog in the hope that a simple micro-climate could be established to better protect the plants from many of the stresses previously experienced. The goal was to establish a simulated habitat while actually decreasing workload and dependence on daily supervision if possible.

In converting the structure, the top was removed, sides extended to 12 inches, and

a reinforced bottom added. Fiberglas® cloth and resin provided an excellent method of sealing and protecting the wood while remaining inert with respect to the intended biology. An added benefit of Fiberglas® is that insect pests would not be able to puncture the containment as with plastic liners used in some ground bogs.

Once the conversion was completed the structure was positioned where it would receive almost unobstructed east/west sun. The peat was added, moistened, and allowed to age for about two weeks while waiting for live sphagnum to arrive from

Peter Pauls Nursery in New York. By the time the live sphagnum arrived* most CPs had already been brought out of cold storage, cleaned, treated with fungicide and planted after a period of acclimatization in the garage. The live sphagnum was then simply spread over the entire surface and top watered frequently until it began to grow and spread. Originally I had intended to have the substrate composed of 8 inches of peat and 4 inches of live sphagnum on top. Having no experience in such matters I found it difficult to properly translate sphagnum sold by weight into area coverage. As my estimate was 50% low, the bog was topped by only 2 inches initially.



Modified Structure 1994

Officially, the bog was operational on 27 March 1994, requiring only the addition of support equipment to streamline day-to-day care and record keeping (Fig. 2). Meters from Edmund Scientific gave the ability to record air/soil temperatures and humidity. Water was introduced and measured directly at the bottom of the substrate using two aquarium uplift tubes and a home-built float mechanism indicating true height of water level.

Predicting that a bog of this type might require more than a gallon of water each day, it was essential that every opportunity be taken to collect and store rain water. Reflecting the requirement for decreased workload it was necessary to automate this process. Using the family camper as a watershed, a funnel was attached at the point of greatest run-off. Water conveyed down a plastic tube ran into a 32-gallon Rubbermaid® trashcan with integral lid. Three such containers were combined via siphon such that the water levels were linked. This modular system allows 96 gallons to be captured with no intervention.

With these modifications, the bog has been extremely successful with few exceptions. All plants exhibited strong, steady growth and the live sphagnum has actually tried to over grow the smaller plants. Several of the *Sarracenias* did not flower due to the late seasonal start, yet two *Sarracenia flava* have flowered in October. The most fascinating aspect this season has been the stratified *Drosera* seeds (Fig. 3). Having spent 4 months in cold storage and acclimation, they were simply spread in large areas over the sphagnum thirty to 45 days latter, sundews began to spring up. By August, these had become beautiful banks of four different sundew species which are now

providing a rich supply of flowers and seeds.

It is now November 5 and I am planning further refinements based on this year's results. Most notably will be modifications to control the water table height at a constant level. It was found that the water table would fluctuate 1 inch for every half gallon used in an 8 to 12 hour period. This may have stressed some *Sarracenia* species. I plan to add an overflow drain and constant drip pump. This will be a closed system running through a sump so the pH of the substrate should not be affected.



Fig. 2. Thomas Hanley's planted bog structure.

Also, I am working with **Davis Instruments Co.** to modify some of their weather systems to provide automatic acquisition of the data I now collect manually each day. This would also allow integration of bog status via modem.



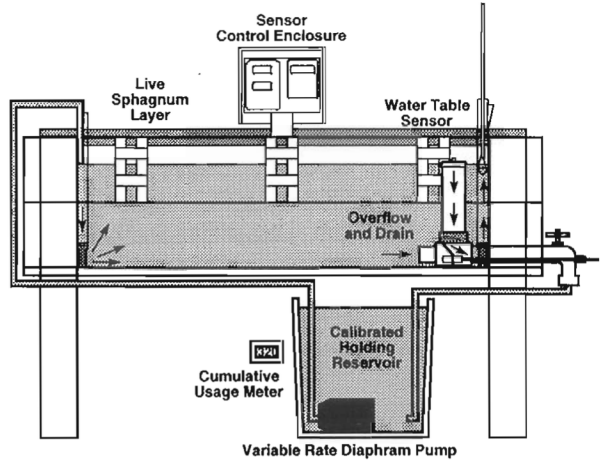
Fig. 3. Droseras grown from seed by Thomas Hanley in his bog structure.

Both of these system upgrades will free me to take trips etc. with much less concern over loss of plants or data. Once these systems are fully integrated and the results proven to be worthwhile, I hope that they can be applied on a larger scale for controlled testing of CP propagation issues and species protection.

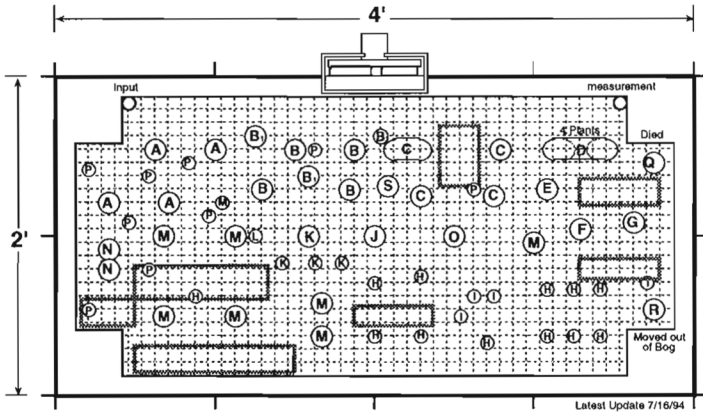
In closing, I would like to thank all who have helped achieve the improbable and

solicit information on the following issues:

1. Culture and care of live sphagnum.
2. Methods of seed harvesting (*Sarracenia/Drosera*).
3. Suggestions on winter care.
4. Comments on my systems or planned upgrades (Am I crazy?).
5. Addresses of any members in, or near, the Dallas/Ft. Worth area.
6. How and where to obtain any books available on Carnivorous Plants.
7. Exact environmental conditions found in the wild for different species.
8. Would any other members like to start an on-line forum? I am on America OnLine.



Planned Modifications for 1995



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| A : <i>Sarracenia flava</i> spp NC | I : <i>Drosera capillaris</i> |
| B : <i>Sarracenia minor</i> | J : <i>Sarracenia psittacina</i> |
| B ₁ : <i>Sarracenia minor</i> "giant" | K : <i>Pinguicula vulgaris</i> |
| C : <i>Sarracenia leucophyllia</i> | L : <i>Cephalotus folicularis</i> |
| D : <i>Sarracenia rubra</i> spp <i>gulfensis</i> | M : <i>Sarracenia purpurea</i> |
| E : <i>Sarracenia flava</i> | N : <i>Sarracenia rubra</i> spp <i>Wherryi</i> |
| F : <i>Sarracenia flava</i> | O : <i>Drosera filiformis</i> spp <i>tracyi</i> |
| G : <i>Sarracenia alata</i> | P : <i>Drosera capensis</i> |
| H : <i>Dionaea muscipula</i> | Q : <i>Primula vailii</i> (non CP) |
| □ : <i>Drosera Intermedia/capillaris/roundifolia</i> species from seed | R : <i>Nepenthes alata</i> "green" |
| | S : Unknown Terrestrial Orchid |

*Please note that in ordering live sphagnum other plants included in the same order required the good people at Peter Pauls Nursery to hold shipment until threat of freeze damage was no longer a concern. Sphagnum shipped by itself is not subject to this consideration as winter freezing is natural to its habitat.