

directed us to a place where the plants were growing. We passed it on the way up to the summit and had to go back about two miles where we parked our cars and climbed a small embankment up onto a natural shelf in the side of the mountain. I would imagine that in the past, this shelf would have been a collecting point for the run-off from melting snow. But in time, it had begun to fill with moss and in some places the water covered the moss so it could not be seen.

The Drosera arcturi plants completely covered the area and it was impossible to walk through them without stepping on them. Since this was December, the plants were at the height of their growing season and many hadn't flowered yet. They grew to a height of about 6 inches in some cases but most grew only to about 3-4 inches. The flowers were borne singly on one stem, and its height was not much higher than the surrounding leaves of the plant. The overall plant color was rusty brown.

As we sat down to have some lunch, I noticed that another Drosera, called spathulata, was growing in the same sort of soil in community groups but was not nearly as abundant. It seems that the surrounding cover (which is very sparse but enough to bury these small plants) is very steadily smothering them. These plants were also ready to flower and each one bore one or two flower scapes crowned by a small group of buds. Overall color was red for the leaves, flowers and buds.

All the plants I found were growing in direct sunlight and would get sun for most of the day. This would explain the red pigment in the leaves. No plants were found growing in the shade, and none were found to be growing in "perpetual" puddles or in excessive dryness. Also, during the winter, the plants would be covered with snow. I would grow these plants at temperatures under 70° F. since my experience with growing them is that any higher temperatures lead to disaster. Therefore, glasshouse conditions are not necessary, but the humidity must be high.

FURTHER HINTS ON GROWING ALDROVANDA

by J.A. Mazrimas

I would like to add further details to the excellent instructions given by Messrs. Ohtaki and Katagiri on growing Aldrovanda in culture. The main thing to remember is that these plants are sensitive to acidity, require a high nutrient diet in order to grow and branch often, and finally require fairly strong light to grow.

The first thing that I did when I received my plants was to make a suitable medium for them to grow in. This involved making a hay infusion or culture of microorganisms which include bacteria, Paramecia, Euglena and others. I found some dried grass, hay or straw and chopped it into four-inch pieces which I stuffed into a tall jar (a one quart fruit jar or large mayonnaise jar) and filled to the brim with boiling water. This is set aside in a warm room for about a week in which time the water becomes yellowish-brown and slightly cloudy. I also made a similar culture from stalks and leaves of dried cattails (Typha) which you find growing along most shallow ponds and ditches wherever water is present all year. Other water plants can be used too.

Next, I visited a tropical fish store and purchased a bottle of Brom thymol blue, which is a pH indicator dye. It is not necessary to buy the entire measuring kit since I'll tell you how to use it here. Also, it is a good idea to purchase some sodium biphosphate to regulate the acidity of the culture.

Then, I arranged a plastic shoebox, which you can purchase at most large department stores, in the following way: first, I placed a layer of washed sand followed on top by several handfuls of straw and cattail leaves from the culture. Then I poured about an equal mixture of the culture solutions until full. Now it is ready for the Aldrovanda. Place the box in a bright and warm area, about 50% sunlight for one-half day with temperature fluctuating between 90° F. in the day to 65° F. at night. It seems that the shallow depth (about four inches) and wide surface area provided sufficient air exchange to occur without the need for a bubbler. Next, I was ready to check the water's acidity.

I scooped a small sample of the culture solution into a vial or test tube and added 2-3 drops of Brom thymol blue solution. If the water turned yellow, then it would indicate the water was too acid and if blue, it would be too alkaline. When the solution becomes green, then acidity is just right which is simple to remember as you view the green plants floating in the water. As my solution aged, it had a tendency to turn alkaline and the water color darkened with increasing growth of undesirable algae. Fresh hay infusions are usually acid when ripe and so adding the correct amount will adjust the pH back to the "green" region. Also, a pinch or two of sodium biphosphate will also bring the pH back to the normal range.

One of the best ways to maintain the optimum pH of 6.2 is to prepare a peat moss infusion by pouring water over it and allowing to set overnight. Add enough of the resulting liquid

to the culture to achieve a pH of 6.2. Add more distilled or rain water to the moss and keep on hand as stock acid water.

You can feed Aldrovanda additional nutrients by purchasing a culture of microworms (which you grow on a cornmeal mush) from a large tropical fish store or mail order houses that advertise in hobby magazines. Using a fine tip dropper, one can direct a thick suspension of these tiny worms into an Aldrovanda trap and watch it rapidly close on the white wriggling mass. If you find some pond water with copopods swimming in it, these seem to be ideal for the trap size of this species. By so doing, I noticed that plants began to branch from the terminal axils, a sign that all is well and you're on the way towards propagating the plants from these branches.

CULTURE OF ALDROVANDA

by Jacques Haldi

Aldrovanda is a rootless plant that floats on the surface of clear acid water. It requires a high light intensity, warm (21-26° C.) and acid water. I think that slightly briny water is a good thing. This you can make by using a little kitchen salt (NaCl or Na⁺, Cl⁻). It is better if there are some small crustaceans in the water because if they are missing, the plant does not grow so well and the leaves stay small in size. One can observe the capture of these crustaceans by placing the plant in a clear glass. It is very difficult to observe this phenomenon in an aquarium. For propagation of the species, cuttings are made in summer so that they will be strong enough by fall to produce winter buds. This plant should be started into dormancy in September. To prepare the plant for this process, the plants must be in 8° C. water with very good luminosity. I like to use mud taken from a swamp that is algae-free and place this mud in the bottom of the container. The minerals from this mud seem to help the plant grow stronger and help the plant acquire extra buds. The mud is also useful because when the winter buds form, they will sink into it during the long winter rest. In the culture of Aldrovanda, algae is the biggest enemy. It is best not to place the container directly in the sunlight but instead use bright diffuse light.

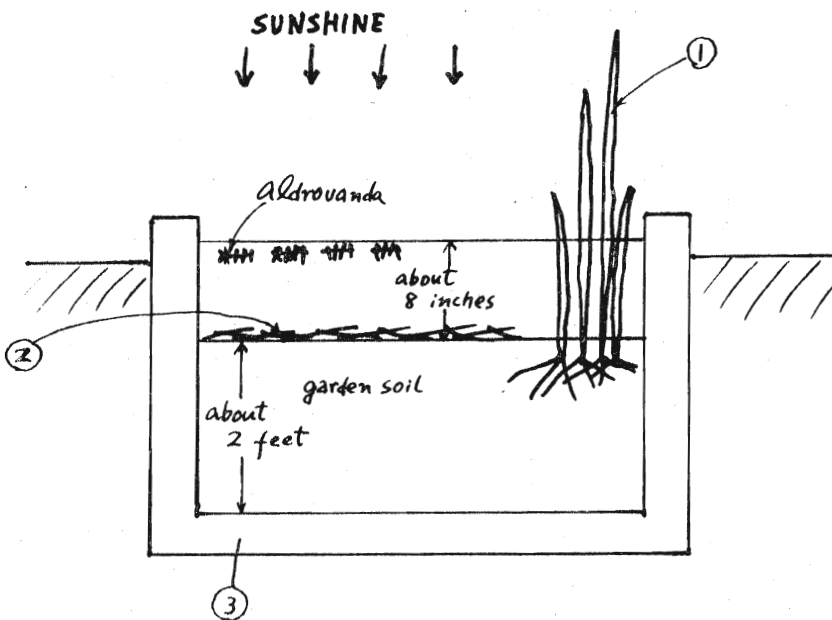
GROWING ALDROVANDA

by Kiyomichi Hanabusa

(1) Iris, or other water plants such as Zizania latifolia, Typha latifolia, Phragmites communis, may be useful. Their roots are believed to produce acidic substance which lowered the pH of water. I prefer wild Iris.

(2) Immerse dead rice grass (stem) enough to change the color of water "beer-like yellow." We often use the rope made of dead rice stem. This rope is customarily used in Japan (especially in farmhouse).

(3) Trough made of concrete (cement). If you use new concrete container, first fill water and immerse much hay or rice stem and keep them for couple of weeks to neutralize alkaline extract.



Necessary conditions: (1) Sunshine (2) Garden soil at the bottom of container
(3) Water plant (4) Dead rice grass (stem)

Bad sign: Algae growing. If a "bloom", water should be renewed and more rice stem added.