

Beginner's Corner

by Larry Mellichamp

LIGHT

Of all the essential factors involved with good plant growth, light is perhaps the most important. Even with carnivorous plants, where proper soil and water are of critical concern, light is still probably the most important cultural factor.

What is light and why is it so important that growers often spend hundreds of dollars on artificial light fixtures or greenhouses to let in more light? Visible white light as we see it is actually a mixture of colors, literally all of the colors of the rainbow: red, orange, yellow, green, blue, and violet. In addition, infrared and ultraviolet are non-visible portions of this spectrum which may affect plant growth, the former producing heat and the latter producing strong radiation which may burn. Red and blue light are the most important colors for plant growth.

First of all, light is important because it is the energy source by which green plants manufacture their basic food materials. They need soil only for essential inorganic elements such as copper, iron, sulfur, etc., in very small quantities. The rest of their raw materials come from the air and water. Even carnivorous plants produce the vast majority of their food by this method called photosynthesis, feeding on insects as a nutrient (especially nitrogen) supplement.

Second, light is very important in the life cycle of most plants because it acts as nature's timing regulator. The length of day and quality of light help determine when a plant is to start growing in the spring, when to flower and set seed in the summer, and when to go into dormancy in the fall in rhythm with the naturally occurring seasons. Of course, temperature plays a part in completing the cycle, but light is the main environmental trigger.

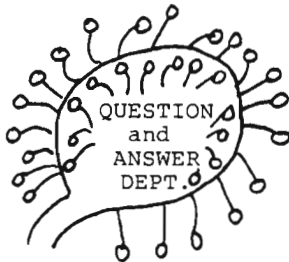
How much light is necessary? For many carnivorous plants, you can't give them too much--THE LOVE IT. This goes for all the native North American species. Some species from other parts of the world, however, require less than full sun (which is normally about 10,000 footcandles of light at high noon in eastern U.S.). Those types which prefer some shade would include *Nepenthes*, *Cephalotus*, and some tropical *Droseras*, *Utricularias*, and *Pinguiculas*.

How does one provide adequate light? Natural sunlight, of course, is ideal--in a greenhouse or out in the open. Unfortunately, plants grown in a greenhouse will get too hot in the summer due to the build-up of heat (the "greenhouse effect") and shading is always required. This shading (either whitewash material applied to the greenhouse covering directly, or shade-cloth) cuts down on the total amount of light reaching the plants, but allows the shade-requiring types to be grown with relatively little light problems. Also, greenhouse coverings (glass or plastic) filter our ultraviolet rays and the plants are protected from such exposure. Thus, you should never place greenhouse-grown plants abruptly in full sunlight because they will burn. Expose them gradually. When plants are grown in full sun, or strong light intensities either under glass or under artificial light, they develop varying amounts of red coloration in the leaves and stems, especially young leaves. This is a protective device, much like tanning in humans, which prevents the leaves from being burned. This red pigment production is a natural response, and is often desirable in cultivation as it brings out the "healthy-looking" colors in the plants. Like tanning, however, it may not be desirable in the long run; but it is the price the plant pays for being able to endure the intense sunlight where maximum photosynthesis can occur.

Now just because you don't have a greenhouse doesn't mean you can't grow CP. Half days or more sun through a window may be enough for satisfactory growth in many types, as long as the plants don't get too hot by being too close to the glass. If you grow CP in a terrarium, do not let it stand tightly closed where direct sun's rays will strike it, or there will be a build-up of heat inside and you can literally boil your plants.

Artificial light indoors is fast becoming a very popular and effective way to grow carnivorous plants. The plants would best be grown in large terraria, either planted out or kept in individual pots, where relatively high humidity can be maintained. The heights of the plants must be considered, but it is usually the smaller types which are best suited for this arrangement. The major problems have been to provide adequate light without heat build-up; and to provide the proper colors of the spectrum most useful to the plants, so that they grow and look natural. Fluorescent lights are highly preferred because they are cooler and cheaper to operate than incandescent lights. A mixture of cool white and wide spectrum Gro-lux seems to be optimal as far as providing the proper mixture of blue and red light at a reasonable cost. For example, a fixture holding 4, 48", 40-watt tubes suspended several inches above the plants would provide for satisfactory growth in most species. The more light fixtures you have, the better for light-loving plants. Usually the lights are set on an automatic timer to shine from 14-18 hours a day. Natural timing will be altered, but most carnivorous plants will grow (and flower) as long as these conditions are maintained. Providing artificial dormancy during the winter is desirable for temperate species and this may be accomplished by gradually decreasing the length of the artificial "day" each day over a period of six weeks, then placing the plants in a cool place for several weeks, to simulate winter conditions: 40°F and eight-hour day length. Dormancy requirements will be discussed more fully in a later article. For more information on indoor light gardening in general, consult the excellent popular books by Fitch or Elbert.

In the next issue, Don Schnell will discuss temperature and dormancy.



Q. I would like to know how to control the black rot that destroys CP's, especially *Dionaea*, *Pinguicula* and *Drosera*? G.M., Mission Viejo, CA.

A. Most CP rot under one of three circumstances: 1) Growth in undrained container without proper attention--beginners should use drain-hole containers; 2) Damage to rhizome through handling; 3) Forcing growth during dormancy, sometimes unwittingly, such as too warm winter greenhouse or not making proper adjustments when growing under lights. (Light growers must make annual cyclic adjustments when growing temperate plants!)

Q. Of all my *Sarracenia*, I have the most trouble growing *S. rubra* ssp. *jonesii*. Why? J.M., Livermore, CA.

A. I have no trouble growing *S. rubra* ssp. *jonesii*. It is in drained pots with live sphagnum. For some reason, the plants do not do as well outdoors in this climate, likely because of the cyclic periods of warm weather during the winter which partially breaks dormancy, conditions they are subjected to less in the colder mountains. Here in central North Carolina, the best plants do very well in my cool *Sarracenia* greenhouse with minimum nighttime temps down to 40°F. This is certainly warmer than the mountains, but does not provide as violent a swing. Steady slightly warm temps are better than wide swings throughout the winter.

Q. What is the preferred pronunciation for the species of *Sarracenia* known as *leucophylla*? R.H., Arroyo Grande, CA.

A. I pronounce *leucophylla* as *leucophyll'a*. According to the strict Latin rules, it would be pronounced *leuco'phylla*, enunciating the third from the last syllable. D.B. Jackson's *Glossary of Botanic Terms*, a sort of standard classic work, gives pronunciation as I do, *leucophyll'a*. Likewise for *purpurea*: Jackson gives it as *purpur'ea*, as I would pronounce it. However, I often hear it *purpure'a*. The *purpu'rea* is according to the rule; the latter is not, but is like the pronunciation of *leucophyll'a*--so there is no consistency. I think a lot has to do with sound and ease of saying the syllables in each case. Hope this helps.