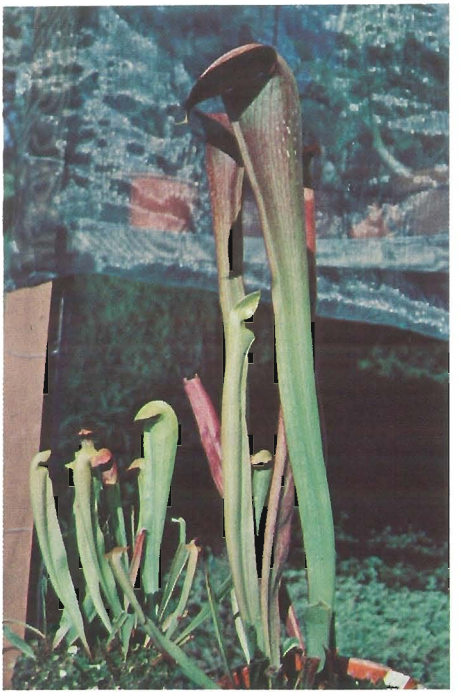

Figure 1—The smaller plants are green *S. alata* × *minor* (North Carolina), and the larger plants are the red-throated *S. alata* × *S. minor* (Okefenokee).

Figure 2—*S. alata* red-throated × *S. flava* heavy-veined.

Photos above by Steve Clemesha.

Distinctive purplish-black pitchers of *Nepenthes gracillima.*

Photo by Roger Shivas

THE INFLUENCE OF DIFFERENT FORMS OF *SARRACENIA* SPECIES ON THEIR HYBRIDS

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Two Sarracenia hybrids that I made about 14 years ago were *S. alata* × *S. minor* and *S. alata* × *S. flava*. In both cases the common green form of *S. alata* was used while the *S. minor* was also the common form—a plant from North Carolina, and the *S. flava* was the heavy-veined form.

The two hybrids matured. The *S. alata* × *S. flava* are tall green plants. The pitchers are slender and they have some red veins. The pitcher tops and hoods show the influence of *S. flava* but they are not as large or spectacular as in that species. The plants produce good pitchers right through the growing season and like the *S. alata* parent, plants produce offsets freely.

The *S. alata* × *S. minor* does not grow very large. Most pitchers are 20 cm or less tall, rather like *S. minor* in shape but lacking its colour. Only two or three small light window spots are found on the upper pitcher back, and these could be easily missed unless looked for. The main contributions *S. alata* made in this hybrid were its green colour and freely offsetting habit. In all the two hybrids are easily grown, but are not very colourful.

Four years ago, I repeated the crosses using the form of *S. alata* with red inside the hood, the large Okefenokee Swamp form of *S. minor* and the form of *S. flava* that has a red pitcher with a green hood that is red veined. The plant of *S. flava* is from Florida.

The hybrids using these parents are strikingly different from those made earlier. The *S. alata* × *S. flava* is now nearly mature. Its pitcher shape is much like that of the earlier hybrid but the young pitchers by the time they are open are red from the pitcher rim to the base. The hood at first is green with red veins inside and out. After a few days, the green becomes golden and soon after this the hood becomes solid red inside and out. The colour is particularly intense on the inside of the hood where it is almost black-red. Late summer and autumn pitchers colour as fully as spring ones. In winter the pitcher tops die but the live bases remain red.

In the *S. alata* × *S. minor* hybrid the plants are also more colourful. The upper third of the pitchers and hoods are reddish-brown, and the hood interiors are solid red, though this is not easily seen because of the *S. minor*-like shape. The upper pitcher back has numerous white spots.

The most outstanding feature of this hybrid, however, is its size. Pitchers are 50-55 cm tall. They taper from their narrowest point at the base to their widest at the pitcher mouth where they are 5 cm from front to back of live pitchers. The hood also is large. The pitchers of these plants are taller and broader at the top than either parent.

I have made others using the Okefenokee *S. minor*. So far only the *S.* × *areolata* cross with it is near maturity. It differs little from the *S. alata* cros but may not be as tall.

I have crossed the red-mouthed *S. alata* with *S. leucophylla* and with *S. purpurea* ssp. *venosa*. The *S. leucophylla* cross differs little from other plants of *S.* × *areolata* I have. The pitcher tops are a bit darker and the hood interior is red as in the *S. alata*. Because the *S. leucophylla* colour is not improved, this hybrid is not very attractive.

The cross between the red-mouthed *S. alata* and *S. purpurea* ssp. *venosa* shows the influence of the colour of *S. alata* in the colouring of the hybrid hood interior. The colour is soon masked as the whole pitcher reddens but the hood interior

remains darker than in hybrids where the green form of *S. alata* was used.

Having grown the Okefenokee Swamp *S. minor,* the red-mouthed *S. alata* and red form of *S. alata* (with the green lid which is red-veined) for more than ten years I have known for some time that their distinctive characteristics are not the result of growing conditions. They come true from seed if the plants are selfed and it is now evident that their distinctive characteristics are passed on to at least some of their hybrids and in some cases with very striking results.

In all cases the plants are grown outside in full sun. Winters here are very mild with rare frosts.

(See color photos, page 67.)

A Photographic Study of the Rapid Movements of Stalked Glands of the Cape Sundew *Drosera capensis*

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The movement of stalked glands and leaves of sundews is well known. The first record of modes of behavior of stalked glands and leaf blades in the genus Drosera can be traced to Dr. Roth in 1782 (Lloyd, 1942). Lloyd documented slow leaf blade movement of *D. capensis* in a sequence of frames from a time-lapse motion picture. Bopp and Weber (1981) have published photographs of slow leaf blade bending of *D. capensis* in a hormone regulation study. Williams (1976) reported on rapid stalked gland movement and slow leaf bending movement in photographs of *D. intermedia* taken by James Kowalchuk. In our present study we present photographs of *D. capensis* (Figure 1) which show the rapid stalked gland reponse (Figure 2) to the presence of an ether anesthetized fruit fly *(Drosophila melanogaster).*

An anesthetized fruit fly was placed on the lateral extreme of the outer discal stalked glands of a *D. capensis* leaf blade (Figure 2a). The terminology is that of Lloyd (1942) reporting on the work of Behr who divided the stalked glands of *D. rotundifolia* into three groups progressing from the 1. marginal glands, 2. the outer discal glands, to the 3. discal or central group of glands. In one hour (Figure 2b) the fly had been coated with mucilage and had been carried medially a short distance by the extreme outer discal glands. At two hours (Figure 2c) the fly has been carried to the lateral margin of the discal or central glands. The extreme bending of the outer discal glands became apparent and the bending of the marginal glands can be seen. During the next two hours (Figures 2e and f) the position of the fly did not change appreciably; however, the progressive bending of the marginal glands continued. In a period of five hours the fruit fly was carried from a lateral position to a central position on the leaf blade and the outer discal and marginal glands have shown extreme bending.

The plants were two year old cuttings in 7.5 cm plastic pots containing a peat-vermiculite mix. The plants were grown in a glass case with a loose fitting cover and two 20 watt cool white fluorescent lights 5 cm from the top of the plant and 10 cm from the top of the pot. The plants were watered from the base with 1 to 2 cm of deionized water and allowed to dry slightly before the next watering. Between photo taking sessions the plants were covered with a glass beaker in order to maintain high humidity.

The photographs were made using a Canon F1 camera and Kodak Panatomic X film. The *D. capensis* habit photograph (Figure 1) was made using a 25 mm exten-