

INSECTIVOROUS PLANTS

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spread analogy, this would have rendered them more sensitive to irritation, or would by itself have excited movement; but no effect was produced. We may, therefore, conclude that animals enter merely by forcing their way through the slit-like orifice; their heads serving as a wedge. But I am surprised that such small and weak creatures as are often captured (for instance, the nauplius of a crustacean, and a tardigrade) should be strong enough to act in this manner, seeing that it was difficult to push in one end of a bit of a hair $\frac{1}{4}$ of an inch in length. Nevertheless, it is certain that weak and small creatures do enter, and Mrs. Treat, of New Jersey, has been more successful than any other observer, and has often witnessed in the case of *Utricularia clandestina* the whole process.* She saw a tardigrade slowly walking round a bladder, as if reconnoitring; at last it crawled into the depression where the valve lies, and then easily entered. She also witnessed the entrapment of various minute crustaceans. Cypris "was quite wary, but nevertheless was often caught. "Coming to the entrance of a bladder, it would sometimes pause a moment, and then dash away; at other times it would come close up, and even venture part of the way into the entrance and back out as if afraid. Another, more heedless, would open the door and walk in; but it was no sooner in than it manifested alarm, drew in its feet and antenna, and closed its shell." Larvæ, apparently of gnats, when "feeding near the entrance, are pretty certain to run their heads into the net, whence there is no retreat. A large larva is sometimes three or four hours in being swallowed, the process bringing to

* 'New York Tribune, reprinted in the 'Gard. Chron.' 1875, p. 303

"mind what I have witnessed when a small snake makes a large frog its victim." But as the valve does not appear to be in the least irritable, the slow swallowing process must be the effect of the onward movement of the larva.

It is difficult to conjecture what can attract so many creatures, animal- and vegetable-feeding crustaceans, worms, tardigrades, and various larvæ, to enter the bladders. Mrs. Treat says that the larvæ just referred to are vegetable-feeders, and seem to have a special liking for the long bristles round the valve, but this taste will not account for the entrance of animal-feeding crustaceans. Perhaps small aquatic animals habitually try to enter every small crevice, like that between the valve and collar, in search of food or protection. It is not probable that the remarkable transparency of the valve is an accidental circumstance, and the spot of light thus formed may serve as a guide. The long bristles round the entrance apparently serve for the same purpose. I believe that this is the case, because the bladders of some epiphytic and marsh species of *Utricularia* which live embedded either in entangled vegetation or in mud, have no bristles round the entrance, and these under such conditions would be of no service as a guide. Nevertheless, with these epiphytic and marsh species, two pairs of bristles project from the surface of the valve, as in the aquatic species; and their use probably is to prevent too large animals from trying to force an entrance into the bladder, thus rupturing the orifice.

As under favourable circumstances most of the bladders succeed in securing prey, in one case as many as ten crustaceans;—as the valve is so well fitted to