ENTOMOLOGY NOTES

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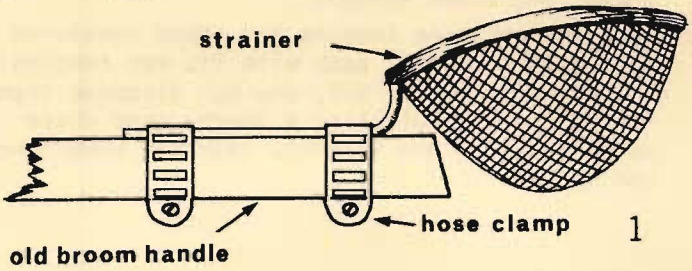
Collecting Aquatic Insects

Given the opportunity, who hasn't gazed into the watery world of a pond or stream and wondered what fascinating forms of life awaited the eye? With some simple collecting equipment anyone can explore a world of creatures he or she never knew existed.

A dip net for capturing specimens is essential. An old broom handle with a strainer attached by radiatior hose clamps makes an excellent, and inexpensive dip net (fig. 1). Next, a shallow white enamel or plastic pan is needed to hold the contents of the net as they are scooped up from the pond. Also needed are items for transferring and preserving specimens collected from the pan such as, forceps for grasping larger insects, eye droppers for "sucking" up very small individuals, and some small bottles filled with rubbing alcohol to kill and preserve captured material. Almost any pond with an abundance of algae and other plants growing in the water contain a wealth of animal life.



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The technique is really simple. Wade among the plants and guide the dip net through the plant material using an upward motion to dislodge and capture specimens. Then, after several passes dump the contents into some water in the pan. Many small creatures will undoubtedly be seen swimming rapidly about. Several more dips of the net and you're ready for some serious examination of the contents in the pan. First, you'll want to remove much of the plant material and debris so you can get a better look at the specimens. But, before discarding the plant material "swish" it around the water to dislodge any trapped animals.

You might like to try and identify these creatures while they are alive, which is rewarding because of the interesting characteristics they exhibit. Carry an inexpensive little book such as "Pond Life"--a paperback in the Golden Nature Guide series publications--which will help you "picture-key" most of your findings.

What sort of insects are you likely to find now that the sample is before you? The largest ones usually stand out first and the giant water bug or its relatives could be among the first. Two common types are found in Northeastern American ponds and can readily be distinguished by the great size differences between them. *Lethocerus* is 3 inches long or longer (fig. 2) while *Belostoma* is rarely over 1 1/2 inches long. Both insects have powerful front legs modified for grasping; the legs close like pincers and each is tipped with a curved hook-shaped claw. The rear legs are modified for swimming, and thus resemble oars. Interestingly the male *Belostoma* carries the unhatched eggs on his back and he is easily recognizable in this condition if collected in the spring. Both species grasp unwary victims with their front legs, and then inject a poison through their needle-like beak.

Equally savage but smaller is *Notonecta* the water backswimmer (fig. 3). Like the giant water bug, it spends most of its time in water but can fly from pond to pond and has very well-developed wings. It does prefer an aquatic existence, and how well suited it is for this mode of life. It swims on it's back, hence the name, and the body is keeled like a sailboat to facilitate movement through the water. The hindlegs are considerably larger than the other two pair and strongly modified for "rowing" through the water. In the water, backswimmers seem to be surrounded by a silvery-looking substance as though the body has been dipped in mercury. Actually this is an air bubble that the animal has captured and is held in place by little "hairs" covering the body. As the air in the bubble is used up, the backswimmer rises to the surface and with a quick, sommersaulting motion, captures a new bubble.

In the aquatic world the water scorpion has to rank as one of the most interesting as well as best engineered members. Looking much like a walking stick, it clings to pond plants and other vegetation with its long stick-like legs (fig. 4). The legs offer little assistance in swimming, so most of the scorpion's life is spent near the shoreline. Of main interest is

the breathing apparatus. Two long tubes sometimes up to two inches long protrude from the rear end. It uses these tubes in a "snorkle-fashion" and thrusts them up through the surface film to the air above. Caution should be exercised in the handling as it can give a painful bite.

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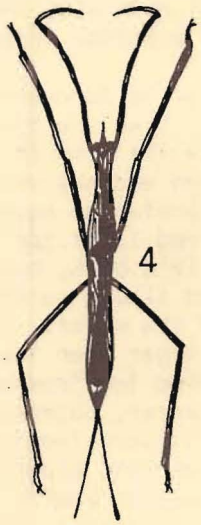
You've seen dragonflies flying up and down the pond margins like flying aces of times past, but have you ever wondered where the young dragonfly lives? The young, called a naiad or aquatic nymph (fig. 5), dwells on the bottom of the pond sprawled out in a "spider-like" fashion. The naiad has modified mouthparts which are unique. The lower lip is hinged and can shoot out and grab a passing insect, small fish, or other suitable prey. The



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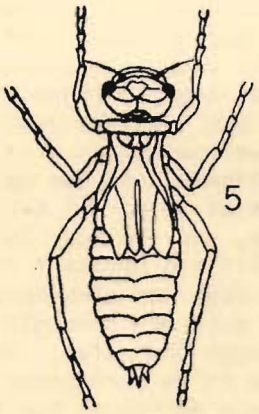

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lip is then retracted to the waiting mouth and feeding begins. When adulthood is near, the naiad crawls out of the water onto a plant stem and there transforms into the adult.

Another common pond inhabitent is *Dineutes* the Whirligig beetle (fig. 6). This small, oval beetle is gregarious and usually several cluster on the surface of the water around pond and stream margins. It is the only water beetle to make use of the surface film as a supporting medium. The lower half of its body rests in the water, while the other upper half is water-repellant and lies on top. The Whirligig has an unusual set of compound eyes that facilitate its' existence between the water and air mediums--each eye is divided into two parts, one part submerged, one part in the air. Its two hind pair of legs are short and flattened and propel the beetle quickly across the water. Whirligigs are given such names as "apple smeller" and "mellow bugs" because of the fruity odor they give off when handled.

Another interesting member is the water diving beetle (fig. 7). It often hangs head-down with the tip of the abdomen sticking above the surface. In this manner, it traps air beneath its wing covers. As with other species of bee-

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tles, the diving beetle has chewing mouthparts and feeds on other insects, minnows, aquatic worms, and other morsels.

Countless more insects and other creatures too could be added, each with its own fascinating story to tell. But, why not discover them for yourself by visiting a nearby pond where an interesting and valuable learning experience can be had.

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