NATURE STUDY OF ANIMALS.

Pond Life.

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In the REVIEW for November, 1914, short notes were given on three species of insects that live in fresh water ponds and streams; the whirligig-beetles, the diving-beetles and the water-scavenger beetles. Review these notes and be on the watch for these and other forms in further work on pond life.

The three forms mentioned were all beetles, but those pictured in Fig. 1 are true bugs.

The water-boatman and the back-swimmers are much alike in general appearance as one sees them swimming through the water. Collect several of each and place in glass dishes for close observation. As the name implies the back-swimmers always swim on their backs. A shows one in its natural swimming position. Note the position of the legs as shown in the picture, and that the third pair alone are extended. In one of our common species of back-swimmers (*Notonecta undulata*) the other two pairs of legs are set out from the body, somewhat like arms akimbo. A favorite position of these insects is to float with the head down and the tip of the abdomen protruding just enough to admit the passage to chambers beneath the wing-covers. Look for their sharp beaks, and examine carefully the wings. Have these insects the true bug characteristics? What are the chief differences between a bug and a beetle?

The water boat-man is shown in Fig. 1. B. How many pairs of legs are extended? These insects swim very rapidly by means of the lengthened and fringed middle and hind legs. Note their silvery appearance in the water. Are they of the same color when in air? Note carefully the covering of the body. Place a piece of plush under the water and note its silvery appearance. To what is it due? How is the insect like the plush in this respect? Why does the water boat-man carry a film of air? How did the back-swimmer carry its air supply? How are whirligig-beetles, diving- beetles and water-scavenger beetles supplied with air?

In another animal that one is apt to find in ponds and streams, the water-scorpion, the air supply is taken in by means of a long tube extending from the tip of the abdomen. The water-scorpions are elongated insects with long legs, and closely resemble the stems of the plants on which they are usually found. In general appearance the giant water-bug or electric-light bug stands in sharp contrast to the water-scorpion. It has a broad flat grayish or brownish body about two inches long. It preys upon other insects and small fish. When fully developed they are strong flies, and fly from pond to pond during the night. In these flights they are often attracted to electric lights and are frequently found in towns and cities, far from their native ponds, and in consequence have become generally known as electric-light bugs. Dr. L. O. Howard tells us that, "The fish ponds in Washington, since the advent of the electric light, have become so greatly stocked with these bugs that they are a serious detriment in fish raising."

Pond-skaters or water-striders are very common forms, and make interesting subjects for school study. Watch a water-strider and describe its locomotion. Does it use its legs in the ordinary insect-way. Which pair of legs are the chief organs of locomotion? By floating a needle on water show your pupils the presence of the surface film of water. Observe the dimples in the surface film where the feet rest. Why do the feet not break the film? The answer to this question is suggested by examining the feet under a microscope. Remove a specimen to a table