

ically segmentation is of the greatest significance in the evolution of animal forms.

Not only are mosquitoes annoying but some kinds are very dangerous, since they transmit malarial fever and the dreaded yellow fever — two diseases that cause the death of millions of people every year. Man is gradually rousing himself to the importance of knowing more about these and other forms of insect life, and year by year he is doing more and more to control and hold the injurious forms in check. This work consists chiefly in destroying their breeding places by draining or filling pools, by covering open drains and by oiling the surface of small ponds, rain barrels, etc.

Put a drop of kerosene in some of your aquaria and note the effect upon the larvae and pupæ.

The Dragon-fly is another insect that passes its larval life in the water, and this stage may be found at almost any season of the year by raking the sediment from the quiet pools of a stream or from the edge of ponds with an ordinary garden rake. They are elongated forms with the body divided into head, thorax and abdomen, the latter of which is clearly marked off into segments. The thorax bears three pairs of legs, and the head is adorned with prominent eyes.

Collect several of these larva nymphs along with a quantity of sediment for each aquarium jar, and study and compare them with the larvae of the mosquito. Does the dragon fly nymph go to the surface of the water to breathe? It has no respiratory tubes such as we find in the mosquito larva, but the posterior end of the "alimentary canal is lined with trachea, and water is alternately drawn into and expelled from this cavity. The water may be expelled with such force as to propel the body forward." To this extent the respiratory apparatus has locomotor function also.

If aquaria containing spring collections are placed in the bright sunshine, and each provided with a number of sticks reaching out of the water, one may observe the nymphs crawl out of the water, fasten themselves to the sticks and pass into the adult (winged) stage.

Despite the many legends to the contrary the dragon-fly is not only harmless but it is one of our most useful insects in helping to keep the mosquito pest in check, for they devour large numbers both as larvae and as adults.

The whirligig-beetles (Fig. 2) live as adults on the surface of quiet pools, where they feed on small

insects that fall into the water. They are social insects and are almost always found in numbers, either swimming or resting motionless near together.

Study them in their native element. Are they easily captured? Do they readily dive? Note

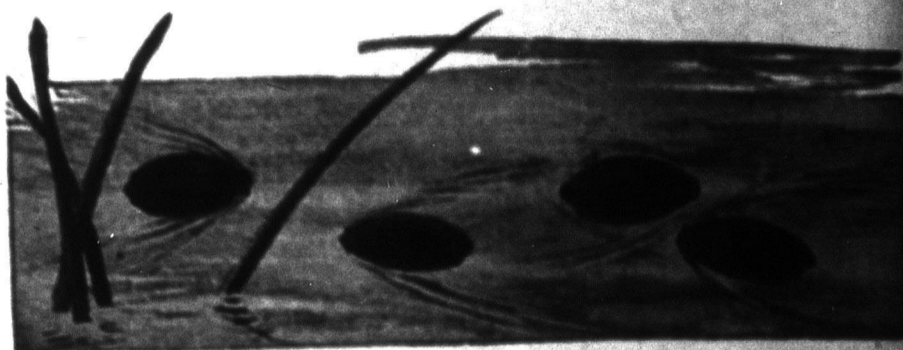


FIG. 2.—Whirligig Beetles. (About Natural size).

the disagreeable odor they exhale when handled. Of what advantage is this odor to them?

These insects are oval in outline and more or less flattened and usually of a brilliant bluish black color, and are easily recognized by the front edge of the head growing across the eyes so they appear to have four eyes — a pair on the upper surface of the head with which to look into the air, and a pair upon the lower side for looking into the water.

Figure 3 pictures the diving beetle *Dytiscus*. It is not so common as the other forms we have



FIG. 3.—The Diving Beetle, *Dytiscus*. (Slightly enlarged).

already mentioned. They respire air and carry a supply under their wings when they dive.

The adults feed on decaying animal and plant