

was covered by the bag; its upper surface stood about half an inch above the brownish liquid. These conditions are represented in figure 2. Four batches of eggs were placed in the aquarium at 10 a.m. of the 13th of May, viz.: two batches on the very bottom of the aquarium in the brownish water, and two on the surface of the bag of sawdust, well within the clear water.

Next morning at 9.00 a.m. every egg in the yellowish brown water was dead; and every egg in the clear water was alive.

Assuming that the brownish water was a saturated solution of material extracted from sawdust, two other solutions were made from it, —one of 25 per cent., and one of 50 per cent. strength, in tap water. Fresh batches of eggs were placed in each of them. In twenty-four hours the eggs in the 25 per cent. solution were all alive; half of those in the 50 per cent. solution were dead. In twenty-four hours more some of the fry had hatched out, but eggs and fry in both solutions were all dead.

In order to ascertain whether the death of both larvæ and fry was not due to lack of oxygen, rather than to poisonous extracts dissolved from the wood, air was made to bubble rapidly through some of the brown water. This experiment was begun at 12.30 p.m., and 800 c.c. of air per minute were passed through 230 c.c. of the discoloured water. At 5.30 p.m. of the same day, a batch of 60 eggs was placed in this aerated water, and air was passed continuously through it all night at the rate of 400 c.c. per minute. Next morning at 10 a.m. every egg in the batch was dead. The conclusion, therefore, is quite clear. The eggs were killed, not by lack of oxygen in the water, but by the poison contained in the water and evidently dissolved out of the sawdust.

The water had changed during the night to a much darker shade of brown. This marked change in colour will be discussed in a subsequent report.

SOURCE OF POISON.

The source of the poison given off by sawdust is undoubtedly to be found in the contents of the wood cells. Sugar, starch, oil, resin, gum, jelly, alkaloids, and acids are all examples of material stored in different parts of plants.

In the older parts of trees the protoplasm and sap disappear completely from the cells, and they may then contain nothing but the