

the purpose of getting information on this point two series of experiments were carried on, one with cedar sawdust and one with white pine.

EXTRACTS FROM CEDAR (ONTARIO).

On the second of June 400 grams of cedar sawdust were placed in a cheese-cloth bag and sunk to the bottom of a small glass aquarium (12 in. x 8 in. x 6 in.) containing 7,000 c.c. of tap water. Next day there had formed at the bottom, to a depth of two inches, a dark yellowish brown solution. The uppermost four inches were tinged a light yellow by diffusion, but there was a perfectly distinct surface of a greyish colour separating the upper from the underlying dark water. These characters became still more marked during the week, at the end of which time 1,400 c.c. of the lower liquid were siphoned off into a shallow circular dish and a perch weighing seventy grams immersed in the solution. In thirteen minutes it was lying on its back moribund, but revived when returned to fresh water. The control animal was kept twenty-four hours in 1,400 c.c. tap water in a similar vessel and then returned to the aquarium.

A perch weighing twenty-five grams was placed in 400 c.c. of this extract and air bubbled rapidly through it all the time. In twenty-eight minutes it was dead. The control animal in tap water under similar conditions was alive at the end of seventy hours.

Three *Daphniæ* in this extract died within two hours.

Fresh water *Hydra* died almost instantly in it. *Paramoëcia* were unaffected by either cedar or pine extracts. These scavengers were often observed apparently feeding upon the dead bodies of *Hydra* that had died in the poisonous extracts.

On the 13th, all the water was poured off and fresh water added. On the 14th, a perch weighing seventy grams was placed in 1,400 c.c. of the solution formed during the preceding twenty-four hours. It was moribund in six minutes. With air bubbling rapidly through some more of this solution, another perch placed in it was moribund in seven minutes.

Pond silk appeared to be unaffected by an immersion of four days in this water.

June 15th. A perch moribund in fourteen minutes in a third solution—all the water being poured off and fresh added.