

Stickleback endured the poison a much longer time. Of two sticklebacks, placed in solutions of this strength, one lived a day and a half, the other ten days, and was then liberated. I had reason for suspecting that the animal which died was not healthy when the experiment began. If so, its death was merely hastened by immersion in the pollution.

Trout are very sensitive to the effects of this poison. At 4.45 p.m. July 21st, I placed a trout in $\frac{1}{2}$ per cent. gas water-waste. In 10 minutes the animal was lying on its side on the bottom of the vessel. As it was evidently moribund it was removed so fresh water which I agitated by pouring water upon it from a height of a foot above the vessel. In 10 minutes more the animal had apparently recovered and lay quietly and comfortably at the bottom of the basin. In half-an-hour more it was very active and frightened if I approached.

A tom cod (*gadus tomcodus*) was placed in a $\frac{9}{10}$ per cent. solution of this waste in sea-water. In a few minutes it was lying on its back. When returned to sea water which I agitated vigorously, the animal revived.

Experiments with smelt gave exactly similar results with $\frac{1}{2}$ per cent. solutions of this waste.

Fresh water forms, like the rock bass and sunfish, and salt water "chub" (*fundulus heteroclitus*) were much less affected. These forms were kept from two to three days in the pollution, some dying within 24 hours, and some surviving several days. The explanation would seem to be two-fold. In the first place these fish are constitutionally more resistant to pollutions of all kinds. In the second place, sulphuretted hydrogen in the mixture would largely diffuse into the air and decompose in the water, in an open vessel, during the first 24 hours. If the animal, therefore survived this period, it would probably die later on, through the poisonous effects of the other ingredients of the water, such as the sulphates and chlorides.

In estimating the poisonous effects of gas waste-water, the extent of its dilution with river or lake water must be taken into account as well as its specific gravity 1.0023, and the volume of the stream or lake into which the waste is discharged.

WASTE WATER FROM NAIL WORKS, ST. JOHN'S, N.B.

This pollution was the most deadly one examined. In