May 24, 1934

REPORT 249

REPORT ON FISH MORTALITY IN FLINT RIVER AT FLUSHING, GENESEE COUNTY, MICHIGAN

A shipment of 7 iced, fresh fish specimens and a quart bottle of water were received on May 8, 1934 from Mr. Ivan Kester, State Conservation Officer of Genesee County. The following letter accompanied the shipment:

> "Enclosed you will find some fish and a sample of water taken from the Flint River at Flushing.
> "There are thousands of fish dying in this river, and I am under the impression that Copper-Cyanide is the cause of these fish dying.
> "Will you kindly check the water and fish I am sending you, and send me a report of your findings. Also mail a carbon copy of your reply to Mr. Adams, Pollution Division, Department of Conservation, Lansing, Mich."

Identification: Five northern pike (grasspike), Esox lucius, total lengths 14 1/2, 14 3/4, 15 3/4 and 16 1/2 inches; one carp, Cyprinus carpio, total length 12 1/4 inches; and 1 common sucker, Catostomus commersonnii commersonnii, total length 13 3/4 inches.

Condition of fish: The shipment arrived with a little ice remaining and the fish in good condition. None of the fish were emaciated and one of the pike, the carp and the sucker contained some abdominal fat. There were no marked of either external or internal injury. The sucker was a mature female about to spawn. All the stomachs were practically empty. The only abnormal condition noted was an excessive amount of mucous on the body, fins and especially about the gills.

Water: A considerable amount of organic substance was present in the quart bottle of water, either in suspension or else upon the bottom and sides of the bottle in the form of a slimy precipitate. To test the effect of this water upon a fish, a 4 3/4 golden shiner, Notemigonus crysoleucas auratus was placed in a jar containing the water sample, and which was aeriated by a hose. The fish lived

in this water for three days without showing any injurious effects from toxic action and it is therefore assumed that injurious chemicals were not present in this sample in sufficient quantity to cause the death of the fish. A microscopic examination of some of the slimy precipitate and water was also made, and showed it to contain some microscopic animal life which was alive,—good evidence that chemical poisoning, in this sample at least, could not have been serious.

Cause of death: The conclusions regarding mortality of fish life in the Flint River which are jusitified from the material are: (1) That death was sudden; (2) That, due to lack of external injuries and unbroken air bladders, mechanical means were not involved; (3) That suffocation, poisoning, or other means leaving no visible trace (except an increased amount of mucous) caused the death of these fish.

Unfortunately there are no autopsy characters that are reliable to determine whether a poisoning effect or lack of oxygen was the cause of death. However, the evidence indicates that the fish mortality may have been caused by a large amount of organic substance in the water which was too great to be oxidized without pulling the oxygen supply below the fish lethal point. In that case the fish would die from axphyxiation. Such a condition is often found in streams below cities which pour untreated domestic sewage and other organic wastes into the stream. It would be necessary to make a field study of the Flint River at Flushing before more definite conclusions could be drawn.

INSTITUTE FOR FISHERIES RESEARCH