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THE PEARLY FRESH-WATER MUSSELS OF ONTARIO.

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(With one figure in the text).

INTRODUCTION.

As a part of the pearly fresh-water mussel investigation, conducted by the Biological Board of Canada, a number of localities, from which promising reports had come in, were visited in August, 1916.

The investigation had a twofold object: first, to determine the abundance, species and commercial value of the mussels; and, second, to ascertain whether it would be advisable to introduce artificial propagation in any Canadian waters.

In order to facilitate the work, the Board decided to send the author to the Fairport Biological Station at Fairport, Iowa, so that he might thoroughly acquaint himself with the problem in hand.

THE UNITED STATES FISHERIES BIOLOGICAL STATION, FAIRPORT, IOWA.

This station was established in 1908, and is the centre of mussel propagation and of the investigation of problems relating thereto.

In the practical propagation of mussels the station serves as headquarters for field operations conducted throughout the Mississippi basin, including the Mississippi river and its tributaries. There may be in the field at one time from two to six field parties operating near the station or at a distance of several hundred miles. For full account see United States Bureau of Fisheries, Document 829, by Dr. Coker.

METHODS AND TECHNIQUE OF ARTIFICIAL PROPAGATION.

The methods of propagation are based upon the peculiar character of the normal course of development of the fresh-water mussels. The young mussels, with rare exceptions, when first liberated from the mother clam must become parasitic upon a fish

in order to pass through the next stage of their development. To this end these young mussels—glochidia, as they are called at this stage—attach themselves to the fins or gills of a fish, if the opportunity presents itself. They already have two shells which under proper stimulus work like a small trap, and a very slight wound seems to be produced which after attachment begins at once to heal over. In this way the glochidia become more or less safely encysted and now virtually live the life of parasites, subsisting on the juices of the fish. In the course of two weeks, more or less, having completed their metamorphosis, they break away from their host, drop to the bottom and begin an independent existence.

If not over-infected, the fish seem to suffer no injurious effects. Naturally, the limit of successful infection depends on the size and nature of the fish. Careful investigation of natural and artificial infection has shown that a moderate-sized fish may carry successfully from 1,000 to 2,000 glochidia.

Mussels do not attach themselves indiscriminately, but for each species of mussel there is a limited number of species of fish that may serve as host. In some cases the number that may act as a host is apparently very exclusive. In this connection