

SESSIONAL PAPER No. 387

supply of the mussels is by no means fully dependent on the free-swimming organisms, and that the favourable localities, discussed above, are largely conducive to the development of the mussel on account of conditions favouring the deposition of the "detritus."

RESTOCKING AND STOCKING.

The restocking of areas where mussels at present exist, and where active fishing is going on, and the stocking of new areas, may be summed up under the head of artificial propagation. As the method pursued in artificial propagation has been described in a general way, we shall now consider its application to the river in question.

Of all mussels so far experimented with, *L. luteola* lends itself most readily to artificial propagation on a commercial basis. It is the species chiefly propagated at present by the United States Government. As time and opportunity prevented my making an extensive survey of Grand River, I cannot state the extent to which this species occurs therein. It is, nevertheless, very generally distributed in Ontario waters, but in order to attain to a size and abundance suitable for commercial value it apparently must have the conditions more or less as described above in "river-lakes." The specimens so far obtained from the river are not of very good quality. This is probably due to unfavourable conditions preventing their optimum development in the areas from which they come. In a commercial appraisal made of some of our shells by Mr. John B. Southall, Shell Expert at the Fairport Station, this particular shell was reported on as follows:¹ "medium size, no discoloration, brittle, third grade² and yielding 788, 16—line,³ gross blanks per ton." In his remarks he further states that they were rather thin and of a steel-coloured nacre and produced blanks that would chip and cleave during the processes of button manufacture.

With regard to this mussel I would suggest a careful examination of the areas lying behind the larger dams with a view to stocking them with the valuable species. Such a survey might include the dams at Dunville, Caledonia, Brantford and Galt on the main river, and also the larger ones on the Speed tributary, where the full is well utilized, and where clams of good size are said to be found in all such storage basins as hold back water over a considerable area. Behind the dam at Caledonia there is a stretch of practically dead water for twenty miles which might lend itself favourably to the development of this mussel. Here the river bed can be classed as permanent, inasmuch as the usual freshet velocity of the river water above is greatly reduced on reaching this point. At Brantford the old barge canal, described above, containing also Mohawk lake, might prove a very suitable locality for propagation on a small scale. For the purpose of stocking, I would strongly recommend that an attempt be made to introduce the particularly fine *luteolas* of lake Pepin, in the Mississippi, about 30 miles down the river from St. Paul, Minn. In the United States gravid mussels, for purposes of infection, have not been shipped over a much greater distance than 300 miles, but I am informed by the Director of the Fairport Station that they sent a couple of shipments of live mussels from Fairport to New York in the fall of 1916, and that the majority reached their destination in good condition. The distance from lake Pepin to Galt, Ont., would be about 835 miles by

Fortunately, this species is not very exclusive in its choice of host. Neither is its spawning period of short duration, as is the case with some other commercial mussels. All the *Lampsiline*, in fact, are gravid, more or less, during the whole year

¹ In the report of the appraisal the *luteolas* sent from the Canada Co. Cut and from the Grand River were combined in one report.

² In grading the material I sent him, the texture and lustre of the niggerhead (*O. ebennus*) was taken as the standard.

³ A line in button measurement is 1/40 of an inch.