KINCOLITH FISHERIES LTD.

VANCOUVER, B. C.

Paper sent Pacific Fisherman by H.D.

In My opinion ~~of~~ the ~~value~~ hatcheries ~~have been~~ of little value to ~~the~~ perpetuating the Salmon supply

In my opinion Sockeye Salmon hatcheries, operating under the methods ~~which have~~ mostly been employed, ~~have been~~ ~~decidedly~~ more detrimental than beneficial to the maintenance of the ~~supply~~ species. ~~I consider those~~ It does not follow however that because perfection has not already been attained, the entire system is worthless, and I most decidedly disagree with those who advocate discontinuing Hatchery ~~operations~~ work because past ~~operations~~ have failed to produce the results anticipated.

~~Recently a Fraser Salmon Cannery manager at River Inlet~~

~~He I believes that~~ The failure of ~~sockeye~~ hatcheries to ~~produce~~ an augmentation in the number of Sockeye Salmon in the areas in which the hatcheries ~~are~~ is situated probably largely due to ~~lack of appreciation on the part of those~~ in charge, checking appreciation of the necessity of employing distinctive methods for each individual species of fish. One who makes a success of ~~the~~ whitefish hatching and applies ~~may~~ similar methods to Salmon propagation would make a mistake, and even in Salmon culture the method of treatment ~~of~~ for ~~the~~ Spring Salmon must differ materially from that employed ~~in~~ with the Sockey species ~~Salmon propagation~~.

Spring hatching unquestionably a success

In the past these necessary distinctions have not been recognized and with all due respect to Hon Mr Sloan's opinion, as expressed in a recent issue of your paper, I believe that the hatchery operations on the Fraser river have been the largest factor in depleting the supply of Sockeye fish.

Spring salmon deposit their spawn in streams which flow directly into the sea. Nature therefore provides the resultant young fry with size and strength sufficient to enable them to maintain themselves in the brackish water at tidal levels until sufficiently acclimatized to exist in the sea. A sudden transmission from fresh to salt water would be fatal. Sockeye salmon on the other hand, spawn only in rivers having a lake at their source and generally then in the small streams by which the lake is fed. * I believe there is no known instance of this distinctive feature in the natural laws governing the spawning habits of the two species indicates that different methods should be employed in artificial propagation work, but in the past this very important factor has been almost completely ignored. Sockeye salmon propagation on the Fraser commenced in — and year after year eggs were secured from Silver and Morris Creeks and other tributaries of Harrison Lake. When the resultant fry were being planted they were deposited in Harrison river where the current at this and subsequently

the Fraser river would carry them to the Gulf of Georgia before they found suitable currentless water in which to remain to attain greater growth. In the fry stage sockeyes lack sufficient strength to hold their own against the sweep of the tides and doubtless practically all perish from ~~the~~ a too sudden change ~~in environment~~ from fresh to salt water. Dr Chas. H. Gilbert of Leland Standford University is unquestionably our greatest authority on salmon life and his investigations have shown that practically ~~every~~ no sockeyes reaching the ocean as fry return to the rivers as mature fish. It therefore follows that sockeye fry ~~at those~~ liberated ~~by hatchery officials~~ in rivers and streams that are lake outlets have been a total loss.

~~I believe In my opinion Mr A Robertson now officer in~~

* Hatchery troughs have smooth sides and bottom and offer no opportunities for the young fish to hold and ~~charge of the Harrison hatchery has solved~~ Mr A Robertson, officer in charge of the Harrison Lake hatchery, has pointed out that ~~young salmon~~ fish raised therein lose the natural instinct ~~born in hatchery troughs and~~ to bury themselves ~~from danger~~ under gravel when danger threatens. Indeed, he says, they come to know ~~when to expect~~ the attendant that feeds them and advance to meet him when meal times arrive. It stands to reason that such fish even when deposited in the waters of a lake ~~itself~~ will fail to protect themselves against their natural enemies, and lacking the instinct to seek shelter ~~they~~ would doubtless swim around until, entering the current of the lake outlet, they are swept seaward and likewise perish in their fry stage upon reaching salt water. ~~Practicall~~

Practically all the fish reared in the Harrison Lake watershed have been liberated as fry in either the lake

or the lake outlet. ~~Almost~~ ~~Practically~~ ~~none~~ New, if any, were planted in the streams flowing into the lake from which in the past the parent fish were secured. If my theory is correct it follows that practically all those produced by hatchery operations have been lost, but in addition, what is more important still, ~~the~~ ~~continued~~ stripping ~~of~~ these spawning streams year after year of the ~~natural~~ parent fish, with no attempt made to replace them with hatchery fry, has ~~killed off the~~ eliminated natural propagation as a factor in those streams. ~~has~~ Years ago the Harrison Lake watershed was the main spawning area of Fraser river sockeyes; to-day its spawning beds are deserted while mature fish pass them by to ascend the Lillooett and Birkenhead; and I believe the depletion of these streams and the consequent diminution in the quantity of salmon in Harrison Lake is largely, if not entirely, due to hatchery operations.

But while the past has been disasterous the future ~~to me~~ seems ~~very~~ bright. ~~The Sacramento and Columbia rivers have unquestionably restored their runs of spring salmon by hatchery accomplishments, and no unbiased person~~ The spring salmon hatcheries of the Columbia and Sacramento rivers have been ~~unquestionably~~ successful in restoring the runs on those rivers and all conversant with conditions ~~there~~ in those waters know this to be the case. It only remains for us to ascertain the proper proceedure for sockeye propagation when ~~a like~~ success with that species will likewise surely follow. Mr Robertson, whom I have

already mentioned, has made greater progress with this phase of the Problem than any other student of the Sockeye Salmon life, and in his invention of gravelled hatching boxes; the discovery of the natural food of Salmon fry; and going back to nature as regards temperature of water, method of fry planting, etc., I think he has opened the door to success. If he has not fully done so he certainly has advanced very far toward accomplishing this object.

That artificial propagation of Sockeye Salmon can be successfully undertaken if the natural laws governing the species are followed has been demonstrated by the success of our Namu operations. Here we maintain a private hatchery of our own, which in the past has been stocked with eggs secured from the government hatchery at Rivers Inlet. We followed the adopted method of hatching the eggs in troughs — although in future we intend using Mr Robertson's methods — but instead of liberating the fry in Namu Lake or its outlet, we deposited them on gravel beds in shallow water far up the main stream which flows into the lake. We commenced operations in 1915 and this season was the first that we could look to for the results of our undertaking.

The Namu Salmon are a distinctive fish. They differ both in size and appearance from both the Bella Coola and Rivers Inlet Sockeye, which also differ from one another. In the past only the native Namu sockeye has been taken in our fishing operations at that point and

any change occuring would indicate that sockeyes of some other origin were making an appearance in those waters.

This year for the first time on record two distinct varieties of sockeyes have been taken at Namu; one the old familiar Namu type; the other – both in size and appearance – distinctly recognizable as of the Rivers Inlet type. This latter fish predominated in the early part of the season (~~just as~~ the Rivers Inlet sockeye is also an early maturing fish), and represented at first over 60% of the total catch. Later on the Namu type ~~were~~ became the most numerous until toward the first week in August ~~they~~ this type comprised ~~constituted~~ almost all of the catches ~~were comprised of this type~~. In no instance were any fish taken which resembled the Bella Coola type. We therefore conclude the ~~We therefore~~ new variety to be product of the eggs secured from Rivers Inlet in 1915 and we ~~feel~~ are feel ~~satisfied~~ ~~We have~~ it has proven ~~that the~~ artifical propagation of sockeye salmon can be successfully undertaken.

~~Any attempt~~ It discontinue the artifical propagation of sockeye salmon would be a retroactive step, ~~and in this age of progressive development in all directions; in science, in industry, and in social life, those who are content to bread anything as a failure without investigation failed to produce the success anticipated have not a proper conception~~ Instead of ~~pronouncing hatchery proclaiming hatchery operation an~~ abandoning hatchery work because of past failure, we should diligently seek the proper solution. ~~and~~ We should increase our experiments; not diminish them. What has been accomplished with Spring salmon is likewise attainable with sockeyes. To give up is to confess ourselves beaten. Almost every great

invention of the ~~past~~ present century has been the result of one final triumph after many disheartening failures, and the man who writes "finis" to any uncompleted effort belongs to the dark ages of ~~long ago~~, not to the golden era of the present.