

water trout (*Salmo tahoensis*) of Lake Tahoe and other mountain lakes and streams in the Sierra Nevada Mountains; the Truckee trout (*Salmo henshawii*); the cut-throat trout (*Salmo clarkii*); and the Rio Grande trout (*Salmo spilurus*). All these inhabit mountain lakes and streams, and we have a vast extent of suitable water in our mountain regions where they should do well.

With regard to the acclimatization of sea-fish, the perseverance and extension of the excellent work at the Portobello Marine Station is to be recommended. I have previously recommended the introduction of the striped bass from America (*Roccus lineatus*), as I consider it one of the most desirable inshore sea-fish which can be introduced.

Money judiciously spent on the introduction of useful fishes will always be a good investment for the country. I do not think, however, there is any necessity for this money to come out of the general taxpayers' pocket; it should come from the revenue derived from trout-angling licenses.

If the Government is prepared to put the fisheries under the control of a skilled ichthyologist, I would recommend that it should take over all the work now being done by the acclimatization societies. Under skilled management I am convinced that, from the total revenue derived from angling licenses throughout the Dominion, it is possible to do all the trout-hatching and river-protection work necessary, and have a surplus sufficient to defray the cost of an annual importation of some of the fishes mentioned. This, I am convinced, is the proper way to carry on the acclimatization of new fishes, and under skilled management it can be done.

A good many acclimatization societies are now more or less exercised about the decrease and general deterioration of trout in their rivers and streams. With regard to this, it must be remembered that every stream has a limited permanent carrying-capacity. When trout were first introduced the rivers and streams contained an abnormal quantity of natural food, which accounted for the large size and quantity of fish carried by most of our streams for a time. As the natural feed decreased, the size and quantity of trout went down in proportion, and to-day in a good many of the streams which only yield small baskets as compared with what could be taken some years ago, it is possible that the number of fish is in proportion to the quantity of food available, so that in order to effect an improvement in the size and quantity of trout it would be necessary to introduce some new natural feed. A biological examination of our rivers and lakes and an analysis of the water of the rivers in each district would be of great interest and value in connection with fish-life generally, and the introduction of natural feed suitable for certain waters; and I would recommend that the Professors and students from our Universities be encouraged to take up this matter and devote some time to it during each vacation.

Another matter which would have an important bearing on the effective and economical working of fish hatching and rearing establishments is the training of fish-culturists. In the United States of America, before a man is qualified to take charge of a hatchery, he has to serve for a time under a qualified fish-culturist, and pass certain examinations in fish-cultural work, embryology, &c. The result is that all the fish-culturists in charge of stations are properly qualified, and the work is carried out on the most practical and scientific lines. In this country any one who may have seen the inside of a fish-hatchery for a season, or who has assisted for a few months netting trout for stripping, or served for a time as a ranger for an acclimatization society or Government Department, calls himself a "fish-culturist," and it is quite common to find such men in charge of fish-hatcheries or in control of certain fish-work. The result is that the work is carried out in a haphazard and wasteful manner, causing much disappointment and waste of time and money. Of the men employed in fish-culture in New Zealand to-day, there are not more than four at the most who can describe scientifically the impregnation of a fish-egg or its embryology from impregnation to hatching out. The trained expert knows he will get certain results, but the amateur can only guess and experiment.

New Zealand's fresh-water fisheries at the present time are of very great importance, as providing a healthy and necessary sport for our own people and as an attraction for the foreign sporting tourist; and by the utilization of trout from our lakes and the introduction of other valuable lake fish they can also be made to add materially to the fish-supply required for market.

With regard to these fisheries as a sporting attraction, I certainly think a great deal more should be done to improve the fishing in our mountain regions, and this can be done by the introduction of certain lake sport fish and trout suitable for mountain rivers and streams. By the introduction of some of the fish I have mentioned in this report, it is possible in the Waiiau watershed in Southland to develop the finest sporting fishing in the Dominion, and there are many similar mountain rivers and streams both on the east and west sides of the Southern Alps suitable for these fish, and their introduction would no doubt open up new routes for sportsmen.

CONCLUSION.

In conclusion, I wish to emphasize what I have already stated in this report—that up to the present the New Zealand fishing industry has not been given anything like the attention its importance demands—as one of the most important food-supplies for its people, as a source of employment, and as an industry capable of developing an important export trade, &c.

I feel confident that if carried out the recommendations I have made will result in the fishing industry being put on a sound footing with regard to its organization and development, but, as with all other industries, a considerable amount of money is required at first. To carry out what I have recommended would, I estimate, take about £25,000 the first year. This would include the cost of a suitable vessel for exploration work, vessels and plant required for working the Foveaux Strait oyster-beds, freezing-works for Stewart Island, and cost of administering the fisheries. Quite three parts of this amount, however, would be for vessels and plant, which would be an asset. No further expenditure should be required in this direction the following year; all that would be required would be the cost of upkeep and administration.