

From the observations made and from the information obtained from reliable sources there would seem to be no doubt but that the following conclusions are substantially correct:—

- (a.) The natural feed for trout has decreased considerably during the last few years.
- (b.) Lake Taupo and its tributaries have been fully stocked with trout for some years.
- (c.) A decrease in the average size and condition of the trout has been distinctly noticeable during the last three years.
- (d.) A number of trout have been found to be affected with the worm parasite.

Natural Feed.

The principal natural feed is said to be the inanga toetoe, kokopu, koura, a "beetle" (found in the grasses and weeds in the lake and said to have been very plentiful at one time), and grubs, worms, &c. In trying to form an estimate of the extent of the feeding-grounds for trout in Taupo consideration must be given to the depth of water which the indigenous fishes which comprise the principal feed of the larger trout, and the trout themselves, will inhabit. My opinion is that the fishes mentioned as comprising the principal feed for trout inhabit comparatively shallow water, probably not beyond 200 ft. at the most, and as they are themselves principally bottom feeders the 200 ft. line round the lake would be the extent of the trout feeding-grounds as far as these animals are concerned. The rainbow and brown trout are themselves not deep-water fish by any means, and, although the information given by authorities on this point is somewhat meagre, yet from what can be gathered and from personal observations I form the opinion that their limit is very little more than 200 ft. Taupo is a deep-water lake: an examination of the excellent contour map prepared by Mr. Keith Lucas when he made a survey of the lake in 1902 shows that it reaches to a depth of 530 ft. In his description of Lake Taupo Mr. Lucas says, "In point of depth Lake Taupo is roughly divisible into three portions—the southern end, the greater part of which is included between the 300 ft. and the 360 ft. contours; the western bay, which lies chiefly between the 360 ft. and the 420 ft. contours; and the north-east portion, which contains depressions to a depth of 530 ft." The map shows that from the shore to the 300 ft. line gives only a narrow strip round the lake.

There is, of course, a certain amount of surface feed all over the lake, and a considerable quantity is brought down by the rivers and streams, but the principal feed for the larger trout is the indigenous fishes and crustacean mentioned, so that, notwithstanding the great size of the lake, when the question of depth is considered in relation to the bottom feeding-area suitable for trout it will readily be realized that this area is not so extensive by any means as at first might be supposed. In this connection I may mention that in 1902 I was sent to Lake Wakatipu to investigate and report on the deterioration of the brown trout in that lake. I found the lake rather poor in surface feed, and the bottom feeding-area suitable for trout was restricted to the narrow fringe of shallow water round the shores; beyond that shallow fringe the bottom falls suddenly away into water anything from 500 ft. to 1,000 ft. in depth. The natural feed found in the shallow water consisted principally of kokopu, bullies, and koura, but of late years these had almost entirely disappeared, the trout going down in size and condition as the feed disappeared. Within a certain distance of the head of the lake trout were much larger and in very fair condition: this was no doubt due to the natural feed brought down by the Reece River.

Natural Spawning and Increase of Trout in Taupo.

The conditions in the rivers and streams flowing into the lake are exceptionally favourable for hatching out a good percentage of young fish from the eggs deposited; and as the fry have no natural enemies in the shape of eels or other voracious fish to prey upon them, a large percentage should reach maturity. The number of fish which have reached maturity annually during the last six or seven years must have been largely in excess of the number caught. It is not possible to arrive at the exact quantity of fish caught with rod and line last season, but what I consider the most reliable authorities give the maximum quantity for the season at about 75 tons, another says 150 tons, and another 232½ tons. Even allowing that 100 tons were taken out, and allowing the low average of 4 lb. for each fish, it would only account for 56,000 fish taken out last season, and considering the extensive spawning-grounds in the rivers around the lake, ten times that number would seem a low estimate of the number of trout which reach maturity in the lake each year. When the question is given a little consideration the very large increase of trout reported during the last few years is easily accounted for, and this annual increase will go on until steps are taken to take out a quantity each year in proportion to the yearly increase.

Recommendations for the Maintenance and Future Working of the Fishery.

The maintenance of this fishery in a healthy condition is a national work, and every effort should be made to see that this is done. Vigorous and skilful measures require to be taken without any delay. If this is done much time, money, and disappointment will be saved and the good name of the fishery maintained. I have therefore to make the following recommendations:—

- (1.) Putting the fisheries of Taupo and Rotorua under the management of a thoroughly skilled expert.
- (2.) The systematic thinning-out of the trout in the lake.
- (3.) The introduction of some new natural feed for trout.
- (4.) Killing of ill-conditioned and diseased fish.
- (5.) Clearing out all the shag-rookeries in the district, and the systematic shooting of shags.