made, which, together with a special study of the spawning snapper and their pelagic eggs, and of data as to the seasonal catches of commercial vessels, helped to throw light on the problems involved. During the past year we were able to pursue the inquiry along more practical as well as more particular lines by the carrying-out of fishing trips in a vessel over which we had the control.

The fishing-launch "Viola" (AK 1872), equipped with Danish seining-gear, was hired, together with the services of the skipper-owner, Mr. J. McKay, for a period of sixteen weeks commencing 23rd November, 1927. 117 hauls of the Danish seine were made in various parts of the Hauraki Gulf. Special attention was given to snapper, but all the fish caught were measured and so far as possible examined with reference to the condition of the sex organs and the contents of the alimentary tract. The length-weight ratio was also ascertained for certain of the species. The numbers of each kind caught and measured were as follows: Snapper, 9,169; gurnard, 657; dabs, 609; john-dory, 352; dogfish, 275; trevally, 66; lemon soles, 61; rays and skates (stingrays), 32; flounders, 26; sharks, 10; kahawai, 10; kingfish, 8; parore, 8; horse-mackerel, 8; porcupine or globe fish, 5; warehou, 4; common soles, 3; wrasse, 3; mackerel, 2; moki, 2: total fish measured, 11,303.

517 female and 475 male snapper were examined as to sexual condition, the period of the observations covering the spawning season of this species.

The food, as indicated by the contents of the alimentary tract, was determined for 821 individual fishes, of which 785 were snapper. From these observations the food of snapper for the period of the investigation was shown to consist principally of crustaceans, usually represented by small crabs. 427 out of the 785 snapper examined (or 54·4 per cent.) had eaten crustacea; 199 individuals (25·4 per cent.) had eaten molluscs, which usually consisted of bivalves (16 per cent. pipis and mussels); only 2·4 per cent. of the snapper examined showed signs of having fed on other fishes.

Particulars of the investigation will form the subject of a special report which is in process of being made.

For thirteen weeks out of the sixteen the biological observations were in charge of Mr. M. W. Young. Captain Daniel, Inspector of Fisheries, who was in charge of the vessel at sea, very efficiently assisted both in operating the fishing-gear and in the biological observations. The investigation has provided information of value to the administration of the fishery, both from the practical aspect, with regard to the productivity of the grounds and the catching-power of the Danish seine, and from the biological aspect, in relation to the stock of fish which inhabits the fishing-grounds of the Gulf. But the problems of the life-history and occurrence of snapper in the Hauraki Gulf have by no means been finally elucidated, and it is to be hoped that provision will be made for further research. The data which we have for four months of the year require to be extended to the other seasons. Especially desirable is some definite indication as to the nature of snapper migrations in this region—to show whether and to what extent the Hauraki Gulf stock is recruited from outside, and to what extent the different classes of snapper recognized by the fishermen are biologically distinct. A scheme of "tagging" experiments would be the best, if not the only, way of elucidating these problems. It is suggested that such experiments should be undertaken at a later stage.

Quinnat Salmon Experimental Netting on the Waimakariri River.

With the twofold purpose of obtaining data for the biological analysis of the run of quinnat salmon in the Waimakariri River, and in order to obtain a practical understanding of the conditions under which salmon-netting operations in this locality are carried on, arrangements were made for a scheme of experimental netting during the past season. Two netsmen were engaged to carry on netting at Kairaki, near the mouth of the Waimakariri, from the 6th February to the 28th April. Favoured by fine weather and a low river until the last fortnight of the season, a very satisfactory catch was made, totalling 454 fish, having an aggregate weight of 4,885 lb. The fish thus averaged 10·7 lb. in weight. The first fish was caught on the 6th February, the last on the 12th April. The most productive month was March, the best days being the 1st (twenty-eight fish caught), the 9th (thirty-six fish) the 12th (twenty-nine fish), the 14th (thirty-six fish), and the 21st (twenty-three fish). Records were kept as to the weather conditions, height of river, and state of tide, besides precise particulars as to the results of individual hauls of the net. The sex, length, and weight of each fish was noted, and from each individual a scale sample was taken for the purpose of providing data for age-determination. The details and results of the investigation will be dealt with in a separate special report. The fish caught were consigned to the wholesale market of P. Feron and Son, Ltd., Christchurch. The gross proceeds of sales amounted to £177 7s. 11d., which represented an average wholesale price of approximately 10½d. per pound for the fish marketed.

Atlantic Salmon.

The publication of papers on the Atlantic salmon of New Zealand by various contributors in recent numbers of the *Salmon and Trout Magazine** (which is the organ of the Salmon and Trout Association of Great Britain) is evidence of the interest taken by British ichthyologists in the biology of this species in its antipodean surroundings. It should be mentioned, however, that the material which formed the data for these papers was scanty in amount and not extensive in its scope, and until much more comprehensive data are available very little further light on the problems connected with this newly established fish-stock can be forthcoming. The desirability of this is more than a matter

* Atlantic Salmon in New Zealand: (1) "Tasmanian and New Zealand Salmon at the Natural History Museum," by C. Tate Regan, F.R.S., with a Note on the Scales, by J. A. Hutton: (2) "The Salmon of Lake Te Anau," by W. L. Calderwood, I.S.O., F.R.S.E.; (3) "The Effect of the New Habitat on Spawning and Migration," by A. E. Hefford; (4) "The Local Conditions," by A. E. Tapper. *Salmon and Trout Magazine*, No. 48, July, 1927.
"Atlantic Salmon in New Zealand," by W. L. Calderwood. *Salmon and Trout Magazine*, No. 50, January, 1928.