

1907.
NEW ZEALAND.

EXPERIMENTAL TRAWLING

(INTERIM REPORT ON).

Presented to both Houses of the General Assembly by Command of His Excellency.

SIR,—

Wellington, N.Z., 12th November, 1907.

I have the honour to present the following interim report on the fishing and deep-sea trawling cruise of the steam-trawler "Nora Niven," which was chartered by the Government for three months from the 5th June to the 4th September of this year for the purpose of prospecting certain parts of the sea off the east coast for fishing-grounds.

The object of the cruise was to test the ocean-floor off the east coast from Stewart Island to the Bay of Plenty and round the Chatham Islands, in order to ascertain what extent of clear trawling-grounds exist outside of those which are already known and worked; to ascertain what fish-life exists out to 100 fathoms; to look for offshore banks; and generally to acquire a better knowledge of our fishing resources.

The New Zealand Trawling and Fish Supply Company's new steam-trawler "Nora Niven" was chartered by the Government to carry out the work. This vessel, which arrived in the Dominion on the 7th May, was specially designed and built for the company by the Great Central Co-operative Engineering Company (Limited), Grimsby, England. The following is a description of the vessel: viz., length over all, 105 ft.; beam, 20 ft. 6 in.; draft, 13 ft. aft, 8 ft. forward; engines, triple expansion, 250-horse power; speed, 9 knots; fitted with a 4-ton Linde freezing-machine (marine type). There are two insulated holds capable of freezing and storing 50 tons of fish, and in one of these holds a strong iron brine-tank is placed, with moulds, where two tons of ice can be made in half-hundredweight blocks every twenty-four hours. The vessel has the most modern appliances and trawling-gear. The otter trawls can be worked from either side as necessity arises. The patent double-barrel steam-winch placed amidships carries 500 fathoms of 2 in. wire rope on each barrel, which enables the trawl-net to be worked to a depth of between 100 and 200 fathoms.

The "Nora Niven" proved to be a splendid sea-boat, and well adapted for the work she was employed to do for the Government. The owners were anxious to afford the Government officers on board every comfort that was possible on such a vessel and facility for carrying out the work successfully, and the officers and crew worked well throughout the cruise.

At the commencement of the cruise the "Nora Niven" had on board six complete trawl-nets and also some spare sections of net, three pairs of otter boards, spare rope, twine, shackles, chafing-gear, and other fittings; and also an outfit lining and an oyster-dredge. The spread of each of the trawl-nets was as follows: Foot-rope, 120 ft.; head-line, 80 ft.

Mr. Edgar R. Waite, Curator of the Canterbury Museum, accompanied the expedition in the interests of that institution for the purpose of collecting specimens of the various species of fish caught, and as far as possible to make a biological survey of the areas worked. Mr. Waite worked under considerable difficulties on board, as, the vessel being built and fitted up entirely for the purpose of fishing, there was very little space available for storing collecting-tanks, gear, &c., and no convenience for examining and preparing specimens. Notwithstanding these difficulties, Mr. Waite worked energetically and enthusiastically throughout the cruise, and succeeded in making a large collection of specimens and obtaining a great amount of very valuable information with regard to the feeding and breeding habits both of the edible and also of the coarse fishes caught. A full report from Mr. Waite, apart from its scientific importance, would be of very great practical and economic value, and I would recommend that arrangements should be made to have it published.

GENERAL ACCOUNT OF, AND REMARKS ON THE RESULT OF, THE CRUISE.

As already stated, the charter of the "Nora Niven" commenced on the 5th June. On that date I inspected the vessel at Wellington, and found that she was equipped with trawl-nets, fishing-gear, and in all other respects as required by the charter-party, and she sailed the same evening for Stewart Island, in order to commence at the furthest-south point and work north.

The Department did me the honour of placing me in charge of the expedition, and I superintended the work from Stewart Island to Otago Heads; but owing to an accident received on board I was compelled to leave the vessel on arrival at Dunedin. Mr. Anderton, Curator of the Marine Hatchery at Portobello, was appointed by the Department to take charge of the work in my place, and continued on board until the expiration of the first charter, on the 4th September.

A summary of the work done on each section is given under separate headings. The report on the first section, from Stewart Island to Otago Heads, is supplied by myself, and the report on the others by Mr. Anderton.

On account of the very large extent of ground which the Department instructed should be tested during the three-months charter (about a thousand miles of coast-line from Stewart Island to Mercury Islands, besides working the Chatham Islands) it was impossible to devote as much time as was necessary to thoroughly test each section, or to go very far off to look for off-shore banks.

During the three months the vessel was out she fished on forty-eight days. Thirteen of the remaining forty-three days were Sundays, on which the crew did not work; and fourteen days were occupied in steaming long distances at the commencement and end of the cruise, and to and returning from the Chatham Islands; and the remaining sixteen days were taken up with coaling, blowing down boilers, and bad weather, when no work could be undertaken.

The total distance covered during the cruise was 4,312 miles, and of this distance the trawl-net was towed 514 miles. One hundred and six hauls of the trawl-net were made. The depth of water in which the hauls were made ranged from 4 to 120 fathoms; and the time occupied by each haul varied from one to two and a half hours, but as a rule one-and-a-half-hour hauls were made. About four hundred soundings were taken with the hand-lead and Lord Kelvin deep-sea sounding-machine for the purpose of testing the depth and nature of the bottom.

The range of depth in which the greatest variety of fish-life was found to exist was from inshore out to 30 fathoms, and no flat-fish of any value were taken over that depth. These results correspond with those obtained during the cruise of the "Doto" in 1900 and 1901. In the report of the "Doto's" cruise in 1901 it is stated that "the experience of this year's cruise was similar to that of last year's in one respect—viz., that wherever the coast-line was prospected the best results were obtained in from 5 to 25 fathoms, and there appears to be no exception to this rule," &c. Hapuka, kingfish, and ling were taken at any depth and out to over 100 fathoms, and tarakihi and schnapper were frequently in large quantities out to 60 fathoms, and on one occasion in 100 fathoms.

One of the reasons why the cruise was undertaken in the winter season was for the purpose of ascertaining the winter habitat of the flat-fish, as they generally disappear from the inshore trawling-grounds during that season. The general opinion of fishermen is that they either go out to deep water or migrate to off-shore banks which were supposed to exist. The result of the work done during this cruise would seem to negative both theories, as no flat-fish of any value were obtained beyond the depths at which they were taken at other seasons, and no off-shore banks were found to exist within the 100-fathom line, and beyond that all the soundings taken showed a sudden drop down to great depths. It is probable that the disappearance of flounders and soles off the known fishing-grounds at certain seasons is due to weather and temperature conditions and spawning habits, and, like the soles and plaice in the Northern Hemisphere, they partly bury themselves in the sand on the bottom. In this way the trawl-net would pass over them. In the North Sea it is a common practice with trawlers at certain seasons to put on a chain instead of a foot-rope for the purpose of moving the flat-fish out of the sand and mud on the bottom.

As the migrations of fish are affected by food, temperature, and other causes, the value of the fish-supply in any locality can only be ascertained correctly by having each locality fished at different seasons; so that areas mentioned in this report as showing good trawling-bottom but with only a moderate or even poor supply of fish at the time they were tested, may at another season prove to be prolific fishing-grounds.

In considering this report it should be remembered that in prospecting new fishing-grounds the work has to be carried out in quite a different manner from that in which a vessel fishing for market would work, so that the results obtained cannot be judged by the quantity of fish brought in. In fishing known grounds a trawler would work continuously in the locality and depth at which fish were known to be most plentiful at that season; whereas in prospecting new grounds a

great deal of time is taken up in steaming between each haul of the net and to the different areas to be worked, and in taking soundings in order to ascertain the depth and character of the bottom before making each haul; and, again, it is only possible to make short hauls, so as to be able to get over the coast-line which has to be worked.

The total quantity of fish brought in by the "Nora Niven" during this three months' cruise was 46,750 lb.

The practical results and information obtained during this cruise will undoubtedly prove of great value to the fishing industry, while the very large areas of splendid trawling-bottom which were discovered off different parts of the coast and at the Chatham Islands; the extensive trawling-grounds discovered in the Bay of Plenty, teeming with schnapper, tarakihi, and other fish; and the very satisfactory results obtained in line fishing and trawling at the Chatham Islands, more than justify the expenditure on the expedition. The negative results obtained in certain localities have also considerable value, as they will prevent owners of fishing-vessels from spending time and money in trying grounds which have been proved during this cruise to be either unsafe or unprofitable.

There is no doubt but that the result of this cruise will have the effect of encouraging more capital and energy being put into the fishing industry. Already a new trawling and fishing company, with a capital of £20,000, is being floated in Dunedin, and two new trawlers of the most modern type have been ordered from England by two other firms. It is also understood that one of the largest firms connected with the fishing trade intend commencing operations on an extensive scale at the Chatham Islands.

I have the honour to submit this report to you in the following order:—

- (a.) A general account of, and remarks on, the result of the cruise.
- (b.) A summarised report on each section of the coast worked from Stewart Island to the Mercury Islands and Chathams.
- (c.) A detailed account of each day's work and haul of the trawl-net.
- (d.) Particulars of the locality, depth, and nature of the bottom, in respect of each haul of the trawl-net.
- (e.) Record of fish taken in the trawl-net.
- (f.) A list of the fish taken in the trawl-net, and stations where they were obtained.
- (g.) Record of fish taken with hook and line.
- (h.) Record of fish taken with set-nets.
- (i.) Table of distances steamed and trawled during the cruise.
- (j.) Weather and temperature observations made during the cruise.
- (k.) Particulars of soundings made apart from those taken at the trawling-stations.
- (l.) Charts marked MD. 3121, showing in red lines where trawl-net worked, and in red figures soundings in fathoms.

The Secretary, Marine Department, Wellington.

L. F. AYSON,
Chief Inspector of Fisheries.

SUMMARISED REPORT ON THE SECTION OF THE COAST FROM STEWART ISLAND TO OTAGO HEADS.

Trawling operations were commenced to the east of Stewart Island on the 10th June, and the grounds were tested out to over 100 fathoms. On an average rough bottom was found out to about seven miles off shore; beyond that distance an even sand bottom was found to exist, and the water deepened gradually out to about forty-five miles off shore, when it suddenly dropped down to 185 fathoms. The shallowest water worked in was 37 fathoms, and the deepest trawled over was 110 fathoms. A very large extent of good trawling-bottom exists to the east of Stewart Island, extending out to about forty miles east from Port Adventure, and about fifty miles in extent from north to south. The quantity and variety of fish taken on this section was, however, rather poor, and consisted of ling, hapuka, and kingfish.

In 1900 the "Doto" worked from Bluff to Waipapapa Point, and some very good trawling-grounds were found, and market-fish were taken in considerable quantities. From Waipapapa Point to Nugget Point we worked from inshore out to 100 fathoms. The result, both as regards the character of the bottom and supply of fish, was unsatisfactory. The configuration of the coast-line indicates rocky bottom for some distance off shore, and this was found to be the case. Beyond this limit of the rocky bottom out to 100 fathoms the bottom was found to be mostly shingle and coarse sand. In Molyneux Bay good results were obtained, both as regards the fish-supply and character of the bottom. Three hauls of the net were made without breaking a mesh. The soft sand and mud bottom indicated good sole and flounder grounds, but the results of the hauls were rather disappointing with regard to the quantity of these fish taken. I am of opinion that during the summer and autumn months good hauls of these fish would be obtained. Large quantities of red-cod, dogfish, and elephant-fish were taken at every haul. From Molyneux Bay to Cape Saunders we found a considerable extent of good trawling-bottom, and a fair supply of market-fish were taken. There is, however, a large extent of hard shingle bottom along this section. From Cape Saunders to about eighteen miles due north of Otago Heads good bottom was found out to 102 fathoms. Tarakihi was the principal fish taken from 25 to 60 fathoms, and ling and kingfish were taken out to 102 fathoms. The best trawling-grounds off the Otago coast extend from Cape Saunders to some distance west and north of Otago Heads, and extend from inshore out to about 30 fathoms. These grounds have been considerably worked by Mr. Sullivan's trawlers from Port Chalmers.

OTAGO TO LYTTTELTON.

Two trawlers from Port Chalmers are at present engaged in working the fishing-grounds off Otago Heads and in Blueskin Bay, and no attempt was therefore made to test these well-known grounds. Thirty hauls were made between Otago and Lyttelton. Almost every haul between Otago and Akaroa, inside about 40 fathoms, disclosed the presence of a great variety of fish. Foul ground exists to a distance of nine miles, and perhaps more, off Moeraki and Lookout Bluff, and, although fish appear to be plentiful, the ground is altogether unsuitable for trawling purposes, and is at present being worked by the line fishermen from Moeraki, the chief fish taken being blue-cod and hapuka.

The Canterbury Bight consists of such a vast extent of ideal trawling-ground that it was impossible during the present trip to make anything like as close a survey as is necessary, and I would strongly urge upon the Government that further tests should be made, preferably during the summer months. A month or more could be profitably spent in making a much closer survey, during which time it would be possible to maintain even soundings during each haul, and thus more fully prove its value. I feel quite confident that within this area the finest trawling-ground in New Zealand and some of the richest fishing-grounds will be found. Having such convenient ports of shelter as Oamaru, Timaru, and Akaroa, and being within easy reach of the chief centres by rail and steamer, increase its claim to further investigations. The bags taken off Akaroa were fairly large, but contained a great many elephant and other unsaleable fish, tarakihi being the chief edible fish taken. Soles, hapuka, and kingfish were also present, but were not taken in large numbers.

LYTTTELTON TO WELLINGTON.

The ground off Lyttelton was tested to a distance of fifty-eight miles east-north-east of Godley Head. Ninety-six fathoms was reached at a distance of twenty miles outside of the furthest soundings marked on the chart. Pegasus Bay, being frequently worked by the Lyttelton trawlers, did not come within the scope of the present survey. Twenty-three hauls were made between Lyttelton and Wellington. Large masses of jelly-fish were taken off Banks Peninsula and to the north of it in the shallower hauls, and as deeper water was approached the catch consisted mainly of elephant and other unsaleable fish. Flounders were taken up to 20 fathoms, beyond which the chief edible fish were tarakihi and gurnard, fair hauls of which were taken in from 30 to 45 fathoms. Two bad foulds were experienced twenty miles east of Motunau Island. These were due to the hard clay banks, which are very treacherous. One haul was made off Gore Bay, but produced only poor results. As a greater part of two trawls had been lost the previous day, no hauls were made between Kaikoura and Cape Campbell, but a zigzag course was made, and numerous soundings taken. Although small sandy patches may be found off the beaches on which trawling might be done, the soundings indicate uneven ground further off shore, evidently composed of reefs of rock, with stretches of very soft mud in between. The whole ground between Motunau Island and Cape Campbell is in all probability unsuitable for trawling purposes. Six hauls were made to the north-west of Cape Campbell in from 10 to 75 fathoms. Very few flat-fish were taken at this season, but tarakihi were plentiful in their favourite depth of about 30 fathoms. No hauls were made further in Cloudy Bay, as this is at present being worked. The deeper haul in mid strait from 38 to 75 fathoms produced very few edible fish and a number of large dogfish. The soundings given on the chart to the south-east of Cape Terawhiti indicate very great variations in depth, with steep drops of as much as 50 to 100 fathoms or more, and it is extremely unlikely that any stretch of trawling-ground exists in this locality.

WELLINGTON TO NAPIER.

Nineteen hauls were made between Wellington and Napier. A foul was experienced to the south-east of Sinclair Head, and the ground between there and Taurakirae is evidently rough. On the west side of Palliser Bay the water is very deep, but good trawling-ground was found towards the centre and east side of the bay, which was tested from 11 to 38 fathoms. Large soles were taken in 11 to 15 fathoms, and tarakihi, gurnard, and schnapper were taken at all depths. The prospects on the east side of the bay appear to be very good, and might conveniently be worked out of Wellington. No trawling was attempted between Cape Palliser and Castle Point, the chart showing deep soundings close inshore. Seven hauls were made between Castle Point and Cape Kidnappers. Two foulds were met with. Common and lemon soles, red-cod, schnapper, and tarakihi were taken at every haul, and might, I think, be expected in payable quantities; but the trawling-area is narrow. The richest portion appears to be between Bare Island and Cape Kidnappers, where the prospects are good once the foul ground has been located.

NAPIER TO EAST CAPE.

No trawling was done inside of a line drawn from Portland Island to Cape Kidnappers. Five hauls were made between here and Poverty Bay. Two hauls were made between 68 and 82 fathoms, which produced very considerable bags of tarakihi, also schnapper and kingfish, but not a single flat-fish of any description. Several hauls had been made previous to this by the "Nora Niven," and the results were the same as regards flat-fish. A considerable area of trawling-ground, about eight miles in width, extends from about six miles north of Table Cape to Poverty Bay, soles, gurnard, tarakihi, schnapper, and red-cod being taken on this ground in considerable quantities. Owing to a strong south-east gale no trawling was done between Aerial

Reef and East Cape, and time did not permit of this portion being tested on the return trip. The soundings given on the chart give indications of even depth and a mud bottom, and I would recommend the owners of trawlers from Napier to give this portion a trial for schnapper and tarakihi. The ground close inshore is reefy, and the 20-fathom line is close inshore, so that the prospects of flat-fish are poor; but the catch of schnapper increases so remarkably a little to the south that it is extremely probable that this ground will prove as rich in schnapper, tarakihi, and other round fish as that found to the west of East Cape.

EAST CAPE TO AUCKLAND.

A series of hauls were made in the eastern portion of the Bay of Plenty, commencing about nine miles west of Cape Runaway, trawling in a south-westerly direction, on which course the depth of water decreased about 10 fathoms per haul. The whole of the first haul was made in over 100 fathoms, and resulted in the capture of a large number of tarakihi and a few other fish. Subsequent hauls each yielded a heavier bag of tarakihi and schnapper, with a few John-dory, kingfish, hapuka, &c. Soles were taken in the largest numbers in about 20 fathoms; the largest bags of schnapper and tarakihi were taken at about 30 fathoms, at which depth upwards of a ton of fish can be taken per hour. Very few unsaleable fish were taken in this region. A number of hauls were taken here on the return journey, and the result proved to be just the same. No hauls were made between Whale Island and Motiti Island, where numerous rock soundings are shown, and there are a number of shoals and reefs. Two hauls were made to the north-west of Tauranga in from 9 to 21 fathoms, but at this season the catch of schnapper was very poor compared with the same depth further to the east. A few soles, John-dory, and gurnard were also taken here, and the probability is that good results are to be had here at certain seasons. The bottom is of coarse sand and quartz crystals. Two hauls were also made to the west of Mayor Island in 33 to 50 fathoms, but results were very poor. The nature of the bottom is somewhat similar to that on the east side of the Bay of Plenty, but the net had a most unpleasant smell when hauled in, with a slimy substance adhering to it, and to which may possibly be attributed the scarcity of fish.

CHATHAM ISLANDS.

The orders in regard to the Chatham Islands were: "To see what the ground was like for trawling, and to test the blue-cod fishing with lines." Contrary to expectations, a very considerable area of good trawling-ground was found. All soundings in and to the south of Petre Bay, through Pitt Strait, and in Hanson Bay showed yellow sand. Very few soundings are given on the chart anywhere around the island, but time and weather did not permit of a complete trawling and sounding circuit of the island being made on this occasion. No blue-cod were taken in the trawl, thus further indicating the absence of reefs near where trawling was done. Seven hauls of the trawl were made, the kinds of fish taken being somewhat similar, depth for depth, to those captured along the east coast of the South Island, and there is every prospect of greatly increased hauls when fishing for commercial purposes. Wherever the lines were put down large catches of blue-cod were made. Almost all were of exceptionally large size, particularly those taken off Rabbit Island and West Reef, where strong tides are experienced. Two and three blue-cod and hapuka were usually pulled up as soon as the line touched the bottom, and it was a sight to see the boats returning after a couple of hours' fishing loaded to the gunwale with blue-cod. Four Pitt-Islanders caught 230 of the largest blue-cod I have ever seen in less than an hour and a half's fishing off the north-west corner of Pitt Island. Six of the crew caught 606 blue-cod and 103 large hapuka, 1 trumpeter, and 1 yellowtail in seven hours off Whangaroa, and on another occasion caught 860 blue-cod in three hours and a half. Almost all the men were inexperienced in the art of blue-cod fishing, making the catch all the more remarkable. It is extremely probable that the Chatham Islands will in the near future become one of the most important sources of our fish-supply. These results may not be obtained throughout the year, but even if they are only to be had in the winter-time these Islands would prove most welcome at that season, during which fish are generally scarce around our own coast. The following additional particulars may be of benefit to those who wish to extend their operations to these Islands. The distance from Lyttelton and Wellington is about equal, being 420 miles, and from Napier about 386 miles, or about two days' steaming from any of these ports. The coast-line of the Islands, including Pitt Island, is about two hundred miles in extent, and is much indented. The greater portion of this is rocky, and with overlying reefs in many places. Blue-cod are reported to be as plentiful all round the Islands as in places tested by us. There are a number of anchorages in which shelter can be obtained during certain winds, but the only safe one during all weathers is at Whangaroa, or Port Hutt. The harbour is only small (see chart), but the anchorage is good, and it is an ideal place for the erection of a movable freezing-plant and the establishment of a fishing-station. There is no bar, a thick patch of kelp extending almost across the entrance to the harbour. There are two sandy beaches for beaching boats, &c., within the harbour. The population of the Islands is about three hundred, the majority of whom are Maoris. There are two hotels at Waitangi. Communication with Lyttelton is bi-monthly in the winter, but more frequent trips are made in the summer-time. Several small shipments of blue-cod, packed in ice, have been sent to Lyttelton, but the service is not at present sufficiently frequent to carry on a regular trade in fish.

DAILY MEMORANDUM OF WORK DONE FROM THE COMMENCEMENT OF THE CHARTER ON THE 5TH JUNE, 1907, TO THE 4TH SEPTEMBER, 1907.

June 5.—After the inspection was completed, the "Nora Niven" left Wellington for Stewart Island, by way of Lyttelton, at 6 p.m.

June 6.—Arrived at Lyttelton at 4 p.m., and, after taking Mr. Waite, with his collecting outfit, on board, the "Nora Niven" left the same evening at 7 p.m. for Stewart Island.

June 7.—Steaming from Lyttelton to Stewart Island. Passed Moeraki light at 5.30 p.m.

June 8.—On run from Lyttelton to Stewart Island, after rounding Nugget Point, experienced heavy head sea. Arrived at Half-moon Bay, Stewart Island, at 5 p.m.

June 9.—Sunday—anchored in Half-moon Bay.

June 10.—Hove up anchor in Half-moon Bay at 7 a.m., and left for the grounds to the east of Stewart Island. When outside Half-moon Bay the chief engineer reported that the feed-pump gland was broken, and would take two hours to repair. The anchor was hove up for the second time at 8.45 a.m., and the vessel steamed south to about 10 miles off Port Adventure. Several soundings were made with the hand-lead, but the bottom proved to be rough and unsafe for trawling. The strong wind, with heavy sea, prevailing made further work impossible, and we ran in to Port Adventure. We fitted up the Lord Kelvin sounding-machine, and drilled the crew in its use.

June 11.—Station 1: Weather unsettled this morning; gale blowing, with heavy rain during the night. The anchor was hove up at 8.30 a.m., and we steamed out due east from Wreck Reef for 9 miles, the soundings showing a fine sand bottom. At 52 fathoms the net was shot for the first haul at 11.30 a.m., and towed for two hours due east. Hauled up at 1.30 p.m. The result of this haul was rather poor, both as to quality and variety of fish. Bad weather setting in, with a heavy southerly, further trawling was considered unsafe. Several soundings were taken, and we returned to Port Adventure to shelter.

June 12.—Stations 2, 3, and 4: The weather having improved during the night, the anchor was hove up at 6 a.m., and we steamed N.E. from Wreck Reef for 10 miles. The soundings showing a fine sand bottom at 37 fathoms; the net was shot at 8 a.m., and towed on a N.E. course for two hours. This haul yielded a poor quantity of market-fish, consisting of hapuka, ling, kingfish, barracouta, &c. Work was continued on a N.E. course all day, and we trawled out to a distance of about 36 miles. In that distance three hauls of the net were made, and six soundings taken. The character of the bottom varied very little, being generally fine sand, and no obstructions of any kind were experienced. The result of the hauls made during the day was poor in quantity and variety of market-fish obtained. Hapuka, ling, and kingfish were the only varieties taken. The trawler lay-to for the night.

June 13.—Station 5: At daylight we steamed out for deeper water. A level bottom was found at 62 fathoms for about 15 miles, when it suddenly dropped down to 183 fathoms, the next sounding giving 197 fathoms. We steamed back to 67 fathoms, and put over the net, towing out to deep water. The depth gradually increased for the first hour's towing, and suddenly the warps hung perpendicularly, showing that the net had been hauled into water well over 100 fathoms. The vessel was then turned back, and the net hauled up in 67 fathoms. The result of this haul was a poor one as regards market-fish. After hauling up we steamed inshore to test the grounds to the east of Ruapuke Island. Bad weather setting in, with a low barometer, we sheltered in Paterson's Inlet all night.

June 14.—Very stormy weather prevailing, with a low glass, no work was possible, and we had to shelter all day in Paterson's Inlet.

June 15.—Left the anchorage in Paterson's Inlet at 9 a.m. for the Bluff for coal, &c.. A strong gale, with a bad sea, was experienced crossing Foveaux Strait, and the vessel had a very rough time crossing.

June 16.—Sunday. Lay at the Bluff.

June 17.—Coaling was delayed to-day owing to the only coal-hulk grounding.

June 18.—Station 6: Coaling was finished this morning, and we left the Bluff at 11.30 a.m. for the grounds to the east of Waipapapa Point and Ruapuke Island. The grounds between Waipapapa Point and the Bluff were tested by the "Doto" in 1900. The trawl-net was shot at 3 p.m. 6 miles to the south of Waipapapa Point in 26 fathoms, the soundings showing the bottom to be fine sand. Towed N.E. for 1½ hours, when the soundings indicated rough bottom, and the net was hauled up and found to be badly torn. Lay-to for the night off Brothers Point.

June 19.—Station 7: Work was resumed S.E. of Brothers Point at 7 a.m. The net was shot for the first haul in 43 fathoms at 7.45 a.m., bottom fine sand. The result of this haul, after towing 2½ hours, was rather poor. The bottom was then tested out to 100 fathoms, but proved to be too rough for trawling. Mr. Waite's bucket dredge was put down at a depth of 120 fathoms.

Station 8: After testing the bottom with the dredge we steamed N.W. x N. 1½ hours, and shot the net in 60 fathoms—a sand-and-shell bottom—at 4.15 p.m. Towed 2½ hours, and hauled up from 59 fathoms. The result of this haul was poor, the few market-fish being represented by ling, hapuka, and kingfish. Steamed north until abreast of Nugget Point, and lay-to for the night.

June 20.—Station 9: Commenced work off Nugget Point at 7 a.m. Several soundings were taken to test the bottom, and the net was put down for the first haul at 8.30 a.m. in 50 fathoms on a sand-and-mud bottom. Towed into the opening of Molyneux Bay, and hauled up in 15 fathoms—mud bottom—4 miles N.E. of Nugget Point. This haul yielded fair results.

Station 10: Shot the net for the second haul to-day 5 miles N.E. of Nugget Point at 10.40 a.m.; depth 15 fathoms, bottom sand and mud. Towed inshore for $2\frac{1}{2}$ hours, and hauled up in 10 fathoms. The result of this haul was a very large bag of red-cod, with a small number of large soles.

Station 11: The net was shot in Molyneux Bay in $10\frac{1}{2}$ fathoms, on a sand-and-mud bottom, at 1.40 p.m. Hauled up 6 miles N.W. of Nugget Point. The result of this haul was a fairly good one, yielding a good variety of market-fish. Anchored for the night in Nugget Bay.

June 21.—Station 12: The anchor was hove up in Nugget Bay at 7.30 a.m. Steamed out 6 miles, and, finding good bottom, the net was shot in 43 fathoms at 8.20 a.m., 6 miles N.E. of Nugget Point. Towed $1\frac{1}{2}$ hours; hauled up from 46 fathoms. The result of this haul was rather poor as to quantity. After hauling up, the bottom was tested with the lead, but found to be too rough for trawling. Hove-to for the night off Quoin Point.

June 22.—Station 13: At daylight it was found that the vessel had drifted north during the night to about 6 miles east of Green Island. Several soundings were taken, but rough bottom was found until abreast of the Taieri River. The net was shot at 8 a.m. in 27 fathoms; bottom sand. Towed 2 hours, and hauled up 10 miles south of Cape Saunders. This haul yielded a fair quantity of market-fish, principally hapuka.

Station 14: The net was put out for another haul at 10.30; depth 25 fathoms; bottom rather hard, and loose pebbles. Towed $2\frac{1}{2}$ hours, and hauled up 8 miles south of Cape Saunders. This haul gave very few market-fish, but a large quantity of dog and elephant fish. Soundings were taken out to 64 fathoms during the afternoon. As the weather was unfavourable, with falling barometer, we steamed round to the west of Otago Heads, and anchored for the night.

June 23.—Sunday. At anchor all day in Blueskin Bay. Strong south wind blowing.

June 24.—Hove up anchor in Blueskin Bay at 7.45 a.m., and steamed out to 12 miles E.S.E. of Cape Saunders. The soundings at 65 fathoms showed rough coarse sand and gravel bottom. Steamed out and got 97 fathoms with similar bottom. Strong wind, with heavy sea, and with the hard bottom the net was not put down. Mr. Waite's bucket dredge was put down at 100 fathoms. Steamed in towards White Island in hopes that calm water would be found in the bight. Finding the southerly wind and heavy sea too bad to allow any work there, we steamed to the north of Cape Saunders, where we were sheltered from the southerly wind.

Station 15: The net was shot in 44 fathoms—bottom sand—at 2 p.m., about 6 miles N.E. x N. from Taiaroa Heads. Towed 2 hours, and hauled up from 39 fathoms. Good bottom was found throughout the haul. The result of the haul was fairly good, the market-fish being represented by soles, kingfish, ling, hapuka, tarakihi, red-cod, and barracouta.

Station 16: The net was shot again in 38 fathoms $9\frac{1}{2}$ miles N.E. x N. from Taiaroa Heads. Towed on a S.W. course for 2 hours 40 minutes, and hauled up from an even sand bottom in 18 fathoms. This haul gave a fair bag of the coarser market-fish—no flat-fish were taken.

June 25.—Station 17: Hove up anchor off Hayward's Point at 6 a.m., and steamed out 2 hours. The net was shot for the first haul at 8 a.m., $6\frac{1}{2}$ miles E. $\frac{1}{4}$ S. Taiaroa Heads; depth 55 fathoms, coarse-sand bottom. Hauled up from 102 fathoms, coarse-sand bottom, at 9.20. This haul was a very poor one, both as regards quantity and variety of fish.

Station 18: The net was shot for the second haul at 10.30 a.m., $8\frac{1}{2}$ miles E.N.E. from Taiaroa Heads, in 53 fathoms, coarse-sand bottom. Towed N.W.; hauled up at 11.45, in 36 fathoms, coarse-sand bottom. This haul yielded a good bag, principally of tarakihi.

Station 19: From station 18 steamed N.E. for an hour. The water deepened very quickly, the soundings showing 71, 200, and 72 fathoms, with a coarse-sand bottom. Altered the course, and returned into shallower water. The net was shot in 60 fathoms at 1.35 p.m., the soundings showing that the character of the bottom had altered to fine black sand. A N.W. gale setting in, with a choppy sea, the net had to be hauled up at 2.35 p.m. Considering the short tow made, the result of this trawl must be considered as satisfactory.

As I was suffering from the effects of an accident on board, we put into Dunedin for medical advice and for coal. Vessel struck bottom between Taiaroa Heads and Port Chalmers. Anchored in Carey Bay all night.

June 26.—"Nora Niven" arrived at Dunedin at 9 a.m. Owing to vessel touching bottom yesterday the Collector of Customs ordered an inspection to be made. The result of the inspection to-day showed that she had not sustained any damage.

Owing to the result of the fall on board the "Nora Niven" the doctor ordered me ashore, so as to have regular medical attention.

June 27.—Trawler coaling and taking water.

June 28.—Finished coaling; weather stormy.

June 29.—Mr. Anderton was placed on board the "Nora Niven" to-day as the officer in charge of the expedition for the Department, in my place. The vessel left Dunedin this morning, but as the weather was unfavourable for working, she anchored in Carey Bay.

[The record of the work from this date to the end of the cruise, on the 4th September, is supplied by Mr. Anderton.]

June 30.—Sunday. Left Port Chalmers and dropped anchor in Blueskin Bay at noon.

July 1.—Hove up anchor at 5.30 a.m., and steamed $1\frac{1}{2}$ hours. Shot the net in 20 fathoms off Jones's Head; bottom mud. Hauled up the trawl at 9 a.m., in 22 fathoms; bottom shell and fine gravel. This haul consisted chiefly of lemon soles, red-cod, &c.—a fair haul for an hour and a quarter.

Station 21: From last station steamed N. 6 miles, and shot the trawl at 10.10 a.m. in 23 fathoms, Shag Point bearing W.N.W.; bottom soft sand. Trawled E.N.E. 4 miles. Hauled trawl 11.30 a.m. Bottom shelving from 23 to 27 fathoms, with fine sand. This haul consisted of 19 soles, 2 ling, and a number of red-cod. Very few other edible fish were taken.

Station 22: Steamer E. x N. from station No. 21 for a quarter of an hour, and shot the net at 12.12 in 20 fathoms. Clean, soft sand bottom, shelving to 44 fathoms—soft ooze and shells. Hauled up the net at 1.50 p.m., in from 40 fathoms, bottom soft ooze. This haul yielded very few edible fish. Considerable quantities of sponges, shells, crabs, and bêche-de-mer.

Station 23: The prospects at the last station were so poor that a course was laid towards shallower water, so as to compare the results with those obtained further south, and to get some rough idea of the fish zones in that locality. Shot trawl again at 3.15 p.m., in 24 fathoms; bottom sand and shell. Got 21 fathoms at 4 o'clock, ground becoming very rough. Hauled up trawl at 4.5 p.m., in 13 fathoms, where a foul was struck; Moeraki bearing N.W. $\frac{1}{2}$ N. 4 miles; Shag Point bearing S.W x W. $3\frac{1}{2}$ miles. Net considerably torn. Haul consisted of blue-cod, sea-perch, red-cod, tarakihi, and a few soles, &c. There is evidently good fishing-ground in this vicinity just clear of the reefs, but the bottom is known to be very rough, and we proceeded further north to where the soundings are more even. Lay off Moeraki all night.

July 2.—Station 24: Steamed to position at daylight, and shot the net at 8.35 a.m. in 20 fathoms; fine-sand bottom. Fouled 8.40. Small tear in trawl, which contained 2 dogfish and a few sea-perch and tarakihi. Ground still rough, so steamed north.

Station 25: Steamed until 10 a.m., by which time net-repairs were finished. Getting even soundings again, the trawl was shot at 10.5 a.m. in 18 fathoms; bottom fine sand and shell. Fouled again at 10.45 a.m. in 19 fathoms, lead showing coarse gravel. Haul consisted of blue-cod, tarakihi, sea-perch, &c. The ground even to this distance out is very patchy, and is altogether unsuitable for trawling.

Station 26: From station 25 steamed N.E. x E. 12 miles, and at 12.55 p.m. shot the net in 40 fathoms, the soundings showing fine-sand bottom. At 2 p.m. hauled in the net in 43 fathoms, from a mud bottom. The haul consisted of large numbers of tarakihi, many of them of small size, one hapuka, and three ling. No flat-fish were taken. The bottom consisted of fine sand, with many sponges and weeds, and a large number of crabs.

The deeper hauls proving so unproductive, I do not feel justified in working this wide area where the 100-fathom line is 30 miles off the land, and having to neglect places in from 20 to 30 fathoms, which are probably more productive. It is impossible in the limited time to do more than make an occasional run into the deeper waters in this part. More attention can be paid to the deeper waters where the 100-fathom line is more easily reached.

Station 27: From last station stood in till 3.50 p.m., and shot the trawl at 3.55 p.m., in 23 fathoms; bottom fine shell. Trawled west till 4.50 p.m., and hauled up the net in 26 fathoms; bottom coarse sand and shell. Catch consisted of about three hundred very large red-cod and a number of hapuka, large tarakihi, ling, and sea-perch. Very few flat-fish were taken. Lay six miles east of Oamaru for the night.

July 3.—Station 28: Morning broke clear and fine, with rising glass. Shot net at 7.25 a.m. in 19 fathoms; fine-sand bottom. Trawled N.E. for $2\frac{1}{2}$ hours, and hauled up net at 9 a.m., in 22 fathoms; gravel bottom. Haul very encouraging, consisting of tarakihi, soles, hapuka, and gurnard.

Station 29: Steered N.E. one mile to clear masses of weed, and shot the net again at 10.5 a.m. in 25 fathoms; coarse-gravel bottom. Trawled N.E. for 1 hour 11 minutes, and hauled up at 11.15 a.m. A few more soles were taken than in the previous haul, and fewer round fish. Thirty-two large elephant-fish, a few tarakihi, ling, and hapuka were taken.

Station 30: Steamed N.E. from 11.30 to 12, and shot the net at 12.15 in 35 fathoms; soft-mud bottom. Trawled N. x E., and hauled the net at 1.15 p.m. in 35 fathoms—black-mud bottom—20 miles N.E. x E. of Oamaru. A large quantity of weed, a few unsaleable fish, and 23 tarakihi were the results of this haul.

Station 31: At 2.30 p.m. got 24 fathoms, with shell bottom, and shot the net. Trawled N. x W. to keep in about 20 fathoms the full length of the haul; 3 p.m., 23 fathoms, shell; 3.40 p.m., 22 fathoms, shell. Hauled trawl at 4.15 p.m. in $21\frac{1}{2}$ fathoms; sand-and-shell bottom. Ground becoming more satisfactory as regards flat-fish, tarakihi, and gurnard. A large number of skate were taken. Very little weed and a few broken pinna shells. Lay-to for the night—glass very low, and falling.

July 4.—Station 32: The morning broke hazy, but fine. Steamed in towards Waihao River, and shot trawl at 7.45 a.m. in 13 fathoms; shell bottom. Hauled in at 9.5 a.m. in 9 fathoms; stony bottom. This haul produced very poor results—a few flounders and soles, red-cod, and kingfish, and a few unsaleable varieties.

Station 33: Steamed 8 miles N. and dropped trawl in 17 fathoms at 10.20 a.m., on fine-sand bottom. Hauled trawl up at 11.35 a.m. from 16 fathoms; fine-sand and mud bottom. Trawl came up remarkably free from weed, and the haul produced 12 very large flounders, a few soles, red-cod, and a considerable number of elephant-fish, dogfish, &c.

Station 34: Shot the net again at 11.50 in 16 fathoms—fine-sand bottom—and worked towards a shallow area lying to the S.E. of Timaru; 11.50, 17 fathoms, fine sand; 1 o'clock, 18 fathoms, fine sand; 1.20 p.m., 19 fathoms, fine sand. Hauled up the net at 1.45 p.m. in 21 fathoms; bottom sand and shell. The haul produced a moderate number of flat-fish, the flounders and brill being of very large size, a number of lemon and common sole, gurnard, tarakihi, and a few skate and elephant-fish.

Station 35: Shot the trawl again at 2.10 p.m. in 21 fathoms; sand bottom. Trawled E. $\frac{1}{2}$ S. $6\frac{1}{2}$ miles, and hauled in at 4.15 p.m. in 29 fathoms; black-ooze bottom. The trawl came up very free from weed. Flat-fish were again well represented, and were of large size, also gurnard, barracouta, ling, tarakihi, large red-cod, &c.

The bottom worked over to-day is an ideal one for trawling, and I consider the prospects for flat-fish very good. Lay 12 miles E.S.E. of Jack's Point for the night.

July 5.—Station 36: A fine clear morning, with a northerly breeze. Steamed out at 6 a.m. towards deeper water. Shot the net at 7.45 a.m. in 35 fathoms; sand bottom. Trawled E.N.E., and hauled up at 9 a.m. in 42 fathoms; mud-and-shell bottom, 28 miles E. $\frac{1}{2}$ S. of Timaru. The haul consisted entirely of round fish, hapuka, ling, barracouta, kingfish, tarakihi, red-cod, and a few unsaleable varieties. A fair haul of round fish, but totally void of all marketable flat-fish. This ground would be impracticable for a daily boat from Timaru, as the steaming-time alone would occupy out and in seven hours at 8 knots.

Station 37: Steamed E. x N. $\frac{1}{2}$ N., and shot the trawl in 48 fathoms 37 miles E. $\frac{1}{4}$ S. of Timaru at 10.45 a.m. Trawled N.N.W. to keep clear of deeper water. Hauled up at 11.50 a.m. Cod end had come adrift, and with the exception of a few small tarakhi this haul proved a blank.

Station 38: Steamed E. $\frac{1}{2}$ S. to test the edge of the bank. Dropped trawl in 58 fathoms at 1.50 p.m.; soft-mud bottom, and trawled E. $\frac{1}{2}$ S. Hauled up at 4.35 p.m. in 75 fathoms; fine-sand bottom, 54 miles east of Timaru. Time down, 2 hours and 40 minutes. The results were very poor for the length of time the trawl was down on such a likely bottom, and consisted of 21 barracouta, 2 ling, 12 tarakihi, and 2 dogfish. No flat-fish of any description were taken.

July 6.—Station 39: Fine clear morning. Steamed in from last station at 6 a.m., and shot trawl at 7 a.m. in 28 fathoms; sand-and-shell bottom. Hauled in at 9 a.m. in 31 fathoms; sand-and-shell bottom. The haul consisted of a large quantity of very large red-cod, hapuka, ling, lemon sole, skate, megrin, gurnard, kingfish, &c.—a big bag, but a considerable quantity of unsaleable fish. The net contained very few weeds, and the bottom trawled over is very likely ground.

Station 40: Steamed in and shot trawl at 11.15 a.m. in 16 fathoms—bottom fine black sand—10 miles E.N.E. of Timaru. Trawled W.S.W., and hauled in at 2.45 p.m. in 9 fathoms—sand bottom—5 miles N.E. of Timaru. Haul consisted of 14 very large flounders and a number of red-cod, conger-eels, skate, and a few soles. This haul was again very clear of weeds, but contained a large mass of jelly-fish, and, as the result of 2½ hours' trawling, was not good.

The ground further inshore is treacherous, and was tested by the "Doto" in 1901.

Being nine days out from Dunedin, we steamed into Timaru for coal, provisions, &c., at 4.30 p.m.

July 7.—Sunday. Lay alongside Timaru wharf. Strong N.W. wind and very low glass.

July 8.—Station 41: Commenced coaling from hulk at 9 a.m., and finished at noon. Left at 3.10 p.m., and steered N.E. till 4.50 p.m. Shot the net at 4.50 p.m. in 13 fathoms; dark-sand bottom. Trawled E. x N. $\frac{1}{2}$ N. until 7 p.m., when the net was hauled up from 16 fathoms; sand-and-mud bottom. This haul proved very similar to the previous one made in the same depth, and contained a very large number of jelly-fish, a few skate, elephant-fish, red-cod, and sole. Steamed N.E. x N. until 8 p.m., and lay-to for the night.

July 9.—Station 42: Strong breeze from S.E. sprang up at 1 a.m., hauling to S., with considerable sea running. Shot trawl at 7 a.m. in 21 fathoms; gravel-and-sand bottom. A complete change in the nature of the bottom from the ground previously worked along this section. Hauled in net at 9 a.m. in 24 fathoms; gravel-and-shell bottom. This haul produced a large bag of fish, but contained a great number of unsaleable ones. Very few weeds. Ling, barracouta, lemon sole, gurnard, hapuka, and tarakihi were represented.

Station 43: Steamed E.N.E. until 10.15 a.m., where 29 fathoms sand-and-shell bottom was found. Shot the net at 10.50 a.m. 32 miles S.W. of Akaroa light. Trawling N.E. to keep in about 30 fathoms. Hauled in at 1 p.m. in 30 fathoms; sand-and-shell bottom. Very large clean bag of fish, but containing a great number of elephant-fish, dogfish, and skate, 7 ling, 8 hapuka, 13 soles, 8 gurnard, and a number of tarakihi, &c.

Station 44: Shot trawl again at 1.40 p.m. in 30 fathoms, sand-and-shell bottom, and trawled N.N.W. to test the waters between 30 and 20 fathoms. Strong S.S.E. wind, with rising sea, caused the course to be altered to N.E. Hauled in at 4.15 p.m. in 24 fathoms—bottom black mud—16 miles S.W. of Akaroa light. The result was a fairly large haul, but again consisted chiefly of unsaleable kinds, also 6 very large flounders, 5 soles, 4 hapuka, and a number of ling, red-cod, tarakihi, gurnard, &c. Wind increased to a strong gale, with very heavy sea, and the vessel was laid-to to the southward of Akaroa all night, and was compelled at daylight to run for shelter to the N. of Banks Peninsula.

July 10.—Station 45: Under the lee of the peninsula, the water being smoother, the trawl was shot at 10.25 a.m. in 10 fathoms on a sand-and-mud bottom. Trawled north to keep in 10 to 12 fathoms, and hauled up in 14 fathoms; mud bottom. This haul produced a very large bag of fish, but mostly elephant-fish, with a few flounders and soles and one ling. The poorness of the bag was probably due to the heavy southerly sea. Steered E. x N., but on opening out Banks Peninsula the sea became too heavy for trawling, and we steamed to an anchorage off Adderley Head, and dropped anchor off McIntosh Bay for the night.

July 11.—Station 46: Hove up anchor at daylight, and steamed to position. The net was shot at 8.15 a.m. in 24 fathoms—mud bottom—a very considerable sea running. Hauled up at 9.5 a.m. in 35 fathoms from a fine-sand bottom. The haul consisted of a few soles and flounders, also tarakihi, moki, ling, and red-cod, with a very large number of elephant-fish, dogfish, and skate. Better results were expected from the depth and nature of the bottom, which consisted of weeds, pinnae, &c., and appeared to be very good feeding-ground.

Station 47: At 11 a.m. got a totally different bottom at 39 fathoms, and shot the trawl at 11.5 a.m. on a sand-and-shell bottom. Hauled in at 1 p.m. in 44 fathoms; sand-and-shell bottom. The result was a very good haul of tarakihi, also a number of ling, hapuka, barracouta, &c. The barracouta were very large, and in good condition.

Station 48: The trawl was again put down at 1.15 p.m., and towed towards deeper water. Hauled in at 3.20 p.m. 27 miles N.E. of Sail Rock in 46 fathoms; sand-and-shell bottom. A very considerable bag was secured, but chiefly unsaleable fish, with a few ling, tarakihi, and hapuka. A large trumpeter was taken in this haul. Steamed out E. x N. $\frac{1}{2}$ N. towards the edge of the bank, taking continuous soundings until 6.30 p.m., when 96 fathoms was reached. A sample of the bottom was here taken by means of Mr. Waite's bucket dredge. This position indicates that the 100-fathom line is not reached until 20 miles to the east of the furthest soundings marked on the chart, and, in order to verify our position, the patent log was set whilst steaming towards the land, and the position found to be correct. Lay-to for the night at 10 p.m.

July 12.—Station 49: Contrary to expectations, the ship had drifted a little to the southward. Steamed to position, 28 miles N.E. x E. of Godley Head, and shot the net at 8 a.m., trawling N. x W. Hauled up at 9.15 a.m. in 40 fathoms; fine-sand bottom. This haul produced a good quantity of tarakihi, one blue-cod, and a few sea-perch, &c. The tarakihi-ground evidently extends right along a line of 35 to 40 fathoms in a northerly-and-southerly direction, and the fish are all of large size.

Station 50: Shot net again at 9.45 a.m., and trawled W.S.W. Hauled up at 11.30 a.m. in 28 fathoms; bottom soft sand and mud. The result was a poor haul, consisting of 33 large tarakihi, 10 lemon sole, 2 ling, 3 barracouta, 50 megrim, a few sea-perch, and a considerable quantity of unsaleable fish.

Station 51: Shot net at noon in 28 fathoms—sand-and-mud bottom—and hauled up at 1.25 p.m. in 18 fathoms from a mud bottom. This haul produced a large bag of fish, but very few flat-fish, and, as usual in this locality, a good many unsaleable varieties. The ground around here appears to be all good tarakihi-ground. In this haul 128 very large tarakihi were taken, also a few lemon soles, red-cod, conger-eels, gurnard, about 100 *Macrurus australis*, and 200 large elephant-fish. Steamed for Lyttelton for coal and provisions, and to allow Mr. Waite to transfer his scientific specimens. Arrived in Lyttelton 5.30 p.m.

July 13.—Coaling at Lyttelton. Forwarded Mr. Waite's cases to Christchurch Museum.

July 14.—Sunday. Lay alongside Lyttelton wharf.

July 15.—Station 52: The warps having become unevenly stretched, they were run out along the wharf and re-marked. Having taken in water and stores, we left Lyttelton at 2.30 p.m., and cleared the Heads at 3.15 p.m., steering N. x E. until 4.25 p.m., when a sounding was taken, showing 14 fathoms and mud bottom. The trawl was shot at 4.35 p.m. 9 miles N. x E. of Godley Head, and hauled up at 6.45 p.m. in 17 fathoms; mud bottom. This haul yielded 11 large flounders, a few tarakihi, ling, lemon soles, and red-cod, with a number of elephant-fish, &c. Steamed until 8 p.m. to a position ready to trawl in about 20 fathoms in the morning.

July 16.—Station 53: The morning broke calm and clear. At 6 a.m. steamed to a position, and shot the net at 7 a.m. in 16 fathoms—mud bottom—trawling E.N.E., the bottom becoming more sandy. Hauled up at 8.50 a.m. in 21 fathoms, 27 miles N.N.E. of Godley Head. The results of this haul were not very good, and consisted of ling, tarakihi, flounders, gurnard, and red-cod, with a number of elephant-fish, dogfish, and jelly-fish.

Station 54: Shot trawl again at 9.5 a.m. in 21 fathoms 27 miles N.N.E. of Godley Head, on a fine-sand bottom, and hauled up at 10.55 a.m. in 27 fathoms; mud bottom. Very fair haul of round fish, chiefly tarakihi, also two ling, and two very large hapuka.

Station 55: Steered E.N.E. until 11.55 a.m., when the net was shot in 38 fathoms; mud bottom. Trawled N.E. until 1 p.m., when we were brought up by soft mud. This haul proved a blank, the cod end of the net being torn out, and the belly and wings torn. The otter-boards had sunk completely in the mud.

Station 56: The warps were shifted to the starboard trawl. Steered N. until 2 p.m. Strong southerly wind increasing, with high S.E. sea. Got better bottom at 55 fathoms, and shot trawl at 2.15 p.m. Hauled up at 3.30 p.m. in 58 fathoms, clay-and-mud bottom. Trawl came up very heavy, as if sanded up, and when near the surface one of the quarter ropes parted, which gave the net a heavy surge, and when taken in it was badly torn, the cod end being ripped out, and the greater part of the catch was lost. This ground is evidently composed of ridges of mud and clay, in which the otter-boards bury themselves and fill the net with mud. Repairs to the port-side net not being completed, and the starboard one being so badly damaged that it was necessary to bend a new one to the old head and foot ropes, at 4 p.m. we steamed in towards Motunau Island. Net-repairs were effected during the afternoon.

July 17.—Station 57: Strong southerly current and S.E. sea had set us by daylight off Conway's Point. Steamed the greater part of the morning in a southerly direction, taking numerous soundings, most of the ground proving too rough and uneven for trawling. At 10.45 got 26 fathoms, the soundings showing a more even bottom, so the trawl was shot on fine-gravel-and-sand bottom. The sounding-machine was kept continually going during the time the net was down. Hauled up at 11.30 a.m. in 43 fathoms from a gravel-and-shell bottom—trawl down only 40 minutes. Good tarakihi and moki ground, but only having one net to rely on it was not considered advisable to risk another shot here. Steered E.N.E. 5 miles. Several soundings showed rocky ground and varying depths. This ground is too reefy for trawling purposes. Lay off Kaikoura all night.

July 18.—Left Kaikoura at 6.30, and proceeded to take soundings. Passed Cape Campbell at 1 p.m. All the way from Kaikoura the bottom appears to be composed of reefs of rock with hollows filled with soft mud and clay, the shallower soundings always indicating hard rock, at times covered with fine sand and shell, and the deeper soundings indicating soft mud.

Station 58: Seven miles N.N.E. of Cape Campbell the soundings showed improved ground, and the net was shot at 1.58 p.m. in 38 fathoms, gravel-and-shell bottom. Towed N. x W., and hauled in at 2.45 p.m. in 35 fathoms. The wires had come together as if foul, so only had 55 minutes' haul, which produced 85 large tarakihi and a few soles, barracouta, *Macrurus Australis*, &c. A nice clean haul, with very few weeds.

Station 59: Shot trawl again at 3.5 p.m. to try shallower water, and hauled up at 4.5 p.m. in 25 fathoms, gravel-and-shell bottom. A good haul of tarakihi again for one hour's trawling, but also a good many unsaleable fish.

Station 60: At 4.25 p.m. again shot the net to test closer in shore, and hauled up the trawl at 5.25 in 20 fathoms, fine-sand bottom, it being too late to stand in further. Result, a large quantity of unsaleable fish, a few tarakihi, crayfish, &c. Lay off Cape Campbell all night.

July 19.—Station 61: Steamed to west of White Bluff at daylight, and at 8.35 a.m. shot the net in 10 fathoms on a mud bottom. Hauled up at 9.45 a.m. from 15 fathoms, black-sand bottom. Haul consisted of 70 large tarakihi, also gurnard, ling, flounders, megrim, &c. The ground inside of this is at present worked by the local fishermen, so we did not go any further inshore.

Station 62: Shot the net again at 10 a.m., steering E. $\frac{1}{2}$ N., and hauled up at 11.30 a.m. in 30 fathoms from a black-sand bottom, 9 miles E.N.E. of Wairau. This haul produced 4 large cases of tarakihi, also a number of gurnard, hapuka, ling, skate, and elephant-fish. No flat-fish were taken.

Station 63: A fresh N.W. wind and increasing sea coming on, we steamed out N.E. x N., and at 12.35 shot the net in 58 fathoms, sand-and-gravel bottom. Trawled N.E., wind and sea increasing. Hauled up at 2.5 p.m. in 78 fathoms, 10 miles S.W. of Terawhiti. This haul produced only 8 marketable fish, with a large number of dogfish. Steered for Sinclair Head on account of heavy sea, but was unable to do any further trawling, so steamed on to Wellington for coal, &c., arriving at 5.30 p.m.

July 20.—Took in coal, &c., and left for Napier at 4.30 p.m.

July 21.—Sunday. Could not enter Napier owing to heavy S.E. gale.

July 22.—Arrived in Napier at 10 a.m.

July 23 and 24.—In Napier, taking in coal, blowing down boiler, repairing refrigerator, &c.

July 25.—Left Napier for Chatham Islands at 7.30 a.m.

July 26.—Moderate northerly wind and overcast. Obtained no sights.

July 27.—Fresh N.E. wind and moderate sea. Too overcast to take observations.

July 28.—Sunday. Sighted Chatham Islands at 9 a.m., bearing N.E. Dropped anchor at 4 p.m. in Waitangi Bay, and went ashore to make inquiry re fishing-grounds, &c.

July 29.—Station 64: Hove up anchor at 6.40 a.m. with the intention of making a complete circuit of the Islands for trawling and sounding purposes, commencing in Petre Bay. Shot the net at 7.20 a.m. in 16 fathoms, bottom sharp sand. Trawled N.W. $\frac{1}{2}$ W. and hauled up at 8.30 a.m. from 24 fathoms, fine-sand bottom. Result: 33 large tarakihi, 1 lemon sole, and 2 megrim, also many thousands of a species of large swimming-crab, the total weighting of these being about a ton. No dogfish, elephant-fish, skate, or any other unsaleable kinds were taken.

Station 65: Shot trawl again at 8.50 a.m. in 28 fathoms, bottom fine sand, and towed S.W. x S. Hauled up at 10.25 a.m. from 35 fathoms, sharp-sand bottom, 5 miles W. x N. of Clatchie Point. Results considerably better, a few more weeds, but less swimming-crabs: 82 large tarakihi, 2 brill, 4 lemon soles, 8 gurnard, a few ling, skate, &c.

Station 66: Shot net 10.45 a.m. in 33 fathoms, bottom yellow sand, trawled S.W., and hauled up at 11.50 a.m. in 42 fathoms. This haul was still more encouraging. Lemon soles increasing with increased depth, also tarakihi. A few megrims and ling. The tarakihi appear to be taken here, as on the New Zealand coast, in the greatest quantities in from 30 to 40 fathoms. Unsaleable fish are still absent, and the bottom is an ideal one for trawling.

Station 67: Shot net again in same position at 12.5 a.m., trawling S.W. x W., and hauled up at 1.45 p.m. in 50 fathoms, bottom fine yellow sand, 6 miles W.N.W. of Durham Point. Here we had evidently got out of the region of the tarakihi, only 3 being taken, a few soles and gurnard, and 1 ling.

Station 68: Steamed through Cuba Strait to west side of Island, and shot the net in 45 fathoms at 3.35 p.m., bottom coarse sand and shell. Towed N.E. $\frac{1}{2}$ N. and at 4 p.m. fouled, losing the greater part of the catch. Steamed in and dropped anchor for the night off Allison Point.

July 30.—Hove up anchor at 6.40 a.m., and proceeded round Cape Paterson. The ground around this cape and in Waitangi West Bay is very reefy and unsuitable for trawling. There are very strong tide-rips abreast of Cape Paterson. Wind and sea increasing, so steamed back towards Cuba Channel. Took a number of soundings which tended to show that the bottom itself is hard and rocky, with loose sand and shell lying on top. Similar soundings were met with when a foul was struck yesterday. Dropped anchor in Whangaroa Harbour at 1 p.m. to test the line fishing, and also the beach with the purse seine, and the kelp reefs with various-sized set-nets. At 2 p.m. despatched the two ship's boats with three men each to the entrance of the harbour, and also two men to place set-nets within the harbour. The two boats returned at 4.30 p.m. with 207 blue-cod of very large size, and one hapuka, for two hours' fishing.

July 31.—Despatched the two boats to the entrance of the harbour for line fishing at 8 a.m. Boats returned at noon both being deeply laden with blue-cod and hapuka; they also caught

1 trumpeter, 1 yellow-tail, and 3 sea-perch. The lines were no sooner on the bottom than the fish took the bait, and blue-cod and hapuka were often pulled up two and three at a time. No dogfish, sharks, or skate were taken, all fish caught being marketable, the blue-cod being of large size and in the best of condition.

The two boats were again sent away at 1.30 p.m., three men being kept on board to clean the morning's catch. Boats returned at 4 p.m. loaded to the gunwale with blue-cod and groper. The results of to-day's lining are remarkably good considering our ignorance of local conditions, and the fact that most of the men are as yet inexperienced in blue-cod fishing. The total result of to-day's catch is 606 blue-cod, 103 hapuka, 3 sea-perch, 1 trumpeter, and 1 yellowtail.

The set-nets put down did not produce good results.

August 1.—Station 69: Took in the boats and hove up anchor at daylight to test the ground to the E. and N. of the Islands. Steered N.W. of Cape Fournier, and at 1.5 p.m. the trawl net was dropped in 15 fathoms on a fine-sand-and-shell bottom. Hauled up at 2.25 p.m. in 25 fathoms. The result was a very striking bag of about 2 tons of swimming-crabs, 10 sacks of crayfish, 21 lemon soles, and a number of megrim, tarakihi, and gurnard. The crayfish were of a very large size, and it is rather a peculiar fact that all of them were males.

Station 70: At 2.40 p.m. steered E.N.E. towards deeper water, and shot the net at 3.20 p.m., and towed north. The bottom throughout the haul was good trawling-ground. At 4.25 p.m. hauled up, in 45 fathoms. A very fair bag resulted from this haul, consisting of 105 tarakihi, a number of lemon soles, megrim, skate, &c. This bay will probably prove very remunerative in certain seasons. The bottom is an ideal one for trawling, consisting of yellow sand and shell. Tarakihi are found here, as in Petre Bay, in about 30 fathoms, and the results of to-day's fishing have been practically the same, depth for depth, as in Petre Bay.

August 2.—A long easterly swell making trawling somewhat risky in Hanson Bay, we proceeded at daylight towards Pitt Island to test the line fishing. Lines were put down in Flower-pot Bay at 9.30 a.m., but the bottom being sandy no fish were taken. Steamed towards Rabbit Island, where the lines were put down a little to the north of the reef. Blue-cod began to be taken at once, two, three, and four on a line. They were of very large size, and in excellent condition, the result up to noon, of nine lines, being about $1\frac{1}{2}$ tons of blue-cod. Shifted at noon to Little Mangere Island, but the water was found very deep close up to the cliff, and the bottom sandy. We therefore steamed back, and recommenced fishing off Rabbit Island. By this time a strong ebb tide had set in, making fishing very awkward. A southerly wind was also freshening. A boat was sent closer inshore containing four Pitt-Islanders, and being out of the strength of the tide they were able to work their lines with greater facility. The boat returned at 3.45 p.m. with 230 very large blue-cod as the result of an hour and a half's fishing with four lines. Stopped fishing at 4 p.m. for the night, and dropped anchor near Flower-pot Bay. The result of this day's fishing was 2 hapuka, 3 sea-perch, and 860 blue-cod, weighing about a ton when headed and cleaned.

August 3.—A strong S.W. wind had arisen during the night, with a falling glass, so we left the Flower-pot at daylight for Port Hutt, this being the only safe anchorage, for the purpose of shifting coal from the hold to the bunkers, and to do more line and set-net fishing. Commenced fishing from the steamer off Port Hutt at 11.40 a.m. Ceased fishing for the day at 3.30 p.m., the result being 520 large blue-cod and 5 hapuka, the latter weighing up to 65 lb. Anchored in Port Hutt for the night. Put down three set-nets from 3 in. to 7 in. mesh at entrance to bay.

August 4.—Sunday. Lay at anchor in Port Hutt. Strong S.S.W. wind and high sea off the Heads. The result of the three set-nets was 10 very large warehou, 4 moki, and 3 tarakihi.

August 5.—Commenced to shift coal, make up trawls, &c. Took up set-nets at 7 a.m., result being 11 butter-fish, 4 tarakihi, 1 hapuka, 6 moki, 2 sharks, and 5 parrot-fish. Despatched a boat at 9.30 a.m. for line-fishing, but there was a heavy sea on, and only 80 blue-cod were taken. A boat was despatched at 1 p.m., but returned at 3 p.m. with only 2 fish after fishing for an hour. Several large sharks were seen, one fully 20 ft. long, and their presence, together with the heavy sea and discoloured water, will, no doubt, account for no fish being caught. Reset nets at 5 p.m.

August 6.—Hove up anchor at 7 a.m., took in boats, and commenced fishing from the steamer at 9 a.m., moving slowly along the coast in an easterly direction. Steamed across Petre Bay at noon to try line fishing off the Ngaio coast. Ceased fishing for the day at 3.40 p.m., and steamed into Waitangi Harbour for provisions. Total catch for the day was about 400 large blue-cod, 19 hapuka, 1 barracouta, and 2 sea-perch. Anchored off Waitangi for the night.

August 7.—Left Waitangi 11.45 a.m. for Wellington. Put down lines off West Reef from 2.15 to 2.45 p.m., the result of the half-hour's fishing being 10 hapuka and 70 very large blue-cod, most of which averaged 8 lb., with an occasional specimen up to 9 lb. The hapuka weighed up to 65 lb. Steered towards Wellington at 2.45 p.m., taking several soundings up to 5 p.m., all of which indicated good trawling-ground. Mr. Waite's bucket dredge was put down here in 95 fathoms, fine-sand bottom, but only a very poor sample was hauled up: whilst the vessel was stopped for this purpose three fishing-lines were bent together, and one blue-cod and one very large trumpeter were caught.

August 8.—Strong northerly wind and falling glass.

August 9.—Arrived in Wellington at 6 p.m.

August 10 and 11.—Coaling alongside wharf in Wellington.

August 12.—Station 71: Left at 10.15 a.m., Pencarrow abeam at 11.30, steered S. x W. $\frac{1}{2}$ W. This ground has been trawled over before, but not recently, so shot the net at 11.45 a.m. in 28 fathoms, bottom fine sand and shell. Towed S.W. x W., and shortly after 1 p.m. the net fouled, and was hauled up very badly torn, only a few lemon sole, skate, moki, &c., being taken. Took a number of soundings, these showing rock bottom and unsuitable ground for trawling. Steamed into Palliser Bay, indications of trawling-ground becoming better. Dropped anchor for the night at east side of Palliser Bay.

August 13.—Station 72: At daylight proceeded to test the ground in Palliser Bay. Shot starboard trawl at 7.5 a.m. in 14 fathoms, black-sand bottom, and hauled up at 8.55 a.m. from 13 fathoms, fine-black-sand bottom. The haul consisted of 21 crayfish and a small number of red-cod, gurnard, conger-eel, &c. The result was poor, but the haul was a very short one.

Station 73: Shot the net again at 8.45 a.m. in 10 fathoms on a fine-sand bottom. The ground inside of here has been trawled over by the "Phantom," but I understand a bad foul occurred on each of the two hauls she made. At 9.35 a.m. foul ground was indicated, so hauled up 15 fathoms. The result was a fair haul with considerable variety, soles, lemon soles, crayfish, kahawai, tarakihi, schnapper, hapuka, moki, and gurnard being represented.

Station 74: Shot the net again at 10.15 a.m. in 20 fathoms, fine-sand bottom. Hauled up at 11.30 a.m. from 29 fathoms, black-sand bottom. Soundings taken during this haul indicated fine trawling-ground. The result was a considerable haul of crayfish, lemon soles, gurnard, schnapper, and tarakihi.

Station 75: Shot trawl again at noon in 29 fathoms, and towed south, hauling up at 1.13 p.m. in 40 fathoms, bottom soft mud. The boards had been buried in this mud. It appears to be the same kind of clay and mud that was met with off Motunau Island. This haul comprised 65 tarakihi, 1 schnapper, and 8 crayfish only. Here we appear to have run out of the flat-fish ground, none being taken in this haul. The ground was very soft and clayey, and it was not considered prudent, with only one net to rely on, to risk another haul in this locality. Steamed S.S.E. to test the deeper waters. A strong S.E. wind with falling glass made further trawling impossible. At 55 fathoms found the bottom of the same clayey nature, and the weather coming in thick from the S.E. we steered for Castle Point, off which we lay-to for the night, the weather being S.E. with drizzling rain.

August 14.—Station 76: Steamed in towards the land to ascertain position, the weather still being thick. A number of soundings were taken, all of which indicated soft mud. Mr. Waite's bucket dredge was put down in 100 fathoms, and a sample taken. Steamed in towards Castle Point, and the bottom becoming more sandy as the land was approached, the trawl was shot at 10.20 a.m. in 28 fathoms on a dark-sand bottom, 3 miles E. x N. of Castle Point. Towed N.N.W., and at 11.30 a.m. hauled up the net in 19 fathoms, dark-sand bottom. A fair bag was the result, with a very considerable variety, consisting of lemon soles, soles, red-cod, gurnard, crayfish, schnapper, tarakihi, conger-eel, moki, &c.

Station 77: Continued to zigzag in a northerly direction, taking frequent soundings, all of which indicated even ground and good trawling-bottom. At 2.10 p.m. shot the trawl in 23 fathoms off Akitio River, and towed N.N.E., hauling up at 4.10 p.m. in 20 fathoms, sand-and-mud bottom. The result of the two hours' haul was somewhat disappointing, but again a very good variety was obtained, sixteen species being represented. A large number of red-cod were taken in this haul, also 12 gurnard, 1 moki, 2 ling, 160 crayfish, 2 conger-eels, 4 flounders, 2 tarakihi, 5 schnapper, and a few soles. This bay appears to be all good trawling-ground, and at certain seasons must yield good results, as almost all the local edible fish were represented in the day's fishing.

At 4.20 p.m. steered E. $\frac{1}{2}$ N. to test the bottom in the deeper waters, but at 50 fathoms the soundings gave very soft mud, of a clayey nature, into which the lead had sunk 8 in., and a mass of it was brought up with the lead. This is unlikely ground for flat-fish, and risky for the trawl. Steamed off shore for the night.

August 15.—Station 78: Sounded at 6.15 a.m. 6 miles due east of Cape Turnagain, and got 62 fathoms, very soft mud bottom. At 7.30 a.m. got 24 fathoms with fine-dark-sand bottom. This is the same bottom as we got yesterday in the same depth. The net was shot here at 7.40 a.m. $4\frac{1}{2}$ miles N.E. x N. of Cape Turnagain, and hauled up at 9.10 a.m. from a fine-sand bottom in 18 fathoms. The result of this haul was again very varied, but somewhat poor in quantity, consisting of 80 red-cod, 13 schnapper, 25 crayfish, 10 lemon soles, also tarakihi, gurnard, and conger.

Station 79: Steamed in towards the beach to try a short haul. At 9.55 a.m. shot the net in 9 fathoms, bottom fine sand. A foul was at once experienced, the ground-rope having parted and the net being badly torn.

Station 80: From 10.20 to 11.15 a.m. a number of soundings were taken before shooting again, all indicating good trawling-ground. The net was put down at 11.15 a.m. in 16 fathoms, and hauled up at 12.10 p.m. in 17 fathoms from fine-sand bottom. The result was not very encouraging, only 1 brill, 1 sole, 5 conger-eels, 2 schnapper, and a number of red-cod and dogfish being taken. Steered N.E. and took numerous soundings, all of which indicated uneven bottom, mostly soft clay and mud, similar to that found in 40 fathoms all the way up this coast. Men employed all day in repairing nets. Anchored inside of Bare Island for the night.

August 16.—Station 81: Fresh southerly wind and considerable sea. Hove up anchor at 7 a.m. The trawl was shot at 7.35 a.m. in 16 fathoms, bottom fine dark sand. Hauled up at 9.15 a.m. from 23 fathoms, fine-sand-and-mud bottom. The result was a good bag of tarakihi, crayfish, schnapper, red-cod, lemon soles, gurnard, &c.

Station 82: Shot trawl again at 9.35 a.m. in 23 fathoms, trawling S.W. x W., and at 10.35 experienced a bad foul, the cod end and squares being torn away. At 10.50 a.m. steered E. x N. to take soundings and nature of the bottom where none are shown on the chart. Strong southerly wind, and too much sea for trawling. Soundings showed soft-mud bottom. Wind and sea increasing we put into Napier for net-repairs, and to take in coal and provisions. Arrived at Napier 7 p.m.

August 17.—In Napier, coaling and repairing nets.

August 18.—Sunday. At Napier wharf.

August 19.—Station 83: Left Napier at 9.35 a.m. Fresh N.W. wind, and fine. Steered clear of the area which is being worked by the local trawlers. At 12.30 shot the net in 68 fathoms, soft-mud bottom, but not of a clayey nature. Hauled up at 2.35 p.m. in 78 fathoms, bottom mud. This haul resulted in the capture of about 50 tarakihi, 5 schnapper, 3 warehou, also a few kingfish, barracouta, sea-perch, red-cod, &c.

Station 84: From Station 83 steamed east until 3.15 p.m. to try 100 fathoms. Shot trawl at 3.55 p.m. in 82 fathoms, soft-mud bottom, 25 miles E.N.E. of Cape Kidnappers. The otter-boards having turned, the net was hauled up, and shot again at 4.15 p.m., a strong wind and sea making trawling very difficult. Hauled up the net at 5.15 p.m. in 76 fathoms, mud-and-sand bottom. A large number of tarakihi were taken in this haul, also 1 hapuka and 2 schnapper. No flat-fish were taken. This depth was tried by the "Nora Niven" about three months ago, but no fish were taken. Steamed N.N.E. until 9 p.m.

August 20.—Station 85: Steamed to position at 5.30 a.m. The ground off Portland Island is very foul close in shore, and the offshore soundings are very irregular, so we steamed to the wider area to the north of Table Cape. At 8.35 a.m. the net was shot in 42 fathoms, $5\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. of Table Cape. Trawled north. The net fouled at 9.30 a.m., and was hauled up badly torn, but very little of it lost. Although badly torn the net contained about 70 tarakihi, a few schnapper, barracouta, lemon sole, and moki.

Station 86: Whilst the net was being repaired we took a number of soundings, steaming E. until 11.35 a.m. when a depth of 300 fathoms, with no bottom, was recorded—a drop of 200 fathoms in about $1\frac{1}{2}$ miles. Altered course to N.W. When 11 miles S.E. of Young Nick's Head the trawl was shot at 1.50 p.m. in 22 fathoms, sand-and-shell bottom. Hauled up at 3.10 p.m. in 24 fathoms from a sand-and-mud bottom. A good haul was obtained, consisting of 95 tarakihi, 52 schnapper, 29 gurnard, 11 lemon soles, and a number of hapuka, trevalli, ling, red-cod, &c. This proved a very good haul for one hour twenty minutes.

Station 87: Shot the net again at 3.25 p.m. in 24 fathoms. Steered N.W., and hauled up at 4.30 p.m. in 23 fathoms, 7 miles S. of Tuahine Point. A very fair haul was obtained for one hour's trawling, consisting of tarakihi, gurnard, schnapper, lemon soles, trevalli, &c. At 4.45 p.m., a strong S.E. gale coming up, we steamed to the northward of Aerial Reef, and lay-to for the night.

August 21.—Our position at daylight was ascertained to be 6 miles S.E. of Motuara Island. The S.E. gale which had been blowing all night still continued with far too much sea running to do any trawling. At 9.30 a.m., no signs of the gale abating, it was decided to run to the northward of East Cape, and to leave this portion of the coast to be worked on the way back to Wellington. Passed East Cape at 3.30 p.m., and lay-to for the night off Cape Runaway.

August 22.—Station 88: Steamed towards position at 5 a.m., and shot the trawl at 9 a.m. in 105 fathoms, bottom sand and soft mud. Trawled S.W. by S., so as to keep in about 100 fathoms. Hauled up at 10.20 a.m. in 105 fathoms. All soundings during this trawl were over 100 fathoms. The result was a very large haul of tarakihi—about 700—also a few schnapper, kingfish, barracouta, &c. No flat-fish were taken.

Station 89: From last station steamed S.W. x W., the bottom becoming harder and more sandy. Shot the net at 11.10 a.m. in 94 fathoms, mud-and-shell bottom. Towed S.W. x W., and hauled up at 12.40 p.m. in 66 fathoms from a mud bottom. The result of this haul was not very good, the net containing only a few schnapper, hapuka, kingfish, John-dory, tarakihi, &c.

Station 90: Shot net again at 11.10 a.m. in 66 fathoms on a mud bottom. Trawled S.W., and hauled up in 58 fathoms from a mud bottom at 2.45 p.m. The result was a very good bag of fish, about 200 schnapper, 100 tarakihi, 4 hapuka, 12 gurnard, a few John-dory, kingfish, &c.

Station 91: The net was again shot, at 3.5 p.m., in 58 fathoms on a mud bottom, and hauled up at 5.5 p.m. in 55 fathoms, mud-and-sand bottom. The result was again a very good bag, the net containing about 500 schnapper, 200 tarakihi, a few hapuka, gurnard, &c. The schnapper were all of large size and in good condition. Lay-to for the night.

Strong N.E. to N.N.W. wind all night, with high sea and drizzling rain. Hove to 8 miles to westward of Cape Runaway. Wind shifted to S.S.W. with heavy rain and high sea at 9 a.m., but the weather becoming finer at 11.30 a.m. we steamed back to resume the position at which we left off the previous day.

August 23.—Station 92: The sea having gone down considerably, the net was shot at 1.25 p.m. in 57 fathoms. Steered S.W., and hauled up at 3.35 p.m. in 55 fathoms from a mud-and-sand bottom. This haul produced a large bag of fish—about 400 schnapper, and a number of tarakihi, hapuka, John-dory, kingfish, &c.

Station 93: The trawl was shot again at 3.50 p.m. in 55 fathoms, and hauled up at 5.10 p.m. in 43 fathoms from a mud bottom. The course steered from last station was S. and S.W. The result of this haul was 300 very large schnapper, with fewer tarakihi, also a few hapuka, gurnard, &c. Lay-to for the night.

August 24.—Station 94: Resumed position at daylight. Very heavy N.W. swell. Shot trawl at 9 a.m. in 38 fathoms, bottom mud. Hauled up at 10.50 a.m. in 34 fathoms. The catch consisted of about 400 schnapper, 150 tarakihi, and a few gurnard, &c. Two lemon soles were also taken in this haul, the first flat-fish since entering the Bay of Plenty.

Station 95: The trawl was again shot at 11.5 a.m., and hauled up at 1.5 p.m. in 25 fathoms. The result was the largest bag yet taken, consisting of about $1\frac{1}{4}$ tons of prime clean fish, nearly all schnapper and tarakihi, with a few hapuka, &c.

Station 96: The net was again shot at 1.20 p.m. in 25 fathoms. Steered S.S.W., and hauled up at 3.45 p.m. in 16 fathoms, bottom mud. The result of this haul was estimated at about 2 tons of prime clean fish, mostly schnapper, tarakihi, hapuka, and kingfish. Lemon soles and soles

were also present in small numbers. Ceased fishing at 4 p.m., the fore deck being full of fish, and the crew not being able to keep pace in cleaning them. This day's catch totalled 135 cases for 6 hours and 20 minutes' trawling, of which 84 cases were schnapper, 46 tarakihi, and the rest hapuka, &c. Lay-to with moderate N.W. wind and sea all night.

August 25.—Sunday. The crew were employed all morning in cleaning and packing the remainder of yesterday's catch. Steered to Whale Island, and anchored for the night.

The feed-pump having become choked, the engineer was unable to keep down the temperature of the freezing-chamber, and to avoid losing about 280 cases of fish a course was laid for Auckland.

August 26.—Arrived in Auckland at 3 p.m.

August 28.—Removing coal from hold to bunkers and repairing feed-pump valve. Sent ashore about 5 tons of fish.

August 28.—Left Auckland 10.15 a.m.

August 29.—Station 97: Our position at daylight was 9 miles N.N.E. of Mayor Island—soundings showing no bottom at 130 fathoms. Steamed in to the land and shot the trawl at 7.30 a.m. in 50 fathoms, 11 miles N.W. x W. of Mayor Island, trawling south. The net was hauled up at 9.10 a.m. in 41 fathoms from a sand bottom. The result was very poor, only 3 schnapper, 1 tarakihi, 10 gurnard, and a number of valueless fish being taken.

Station 98: At 9.30 a.m. shot the net again, steering south to shallower water, and hauled up in 35 fathoms from a coarse-gravel bottom at 11.45 a.m. The result was again very poor, only a few moki, gurnard, crayfish, and 1 lemon sole being taken.

The net, when hauled up on the last two occasions, has had a very unpleasant smell, the ground evidently being what fishermen term "sour ground."

Station 99: From last station steered S.E. to try fresh ground. Shot the net at 12.30 p.m. in 23 fathoms, bottom coarse sand, steered W. x S., and hauled up in 16 fathoms, sand-and-quartz-crystal bottom, at 2 p.m. This haul was a considerable improvement on the last one, and the bottom was of quite a different nature. The catch comprised a number of schnapper, trevalli, lemon sole, gurnard, &c.

Station 100: Shot the net again at 2.20 p.m. in 16 fathoms, and towed S.W., hauling up at 3.45 p.m. in 10 fathoms from a coarse-sand bottom. This haul was not very large, but gave a variety of fish, 30 large schnapper and a number of tarakihi, gurnard, John-dory, &c., were taken. Steamed towards Whale Island, and lay-to for the night at 10 p.m.

August 30.—Station 101: The net was shot for the first haul at 6.35 a.m. in 40 fathoms on a dark-sand bottom. Trawled E. x S., the bottom being very similar to that on the east side of the bay. Hauled up the net at 8.5 a.m. in 35 fathoms, the result being a very good bag of about 300 schnapper, 200 tarakihi, and a few hapuka, gurnard, about 20 kingfish, &c.

Station 102: The trawl was shot again at 8.50 a.m. in 35 fathoms, and hauled up at 10.55 a.m. in 28 fathoms. Upwards of 2 tons of fish, mostly large schnapper, were taken in this haul.

Station 103: The net was shot again in 28 fathoms at 11.10 a.m. Towed E., and hauled up at 1.10 p.m. from 21 fathoms. This haul again resulted in the capture of upwards of 2 tons of fish, chiefly schnapper and tarakihi, also a number of lemon soles, John-dory, kingfish, hapuka, &c.

Station 104: Again shot the trawl at 1.25 p.m., towing W. Hauled up at 4.5 p.m., in 25 fathoms, 7 miles E. x N. of Whale Island. The result of this haul was a still larger bag of schnapper, tarakihi, gurnard, hapuka, lemon sole, &c. Total catch for 8½ hours 130 cases, containing 2,250 schnapper, 1,650 tarakihi, and a number of hapuka, kingfish, and barracouta.

August 31.—A strong northerly breeze increasing to a strong gale with high breaking seas and heavy rain was here experienced, and the crew had the greatest difficulty to save yesterday's catch, which was lying on the fore deck; hard N.E. gale continuing to blow throughout the day and the following night.

September 1.—Station 105: Steered back to position at 6 a.m., and shot the net at 8 a.m. in 50 fathoms, steering S. Hauled up at 10.5 a.m. in 33 fathoms from a mud bottom. The result was again a large bag of schnapper and tarakihi.

Station 106: The net was put over for the last haul at 10.30 a.m., towing W.S.W., and hauled up again at 1.5 p.m. The result was a record bag of schnapper, tarakihi, kingfish, barracouta, and John-dory. The result of the last two hauls was 66 cases schnapper, containing about 2,000 fish, and 37 cases tarakihi, containing about 1,000 fish, also a case or two of hapuka, kingfish, and John-dory.

Proceeded towards Wellington at 1.20 p.m.

September 2.—Finished packing yesterday's catch, and placed same in freezing-chamber.

September 3.—Arrived in Wellington at 4 p.m.

September 4.—The charter expired this day, and all fish were landed, but as the steamer was being rechartered, it was unnecessary to overhaul the gear as had been anticipated previous to handing the vessel over to her owners.

July	6	40	11.15 a.m.	12½' E.N.E. of Timaru ..	..	16	Black mud	..	1.45 p.m.	6' N.E. x E. ½ E. of Timaru Light-house	9½	Fine sand ..	..	2.45	7½
"	8	41	4.50 p.m.	12' N.E. ½ E. of Timaru ..	..	13	"	..	7 p.m.	17½' N.E. x E. of Timaru Lighthouse	16	Sand and mud	..	2.10	6½
"	9	42	7 a.m.	32½' N.E. ½ E. of Timaru ..	..	21	Gravel ..	..	9 a.m.	45½' N.E. x E. ½ E. of Timaru Lighthouse	24	Shell and gravel	..	2.0	6
"	9	43	10.50 a.m.	32½' S.W. ½ S. Akaroa Lighthouse ..	..	29	Sand and shell	..	1 p.m.	26½' S.W. ½ S. Akaroa Lighthouse ..	30	Shell and sand	..	2.10	6
"	9	44	1.40 p.m.	22' S.W. ½ W. Akaroa Lighthouse ..	..	30	"	..	4.15 p.m.	18½' S.W. ½ W. Akaroa Lighthouse ..	24	Black mu.	..	2.30	7½
"	10	45	10.20 a.m.	24' N. x E. ½ E. Long Lookout Point ..	..	10	Sand and mud	..	12.45 p.m.	8½' N. ½ E. of Long Lookout Point ..	14	"	..	2.20	7
"	11	46	8.15 a.m.	4' N. ½ E. of Sail Rocks ..	..	24	Mud ..	..	9.45 a.m.	8½' N.E. ½ N. of Sail Rocks ..	35	Fine sand ..	..	1.30	4½
"	11	47	11.5 a.m.	16½' N.E. x E. ½ E. of Sail Rocks ..	..	39	"	..	1 p.m.	21' N.E. ½ E. of Sail Rocks ..	44	Fine sand and shell..	..	1.55	6
"	11	48	1.15 p.m.	21' N.E. ½ E. of Sail Rocks ..	..	44	Fine sand and shell	..	3.20 p.m.	27' N.E. ½ E. of Sail Rocks ..	46	"	..	2.5	6½
"	12	49	8 a.m.	28½' N.E. x E. Godley Head Light-house	..	50	"	..	9.15 a.m.	23½' N.E. ½ E. Godley Head Light-house	40	Fine sand ..	..	1.15	3½
"	12	50	9.35 a.m.	29½' N.E. ½ E. Godley Head Light-house	..	40	"	..	11.30 a.m.	24' N.E. Godley Head Lighthouse..	28	Sand and mud	..	1.55	6	
"	12	51	12 noon	24' N.E. Godley Head Lighthouse ..	..	28	Mud and sand	..	1.30 p.m.	18' N.E. Godley Head Lighthouse ..	18	Soft mud ..	..	1.30	4½
"	15	52	4.35 p.m.	9' N. x E. Godley Head Lighthouse	..	14	Mud ..	..	6.45 p.m.	15' N.E. Godley Head Lighthouse ..	17	"	..	2.10	6½
"	16	53	7 a.m.	23½' N.N.E. Godley Head Lighthouse	..	16	"	..	8.50 a.m.	27½' N.E. x N. ½ N. Godley Head Lighthouse	21	Fine black sand	..	1.50	5½	
"	16	54	9.5 a.m.	27' N.E. x N. ½ N. Godley Head Lighthouse	..	21	Fine sand ..	..	10.55 a.m.	30½' N.E. x N. Godley Head Light-house	27	Soft mud ..	..	1.55	6
"	16	55	11.55 a.m.	36' N.E. ½ N. Godley Head Light-house	..	38	Mud ..	..	1 p.m.	39' N.E. ½ N. Godley Head Light-house	40	"	..	1.5	3
"	16	56	2.15 p.m.	43' N.E. x N. Godley Head Light-house	..	55	Sand and mud	..	3.30 p.m.	46' N.E. ½ N. Godley Head Light-house	58	Mud and clay	..	1.15	4	
"	17	57	10.45 a.m.	4½' E.S.E. of Waiuana River	..	26	Gravel and mud	..	11.30 a.m.	6½' E. ½ S. of Waiuana River	43	Gravel and shell	..	0.45	2½	
"	18	58	1.50 p.m.	6½' N.N.E. of Cape Campbell	..	38	Gravel, shell, and fine sand	..	12.45 p.m.	7½' N. ½ E. of Cape Campbell	35	Soft sand and shell..	..	0.55	3	
"	18	59	3.5 p.m.	7½' N. ½ E. of Cape Campbell	..	35	Soft sand and coarse shell	..	4.5 p.m.	5½' E. of White Bluffs	25	Gravel and shell	..	1.0	3	
"	18	60	4.25 p.m.	5½' E. of White Bluffs	..	25	Gravel and shell	..	5.25 p.m.	6½' N.W. x N. ½ N. of Cape Campbell	20	Fine sand ..	..	1.0	8
"	19	61	8.35 a.m.	2½' N. ½ W. of White Cliffs	..	10	Mud ..	..	9.45 a.m.	5½' N.E. ½ E. of Wairau River	15	Black sand	..	1.10	3½
"	19	62	10 a.m.	5½' N.E. ½ E. of Wairau River	..	15	Black sand	..	11.30 a.m.	9½' N.E. x E. ½ E. of Wairau River ..	30	"	..	1.30	4½	
"	19	63	12.35 p.m.	13' S. x E. ½ E. of Wellington Heads	..	58	Sand and gravel	..	2.5 p.m.	10½' S.W. ½ S. of Cape Terawhiti	75	Gravel and shell	..	1.30	4½	
"	29	64	7.20 a.m.	1½' N.W. ½ W. Clatchie Point	..	16	Sand and shell	..	8.30 a.m.	2½' S.E. of Port Hutt	24	Fine sand ..	..	1.20	4
"	29	65	8.50 a.m.	5' E. x S. ½ S. of Port Hutt	..	24	"	..	10.25 a.m.	5' W. of Clatchie Point	33	Fine yellow sand	..	1.35	4½	
"	29	66	10.40 a.m.	5' W. of Clatchie Point	..	33	Fine yellow sand	..	11.50 a.m.	6½' N.W. x W. of Durham Point	42	"	..	1.10	3½	
"	29	67	12.5 p.m.	5½' N.W. x N. of Durham Point	..	42	"	..	1.45 p.m.	6½' W. x N. of Durham Point	50	"	..	1.40	4½	
"	29	68	3.35 p.m.	5' W. x N. ½ N. of Somes Point	..	45	Coarse sand and shell	..	4 p.m.	1½' W. ½ S. of Alison Point	Foul	Fine sand and shell..	..	0.30	2½	
Aug.	1	69	1.5 p.m.	4' N. ½ E. of Cape Fournier	..	16	Sand and shell	..	2.25 p.m.	8½' N. ½ W. of Cape Fournier	25	Fine sand ..	..	1.20	4
"	1	70	3.20 p.m.	6½' N. x E. ½ E. of Cape Fournier	..	33	Fine sand and shell ..	..	4.25 p.m.	11' N. ½ E. of Cape Fournier	45	"	..	1.5	4
"	12	71	11.50 a.m.	1½' S.W. x S. ½ S. Pencarrow	..	28	"	..	1.10 p.m.	4½' S.W. ½ W. of Pencarrow Head..	38	Rocks, foul	..	1.20	4½	
"	13	72	7.10 a.m.	Palliser Bay	..	14	"	..	7.55 a.m.	Palliser Bay	13	Fine black sand	..	0.45	2½	
"	13	73	8.35 a.m.	"	..	11	"	..	9.35 a.m.	"	15	"	..	1.0	3	
"	13	74	10.16 a.m.	"	..	20	"	..	11.30 a.m.	"	29	"	..	1.15	4	
"	13	75	Noon	"	..	29	"	..	1.30 p.m.	"	38	Soft mud ..	..	1.30	4½
"	14	76	10.20 a.m.	3½' E. x S. ½ S. of Castlepoint	..	28	"	..	11.30 p.m.	5½' N.E. x N. ½ N. of Castlepoint ..	19	Dark sand ..	..	1.10	3½
"	14	77	2.10 p.m.	4' E. x N. ½ N. of Ahanga River	..	23	Sand and mud	..	4.10 p.m.	6½' S.W. x S. ½ S. of Cape Turnagain	20	Sand and mud	..	2.0	6	
"	15	78	7.40 a.m.	4½' N.E. x N. of Cape Turnagain	..	74	Fine dark sand	..	9.10 a.m.	8½' N. ½ E. of Cape Turnagain	18	Fine dark sand	..	1.30	4½	
"	15	79	9.55 a.m.	Off Porangahan River	..	9	"	..	Fouled	"	Fouled	"	"	..	"	"
"	15	80	11.15 a.m.	Centre of bay	..	16	"	..	12.10 p.m.	8½' S.S.W. of Black Head ..	17	Fine sand ..	..	0.55	3
"	16	81	7.35 a.m.	2½' N. ½ E. of Bare Island	..	16	"	..	9.15 a.m.	6½' S. ½ E. of Cape Kidnappers	21	Sand and mud	..	1.40	4½	
"	16	82	9.35 a.m.	4½' S. ½ E. of Cape Kidnappers	..	21	"	..	10.35 a.m.	8½' S. ½ W. of Cape Kidnappers	Fouled	"	..	1.0	3	

TABLE showing the TIME, LOCALITY, DEPTH, and NATURE OF THE BOTTOM in respect of each Haul—continued.

Date.	Station.	Trawl shot.			Trawl hauled.			Time Trawl down.	Distance Miles.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	Bottom.
1907.									
Aug. 19	83	1 p.m.	14° N.E. x E. of Cape Kidnappers ..	68	Soft mud ..	2.35 p.m.	19° E.N.E. of Cape Kidnappers ..	78	Soft mud ..
" 19	84	4.15 p.m.	29° E. x N. of Cape Kidnappers ..	82	" ..	5.15 p.m.	27° E. x N. of Cape Kidnappers ..	76	" ..
" 20	85	8.35 a.m.	44° N.E. x E. of Table Cape ..	42	Soft mud and sand ..	9.30 a.m.	7° N.E. x N. of Table Cape ..	42	Rocks, foul ..
" 20	86	1.50 p.m.	11½° S.E. x E. of Young Nick's Head ..	22	Sand and shell ..	3.10 p.m.	9° S.E. of Young Nick's Head ..	24	Sand and mud ..
" 20	87	3.25 p.m.	8° S.E. of Young Nick's Head ..	24	Sand and mud ..	4.30 p.m.	7° S. of Tuahine Point ..	23	" ..
" 22	88	9 a.m.	94° W. x S. of Cape Runaway ..	105	" ..	10.20 a.m.	11½° W. x S. of Cape Runaway ..	105	" ..
" 22	89	11.10 a.m.	13½° S.W. x W. of Cape Runaway ..	94	Sand, shell, and mud ..	12.40 p.m.	14° S.W. x W. of Cape Runaway ..	66	Mud ..
" 22	90	1 p.m.	12½° S.W. x W. of Cape Runaway ..	66	Mud ..	2.45 p.m.	17½° S.W. of Cape Runaway ..	58	Hard mud ..
" 22	91	3.5 p.m.	34° W. of Waikana Point ..	58	Hard mud ..	5.5 p.m.	9½° W. x S. of Waikana Point ..	55	Mud and sand ..
" 23	92	1.35 p.m.	57° N.W. of Tekaka Point ..	57	" ..	3.35 p.m.	8½° W. x N. of Tekaka Point ..	55	" ..
" 23	93	3.50 p.m.	84° W. of Tekaka Point ..	55	Hard mud and sand ..	5.10 p.m.	10½° W. x S. of Tekaka Point ..	43	" ..
" 23	94	9 a.m.	74° W. x S. of Tekaka Point ..	38	" ..	10.50 p.m.	8½° W. of Koronohina Point ..	34	Mud ..
" 24	95	11.5 a.m.	64° W. of Koronohina Point ..	34	" ..	1.5 p.m.	7° N. x W. of Peheatare Point ..	25	Blue mud ..
" 24	96	1.20 p.m.	8° N.W. x W. of Peheatare Point ..	25	" ..	3.45 p.m.	5° W. x N. of Peheatare Point ..	16	" ..
" 29	97	7.30 a.m.	11° N.W. x W. of Mayor Island ..	50	Sand and mud ..	9.10 a.m.	84° W. of Mayor Island ..	41	Hard sand and mud ..
" 29	98	9.30 a.m.	9° W. of Mayor Island ..	41	" ..	10.45 a.m.	94° W. x S. of Mayor Island ..	33	Coarse gravel ..
" 29	99	12.30 p.m.	6° N.W. of Karewha Island ..	23	Coarse sand ..	2 p.m.	84° N.W. of Karewha Island ..	16	Coarse sand and crystal ..
" 29	100	2.20 p.m.	34° N.W. x W. of Karewha Island ..	16	Sand ..	3.45 p.m.	24° W.S.W. of Karewha Island ..	10	Ditto ..
" 30	101	6.35 a.m.	84° N.E. of N. Whale Island ..	40	Dark sand and mud ..	8.35 a.m.	11½° N.E. x E. of Whale Island ..	35	Soft mud ..
" 30	102	8.50 a.m.	10° N.E. x E. Whale Island ..	35	Soft mud ..	10.55 a.m.	12½° E. x N. of Whale Island ..	28	Soft mud and sand ..
" 30	103	11.10 a.m.	11½° E. x N. of N. Whale Island ..	28	" ..	1.10 p.m.	15½° E. x N. of Whale Island ..	21	" ..
" 30	104	1.25 p.m.	6° E. of N. Whale Island ..	21	Soft mud and sand ..	4.5 p.m.	15° E. of N. of Whale Island ..	25	Soft mud ..
Sept. 1	105	8 a.m.	84° W. of N. Tekaka Point ..	50	Soft mud ..	10.5 a.m.	94° S.W. of Tekaka Point ..	33	" ..
" 2	106	10.30 a.m.	10½° S.W. of W. Tekaka Point ..	33	" ..	1.5 p.m.	14½° E. x N. of Whale Island ..	33	" ..

Record of Fish Caught with the Otter Trawl-net during the Cruise of the "Nora Niven."

Date.	Station.	Flounder.	Sole.	Lemon Sole.	Megrim.	Brill.	Hake.	Blue-cod.	Red-cod.	John-dory.	Mackerel.	Kingfish.	Barracouta.	Moki.	Tarakihiki.	Red-gurnard.	Ling.	Hapuka.	Schnapper.	Conger-eel.	Jew-fish.	Skate.	Sea-perch.	Crayfish.	Electric Ray.	Whip-ray.	Sharks.	Dogfish.	Elephant-fish.	Leather-jacket.	Ocypus.	Other Kinds.	
1907.																																	
June 11	1				8							7					8					1											2
" 12	2				3							14					16					6											9
" 12	3				2							2					12					1											2
" 12	4				3							2					9																6
" 13	5				7							2					43					4											2
" 18	6				2							2					9					1											6
" 19	7				2							2					16					2											13
" 19	8											2					7					2											21
" 20	9											2					1					2											21
" 20	10											2					7					2											13
" 20	11											1					1					4											21
" 21	12											6					2					2											13
" 22	13											4					9					6											4
" 22	14											1					7					2											4
" 24	15											12					30					4											4
" 24	16											4					20					2											4
" 24	17											4					33					2											11
" 25	18											4					13					3											7
" 25	19											9					6					4											1
" 25	20											4					4					3											1
" 1	21																2					5											3
" 1	22																7					4											1
" 1	23																2					2											3
" 2	24																3					5											1
" 2	25																6					5											3
" 2	26																2					5											1
" 2	27																3					5											1
" 3	28																9					27											3
" 3	29																17					20											2
" 3	30																2					13											1
" 3	31																1					1											3
" 4	32																3					31											1
" 4	33																2					6											2
" 4	34																8					3											23
" 4	35																1					8											11
" 5	36																1					3											32
" 5	37*																12					9											7
" 5	38																2					3											2
" 6	39																35					85											85
" 6	40																3					8											60

* Net damaged; cod end adrift.

A LIST of the various SPECIES OF FISH taken in the Trawl-net, and the Stations where they were obtained.

- Common Flounder (*Rhombosolea monopus*): Taken at stations 10, 20, 32, 33, 34, 35, 40, 44, 45, 46, 51, 52, 53, 61, 72, 76, 77, 96, 104.
- Sole (*Peltorhamphus novae-zealandiae*): Taken at stations 7, 8, 9, 10, 11, 12, 13, 14, 15, 32, 33, 34, 35, 40, 41, 43, 45, 62, 69, 73, 76, 77, 78, 80, 81.
- Lemon Sole (*Ammotretis rostratus*): Taken at stations 20, 21, 22, 23, 25, 27, 28, 29, 31, 32, 34, 35, 39, 40, 41, 42, 43, 44, 46, 47, 48, 49, 50, 51, 52, 54, 58, 61, 63, 64, 65, 66, 67, 69, 70, 71, 73, 74, 76, 77, 78, 81, 85, 86, 87, 94, 96, 98, 99, 100, 104, 105.
- Megrim (*Ammotretis sp. ind.*): Taken at stations 1, 2, 3, 5, 6, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 31, 32, 35, 36, 39, 40, 43, 46, 47, 48, 49, 50, 51, 54, 61, 63, 64, 65, 66, 67, 69, 70, 71, 74, 81, 86, 87, 89, 90, 91, 92, 97, 99, 101, 104, 106.
- Brill (*Ammotretis guntheri*): Taken at stations 34, 65, 80.
- Hake (*Lotella hacinus*): Taken at station 11.
- Blue-cod (*Pereis colias*): Taken at stations 23, 25, 49.
- Red-cod (*Lotella bacchus*): Taken at stations 9, 10, 11, 12, 13, 15, 16, 18, 20, 21, 23, 27, 29, 31, 33, 34, 35, 36, 39, 40, 42, 44, 46, 50, 51, 52, 53, 57, 59, 63, 72, 75, 76, 77, 78, 80, 81, 83, 85, 86, 87, 92, 106.
- John-dory (*Zeus faber*): Taken at stations 89, 90, 91, 92, 93, 94, 96, 97, 98, 99, 100, 101, 104, 105, 106.
- Mackerel (*Scomber australasicus*): Taken at station 72.
- Kingfish (*Seriola lalandi*): Taken at stations 1, 2, 3, 4, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 33, 36, 39, 44, 81, 83, 88, 90, 91, 92, 93, 101, 104, 105, 106.
- Barracouta (*Thyrsites atun*): Taken at stations 2, 3, 4, 11, 12, 13, 14, 15, 16, 17, 20, 34, 35, 36, 38, 39, 42, 43, 44, 46, 47, 49, 50, 51, 58, 59, 60, 63, 81, 83, 85, 86, 88, 89, 91, 94, 96, 98, 99, 101, 104, 105, 106.
- Moki (*Latris ciliaris*): Taken at stations 13, 14, 25, 46, 51, 71, 73, 74, 76, 77, 85, 98, 99, 101.
- Tarakihi (*Chilodactylus macropterus*): Taken at stations 3, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 34, 35, 36, 42, 43, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 69, 70, 71, 73, 74, 75, 76, 77, 78, 81, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 96, 97, 100, 101, 104, 105, 106.
- Gurnard (*Trigla kuniu*): Taken at stations 21, 25, 28, 31, 34, 35, 39, 42, 43, 44, 51, 53, 54, 61, 62, 64, 65, 66, 67, 69, 72, 73, 74, 76, 77, 78, 80, 83, 85, 86, 87, 89, 90, 91, 92, 93, 94, 96, 97, 98, 99, 100, 101.
- Ling (*Genypterus blacodes*): Taken at stations 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 26, 27, 29, 31, 35, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 61, 62, 65, 66, 67, 77, 86.
- Hapuka (*Oligorus gigas*): Taken at stations 2, 3, 8, 9, 12, 13, 14, 15, 16, 25, 26, 27, 28, 29, 35, 36, 39, 42, 43, 44, 47, 48, 54, 62, 73, 84, 86, 88, 89, 90, 91, 92, 93, 96, 100, 104, 106.
- Schnapper (*Pagrus unicolor*): Taken at stations 9, 71, 72, 73, 74, 75, 76, 77, 78, 80, 81, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 96, 97, 98, 99, 100, 101, 104, 105, 106.
- Conger-eel (*Conger vulgaris*): Taken at stations 40, 51, 52, 72, 76, 77, 78, 80.
- Skate (*Raja nasuta*): Taken at stations 1, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15, 16, 17, 19, 20, 21, 22, 23, 25, 28, 29, 30, 31, 32, 33, 34, 35, 39, 40, 41, 42, 43, 44, 46, 47, 48, 49, 51, 52, 53, 54, 57, 62, 65, 71, 72, 73, 74, 75, 77, 78, 81, 85, 86, 87, 88, 89, 90, 93, 94, 96, 97, 98, 99, 100, 101, 104, 105, 106.
- Sea-perch (*Sebastes percoides*): Taken at stations 22, 23, 24, 25, 26, 27, 30, 31, 36, 46, 49, 50, 71, 83, 84, 88.
- Crayfish: Taken at stations 10, 11, 18, 60, 62, 69, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 85, 86, 93, 98.
- Electric Ray (*Torpedo fairchildii*): Taken at stations 46, 47, 48, 49, 51, 57, 59, 105, 106.
- Whip-ray (*Myliobatis aquila*): Taken at stations 85, 86, 87, 91, 92, 93, 94, 97, 98, 99, 100, 104, 105, 106.
- Shark (*Heterodontus philippi*): Taken at stations 46, 75, 80, 91.
- Dogfish (*Scyllium laticeps*): Taken at stations 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 38, 39, 42, 43, 44, 46, 47, 48, 50, 51, 52, 53, 54, 57, 58, 59, 61, 62, 63, 71, 72, 73, 74, 76, 77, 78, 80, 81, 83, 84, 85, 86, 87, 88, 91, 92, 94, 97, 99, 100, 104, 105, 106.
- Elephant-fish (*Callorhynchus antarcticus*): Taken at stations 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 23, 27, 28, 29, 32, 33, 34, 35, 36, 39, 40, 41, 42, 43, 44, 45, 46, 51, 52, 53, 54, 57, 58, 59, 60, 61, 62, 72, 73, 74.
- Leatherjacket (*Monocanthus convexirostris*): Taken at stations 21, 22, 23, 25, 26, 30, 31, 33, 34, 36, 46, 49, 50.
- Octopus: Taken at stations 4, 18, 20, 22, 24, 29, 35, 43.
- Squid (*Soligo pealii*): Taken at stations 4, 13, 15, 16, 17, 18, 32, 33, 34, 35, 36, 38, 39, 42, 44, 47, 49, 50, 59, 60, 83, 88, 99, 104.
- Flathead (*Kathetostoma laeva*): Taken at stations 1, 2, 5, 23, 30, 31, 35, 39, 43, 47, 48, 49, 83, 84, 89, 90, 92, 93, 94, 99, 100, 101, 104.
- Torpedo: Taken at stations 2, 3, 4, 5, 7, 8, 13, 15.
- Kahawai (*Arripis salar*): Taken at station 71.
- Macrurus australis: Taken at stations 33, 34, 35, 36, 39, 40, 41, 44, 45, 46, 47, 50, 51, 52, 53, 54, 57, 58, 59, 60, 61, 63, 71, 76, 77, 81, 88.
- Trumpeter (*Latris hecateia*): Taken at station 48.
- Horse-mackerel (*Trachurus*): Taken at station 73.
- Trevalli (*Caranx georgianus*): Taken at stations 75, 86, 87, 88, 98, 99, 100, 101, 104.
- Warehou (*Neptonemus brania*): Taken at stations 83, 88.

RECORD of FISH caught with LINES during the Cruise of the "Nora Niven."

Date.	Locality.	Trumpeter.	Yellowtail.	Blue cod.	Barracouta.	Hapuka.	Sea-perch.	Number Men employed.	Time.
1907.									Hrs.
30 July ..	Chatham Islands, off Whangaroa Harbour	..	..	207	..	1	..	6	2
31 " ..	"	1	1	606	3	103	3	6	7
2 August ..	" north of Pitt Island	..	..	860	..	2	3	6	3 $\frac{1}{2}$
3 " ..	" off Whangaroa Harbour	..	..	520	..	5	..	6	3
5 " ..	"	..	..	80	..	..	..	3	4
6 " ..	"	..	..	400	1	19	2	6	5
7 " ..	" off West Reef ..	..	..	70	..	10	..	4	0 $\frac{1}{2}$

RECORD of FISH caught with SET-NETS at Chatham Islands.

Date.	Locality.	Moki.	Tarakahi.	Butter-fish.	Hapuka.	Parrot-fish.	Warehou.	Sharks.	Number of Nets.
1907.									
31 July ..	Whangaroa Harbour	8	2	10	..	3	..	..	3
1 August ..	"	2	1	..	..	..	..	..	1
4 " ..	Port Hutt	3	4	..	..	..	10	1	3
5 " ..	"	6	4	11	1	5	..	2	3

TABLE of DISTANCES trawled and steamed.

From	Miles steamed.	Miles trawled.	From	Miles steamed.	Miles trawled.
Wellington to Stewart Island ..	502	..	Wellington to Napier ..	158	44
Stewart Island to Bluff ..	40	..	Napier to Auckland ..	491	67
Stewart Island to Otago ..	265	120	Auckland to Wellington ..	590	57
Otago to Lyttelton ..	380	150			
Lyttelton to Wellington ..	186	49	Total distance steamed ..	3,798	514
Wellington to Napier ..	180	..			
Napier to Chathams ..	390	..	Distance trawled ..	514	..
At Chathams ..	196	27			
Chathams to Wellington ..	420	..	Total distance covered ..	4,312	..
Total number of hauls ..			106		
Number of soundings ..			393		

WEATHER, TEMPERATURE, OBSERVATIONS, &c., made during the Cruise of the "Nora Niven."

Date.	Time.	Locality.	Temperature, Water		Barometer.	Wind.		Weather Conditions.	Sea.
			(surface).	(bottom).		Direction.	Force.		
1907.									
June 10	Noon	21 miles S.E. Stewart Island	Deg. Fah. 51	Deg. Fah. 52	In. 30	W.	6	Cloudy..	Heavy sea.
" 11	10 a.m.	" N.E.	51	51	29.9	S.W.	4	Overcast	Heavy swell.
" 12	Noon	" E.S.E. from Bluff	51	51.2	29.8	S.W.	4	"	Heavy S. swell.
" 13	"	" E. Stewart Island	51.5	52	29.8	S.W.	4	Cloudy..	"
" 14	"	" Paterson Inlet..	52.2	52	29.4	S.W.	8	Heavy cold showers	Very rough.
" 15	9 a.m.	"	52	52	29.3	S.W.	8	Snow; cold showers	"
" 16	Noon	"	51	52	29.4	S.W.	6	Rain-showers	Rough.
" 17	"	"	51	52	29.7	W.	2	Light showers	Calm.
" 18	2 p.m.	"	53	52	30	E.	2	Fine	"
" 19	Noon	"	51	52	30.2	E.	2	"	"
" 20	"	"	50	45	30.35	W.	2	"	"
" 21	"	"	50	46	30.4	W.	4	Cloudy; very cold	Choppy.
" 22	"	"	50.5	46	30.2	S.W.	4	Cloudy..	Smooth S. roll.
" 23	"	"	50.5	48	30.29	S.	6	Passing clouds; cold	"
" 24	1 p.m.	"	50.5	49	30.15	S.W.	4	Fine	Choppy; heavy swell.
" 25	11 a.m.	"	51	48	30.1	W.	2	"	Calm S. roll.
" 26	Noon	"	49	49	30	Calm	2	Fine and clear	Slight E. swell.
July 1	11 a.m.	"	49	48	29.9	Light S.	1	"	"
" 2	1 p.m.	"	49	49	29.6	N.	3	Fine; light clouds	Light N.E. swell.
" 3	Noon	"	50	50	29.66	N.	1	Fine and clear	"
" 4	12.30 p.m.	"	49	49	29.68	N.	1	"	"
" 5	2 p.m.	"	50	49	29.9	N.N.E.	4	"	Moderate swell.
" 6	1 p.m.	"	46	48	29.7	Calm	7	"	Smooth.
" 9	"	"	48	49	29.72	S.S.E.	8	Cloudy..	S.S.E., moderately high.
" 10	3 p.m.	"	46	48	29.9	S.	2	"	S.S.E., high.
" 11	11.30 a.m.	"	52	49	29.40	N.	2	Fair and clear	moderate.
" 12	2.30 p.m.	"	48	49	30.52	E.	1	"	S.E., moderate.
" 18	11.30 a.m.	"	48	49	30.42	N.W.	1	"	Slight E. swell.
" 19	Noon	"	50	50	29.9	E.S.E.	1	Cloudy..	Smooth.
Aug. 12	Noon	"	49	50	29.72	N.W.	2	"	Smooth.
" 13	11 a.m.	"	54	54	29.6	E.S.E.	5	"	E.N.E., moderate.
" 14	1.30 p.m.	"	55	55	29.7	N.W.	1	"	"
" 15	4.15 p.m.	"	55	54	29.62	W.N.W.	5	Clear	E., light
" 19	1.45 p.m.	"	57	58	29.88	S.	6	"	S. and S.E.
" 21	1.20 p.m.	"	57	58	30	S.W.	2	"	Smooth.
" 22	10.15 a.m.	"	57	57	29.5	S.W.	3	Cloudy..	N.N.W. swell.
" 23	1.20 p.m.	"	56	58	29.82	S.W.	5	Clear	Westerly swell.
" 25	2 p.m.	"	56	58	29.90	N.W.	5	Cloudy, and constant rain	N.W., moderate.
" 30	1 p.m.	"	56	57	29.92	N.W.	5	"	"

The following scale is used above for indicating the force of the wind:—

Calm	0	Fresh breeze	5
Light air	1	Strong breeze	6
Light breeze	2	Moderate gale	7
Gentle breeze	3	Fresh gale..	8
Moderate breeze	4		

PARTICULARS of SOUNDINGS made apart from those taken at Trawling Stations—*continued*.

No.	Locality.						Depth in Fathoms.	Nature of Bottom.
86	1 miles	E. x N.	Clatchie Point	..	..	..	10	Fine sand.
87	1½	"	N.W.	..	..	..	16	"
88	6	"	W. Durham Point	..	..	..	61	"
89	9	"	N. x E. Durham Point	..	..	..	65	"
90	10	"	N.W.	..	..	..	58	"
91	11	"	W. x N.	..	..	..	70	"
92	12	"	W. x S.	..	..	..	75	"
93	13½	"	S.W.	..	..	..	82	"
94	17	"	W.	..	..	..	80	"
95	20	"	S.W.	..	..	..	170	"
96	9	"	W. Somes Point	..	..	..	70	Coarse sand and shingle.
97	10	"	W.	..	..	..	72	Sand and shingle.
98	15	"	W.	..	..	..	95	Sand and rock.
99	2½	"	N.E. Cape Pattison	..	..	..	9	Fine sand.
100	5	"	N. x E.	..	..	..	22	Shell.
101	9½	"	N.	28	Sand.
102	7	"	N. x W.	32	Shell.
103	6	"	N.W.	28	Rock.
104	30	"	W. x S. Burham Point	178	Fine sand.

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