

1908.
NEW ZEALAND.

EXPERIMENTAL TRAWLING

(REPORT ON).

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

The CHIEF INSPECTOR OF FISHERIES to the SECRETARY, Marine Department.

SIR,—

Wellington, 13th July, 1908.

I have the honour to present the following report on the second trawling cruise of the steam-trawler "Nora Niven," which was chartered by the Government for a further period of three months for the purpose of prospecting the grounds to the west of Cook Strait, Tasman and Golden Bays, down the west coast of the South Island to Hokitika, the west coast of the North Island, and part of the east coast from the Hauraki Gulf to the North Cape.

A full description of the "Nora Niven" was given in my report on the first three months' cruise.

As was the case during the first cruise, the owners did everything possible for the comfort of the Government officers on board, and afforded them every facility in their power for carrying out the work successfully.

Mr. Waite's official duties prevented him from accompanying this cruise; and it is a matter for regret that no marine biologist accompanied the expedition, as it afforded an exceptional opportunity for collecting specimens and studying marine life along a great range of the coast-line of New Zealand.

At the commencement of the cruise the "Nora Niven" had on board two new trawl-nets, complete; and sections equal to half a net; and two half-worn nets on deck, "bent on" ready for use; three pairs of otter-boards, and sufficient spare twine, shackles, and other fittings. During the cruise another complete new net was put on board.

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

(a.) GENERAL ACCOUNT OF THE CRUISE.

The second charter of the "Nora Niven" dated from the 5th September. I inspected the vessel, and examined and overhauled her nets and fishing-gear at Wellington on that date. As the first charter expired on the previous day, the trawl-nets and gear required overhauling and repairing, and the engine-boilers blowing down and cleaning before commencing on the second cruise; and this was done on the 6th and 7th.

I was in charge of the expedition from the commencement of the cruise until the 17th October, when owing to ill health I was compelled to come ashore, and Mr. H. Stephenson, Inspector of Fisheries for the Bay of Islands, was put in charge. The records of fish caught, depths trawled in, nature of the bottom, &c., and report of the work done is supplied by me up to the 17th October, and from that date to the end of the cruise by Mr. Stephenson.

During the three months the vessel was under charter she fished on forty-four days; thirteen days were occupied in coaling, taking in stores, discharging fish, &c.; twelve days in steaming to the various grounds to be tested; five days weather bound; thirteen days were Sundays, and the remaining three days were occupied in repairing, &c.

The total distance covered during this cruise was 3,835 miles, the distance steamed being 3,123 miles, and the distance the trawl-net was towed 712. One hundred and forty-six hauls of the trawl-

net were made, and 300 soundings taken. The depth of water in which the hauls of the trawl-net were made varied from 4 to 105 fathoms; and the time occupied by each haul varied from three-quarters of an hour to two hours and a half.

The total quantity of fish brought in and delivered to the owners of the "Nora Niven" was 48,625 lb. Besides this there were large quantities of red-cod and other fish not included in the list of fish which they were to take, which had to be returned to the water again.

The greatest quantity and variety of market-fish were taken inside of the 30-fathom line. In this respect this cruise corresponded with the other trawling experiments made round the coast of New Zealand.

Tasman and Golden Bays were carefully prospected in order to ascertain whether they had quite recovered from the wholesale destruction of fish which took place there in 1901. Very good results were obtained as regards the extent of good trawling-bottom which was found, and the quantity and the variety of market-fish taken.

On the west coast of the South Island splendid trawling-bottom was found all along the range of coast which was prospected—i.e., from off the Heaphy River, south of Kahurangi Light, to Hokitika, a distance of about 130 miles. No rough bottom was encountered anywhere. A good variety of market-fish was taken, but the hauls were generally poor as regards quantity. Judging from the nature of the bottom and other indications, I form the opinion that at some season of the year fish would be found in large quantities from close inshore out to 20 or 30 fathoms. Brill (*Pseudorhombus scaphus*) were taken all along this coast, and in proportion to the quantity of other flatfish caught they were taken in larger quantities than on any other fishing-grounds that I know of in New Zealand.

Good trawling-bottom was found all along the west coast of the North Island, and at several points along this section of coast large hauls of fish were made. The results obtained show that extensive and prolific fishing-grounds exist along this range of coast. These grounds will no doubt in time be systematically worked from Onehunga, Kaipara, Kawhia, and New Plymouth.

For some distance outside the trawling limits in the Hauraki Gulf good bottom was found, and some large hauls of fish made. From outside of Flat Rock to the North Cape the bottom proved unreliable. In places considerable areas of sand bottom were found, then, unexpectedly, rocky bottom would be encountered. In working this section the nets and gear were frequently damaged. From Tiri Tiri Island to the North Cape fish-life is abundant, and, notwithstanding the uncertain nature of the bottom and damage to the gear, some very good hauls of fish were made.

Bad weather at the commencement of the cruise interfered with the work to the west of Cook Strait, and the completion of this had to be postponed until the vessel returned down the west coast of the North Island, when we were again unfortunate as regards weather, and consequently this section was not tested as thoroughly as intended. The work done, however, showed that to the south, from off Jackson's Head to Stephens Island, the bottom is rough in places, and in the deeper water towards the middle of the strait it is generally soft with ledges of clay, which makes it dangerous for trawling. From Kapiti Island to Wanganui there is a large stretch of good bottom, and a good supply of fish.

The two cruises of the "Nora Niven" have revealed the fact that off the coast of New Zealand there exist immense areas of even sand and mud bottom suitable for trawling. On account of the very large extent of coast-line which had to be gone over during each charter-period it was impossible to thoroughly work these areas, but in many places large hauls of the best market-fish were taken, giving a good indication of the value of the areas as fishing-grounds. To prove their actual value it is, however, necessary that they should be systematically worked at different seasons of the year. Valuable preliminary work has been accomplished by the discovery of these areas, and this should be followed up by the systematic seasonal working of the grounds in order to prove their value.

The following statement made in the report on the first three months' cruise applies to the whole six months' work done by the "Nora Niven": viz., "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 various 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 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."

- (a.) A general account of the cruise.
- (b.) A general report by Mr. Stephenson on the work done while he was on board.
- (c.) A summarised report on the extension of the cruise of the "Nora Niven."
- (d.) A detailed account of each day's work and haul of the trawl-net.
- (e.) Particulars of the locality, depth, and nature of the bottom in respect of each haul of the trawl-net.
- (f.) Record of fish taken in the trawl-net.
- (g.) A list of the fish taken in the trawl-net and stations where they were obtained.
- (h.) Table of distances steamed and trawled during the cruise.
- (i.) Weather and temperature observations made during the cruise.
- (j.) Charts (seven) marked M.D. 3252, showing in thick red lines where trawl-net worked, and in red figures soundings in fathoms, and steaming-courses in thin red lines.

I have, &c.,

L. F. AYSON,

Chief Inspector of Fisheries.

The Secretary, marine Department, Wellington.

(b.) GENERAL REPORT BY MR. STEPHENSON.

SIR,—

Russell, Bay of Islands, 23rd December, 1907.

I have the honour to present the following report on the experimental trawling which was carried out under my control in the steam-trawler "Nora Niven," commencing in the Hauraki Gulf, Auckland, on the 17th October and ending on the 3rd December, 1907, at Wellington.

On the 17th October a start was made outside Tiri Island, in the Hauraki Gulf, and continued thence in the direction of Cape Colville, Little and Great Barrier Islands, to the outer island Hen and Chickens. After having shot the net several times in the various localities, as will be found marked on the chart, I started for the vicinity of Great Exhibition Bay, south of North Cape, and trawled back in the direction to where I left off. Twenty-three shots in all were made on this coast, trawling over about ninety miles of ocean-bottom, in depths ranging from 11 to 55 fathoms, and, excepting a small portion immediately outside Tiri Island, the grounds trawled over were found on the whole not of a suitable character for trawling, we having met with large quantities of marine growth and razorback mussels, indicating the rocky nature of bottom. The quantities of fish, and each kind, taken on this coast are as follows: 3,763 schnapper, 603 tarakihi, 473 John-dory, 73 gurnard, 418 moki, 247 leather-jackets, 54 trevalli, 32 maumau, 3 barracouta, 1 kingfish, 2 mackerel, 2 blue-cod, 2 hapuka, 4 skate, 1 sole, 1 crayfish, and 54 sharks. Immediately after the last haul was taken in on this coast the vessel was headed for Auckland, in order to allow time for blowing down and taking in a supply of coal and stores previous to trawling down the west coast, arriving at Auckland at 11 a.m. on the 26th October.

At midnight on the 30th October a start was made from Auckland going direct for Cape Maria, which was reached at 8 a.m. on the 1st November. At 9.30 a.m. the first shot was made on the west coast, five miles W. $\frac{1}{2}$ N. from Motu Pia, south of Cape Maria van Diemen, and the last in Cook Strait, twelve miles W. x S. $\frac{1}{2}$ S. from south end Kapiti Island, including West Wanganui, Farewell Spit, Cloudy Bay, and Guard's Bank. Fifty-eight shots, as will be found marked, were made on this coast and through the strait, trawling over about 285 miles of ocean-bottom, and in depth ranging from 4 to 85 fathoms. All the ground trawled over on this coast was found most suitable for trawling, except from New Plymouth to as far south as Patea and through the middle of the strait. The quantities of fish, and each kind, taken on this coast are as follows: 7,354 schnapper, 3,045 gurnard, 1,408 tarakihi, 850 trevalli, 332 kingfish, 295 sharks, 235 soles, 186 John-dory, 71 red-cod, 50 frostfish, 47 flounders, 49 skate, 40 leatherjackets, 30 brill, 32 moki, 35 blue-cod, 51 lemon-soles, 37 hapuka, 20 elephant-fish, 17 kahawai, 13 warehou, 6 turbot, 5 ling, 5 mackerel, 4 barracouta, 4 crayfish, 2 megrim, 2 octopi, 1 conger-eel, and 1 hake. Though no very large catches were made on this coast, in my opinion this can be attributed to a great extent to the possibility of the various kinds of fish being at this season of the year in very shallow water. I might also add that the fish on the west coast are of a superior quality and by far a better-keeping fish than those obtained on the east coast. No doubt this can be accounted for by the fact of the difference and nature of bottom, that on the east coast being dirty, and that on the west being a clean hard-sand bottom.

In addition to trawling for fish, a day and part of a second was spent in dredging for oysters in Cloudy Bay, and though only a few oysters were found, I am of the opinion the locality should be further tested, for with proper appliances the result might be very different. The dredge used by me proved most unsuitable, being very light and far too small.

I have, &c.,

H. STEPHENSON,

L. F. Ayson, Esq., Chief Inspector of Fisheries, Wellington.

Inspector of Fisheries.

(c.) SUMMARISED REPORT OF THE EXTENSION OF THE CRUISE OF THE "NORA NIVEN."

THE extension of the charter of the "Nora Niven" dated from the 5th September, and as the vessel's boilers required blowing out and the trawl-nets overhauling before trawling was commenced again, this was done on the 6th and 7th September, and on the 9th a demonstration of the working of the nets was given to a party of members of Parliament in Wellington Harbour. On the 10th September the vessel left at 5 a.m. for the west of Cook Strait.

We arrived off Stephens Island at 2 p.m. on the same day, when soundings were taken; but, as these indicated a rough bottom, and a heavy sea was coming up, with indications of bad weather, it was decided to run into Tasman Bay and work there until the weather cleared. Anchored for the night off Separation Point, and at 6 a.m. on the 11th the anchor was taken up and soundings showing a good mud bottom the trawl-net was shot at 6.35 a.m., and four hauls were made in a line from Separation Point to Greville Harbour, D'Urville Island. The bottom right through was mud, and the hauls consisted of schnapper, gurnard, red-cod, tarakihi, soles, skate, kingfish, and barracouta.

Work was continued in Tasman Bay on the 12th, 13th, and 14th from the Croixelles Harbour in a zigzag course across to Motueka and back across the bay again to the entrance to the French Pass. With scarcely an exception good hauls of fish were made, principally large schnapper, gurnard, soles, and flounders—altogether about $3\frac{1}{2}$ tons of market-fish were taken. The bottom throughout was mud, and no obstruction of any kind was met with. The shallowest water trawled in was 10 fathoms and the deepest 30 fathoms.

As hake were taken in considerable quantities by the "Doto" in 1900, I was anxious to ascertain if they were in this bay at this season, and, if so, in what depth. None, however, were taken, and it seems probable that their season in shallow water is through the summer and autumn.

It was expected that exceptional results would be obtained in the Current Basin, at the south entrance to the French Pass, but in this I was disappointed, as the result of haul No. 124 shows.

From the quantities of market-fish taken it is evident that Tasman Bay has quite recovered from the wholesale destruction of fish which took place there in 1901, caused by a peculiar slime.

The vessel returned to Wellington on Saturday night for repairs to the engine, and to ship another trawling-master.

Repairs were effected on the 16th, and the supply of coal and water replenished, and the vessel left Wellington for the west coast of the South Island on Tuesday morning, the 17th, and steamed direct to Karamea Bight, arriving off Kahurangi Point at 7 a.m. on the 18th.

The rocky nature of the coast off Kahurangi Point and for some distance south, and the chart soundings showing deep water very close in, it was not considered safe to begin trawling until abreast of the Heaphy River. Soundings were taken two miles and half off the mouth of the Heaphy River, and the lead showing good bottom at 33 fathoms the net was shot at 9.15 a.m.

The result of this haul was poor as to quantity, but the fish taken were a peculiar mixture, consisting of some fine John-dory, macrurus, schnapper, red-cod, ling, soles, and gurnard.

In order to test what was considered to be the best flatfish-grounds, the next haul was made in shallower water, and, the rough rocky shore having been passed and low flat lands showing for a considerable distance, the conditions seemed favourable for good fishing-grounds. The net was therefore shot a second time in Karamea Bight, and the haul again gave a good variety but rather meagre in quantity. Some excellent soles came up, and from the character of the bottom, depth, &c., I form the opinion that this locality at certain seasons will yield a large supply of good fish—the bottom, depth, &c., being just what is required for trawling. The character of the bottom, fish, and depth of water correspond with the other best-known flatfish trawling-grounds in the Dominion, and may be said to extend from the Heaphy River to the mouth of the Buller River, about fifty miles of coast-line, and out to about fifteen miles off shore.

By the 20th September the coast had been tested down to Cape Foulwind, and good even bottom was found all the way. The weather-conditions indicating either southerly or south-westerly winds it was decided to steam to the southern limit to be prospected on the west coast, and after hauling up the net off Westport at 4.35 p.m. on the 20th we steamed on all night, and arrived off Hokitika at 6 a.m. on the 21st.

The grounds were systematically tested from off the mouth of the Hokitika River up to Cape Foulwind, from 11 fathoms out to 105, on the 21st, 22nd, and 23rd September. From about an average of two and a half miles off shore, all the way up, the bottom was even black sand; no obstruction was found anywhere, and not a strand of net was broken all the way up. A good variety of fish was found, but the quantities taken were very poor. From north of Karamea to the Hokitika River the bottom is all that is required for trawling, and, although the quantity of fish taken was distinctly poor, it is probable that at other seasons the fish are more plentiful. The exposed coast, subject to heavy seas, and only bar-harbours for shelter, are factors unfavourable to the development of a successful trawling industry being established.

After finishing off Karamea on the 24th September, at station No. 154, we steamed north for West Wanganui, weather very thick, with northerly wind and sea increasing. By the time we arrived off West Wanganui it was blowing a gale with heavy sea and low glass, and it being impossible to lay off there it was decided to go round Cape Farewell. At 5 a.m. on the 25th the vessel was hove to for an hour, a gale from the north-west blowing, weather very thick, and a heavy, confused sea running. It was quite impossible to do any work, and as there was every indication of a continuance of the bad weather an attempt was made to reach shelter in Tasman Bay, which after a time was successful, and we reached Totaranui at 1 p.m., three other steamers coming in for shelter at the same time.

The weather continuing very bad, on the 26th the nets and gear were overhauled.

On the 27th, as there was some improvement in the weather, I decided to work inside Tasman Bay, and we left the anchorage in Totaranui at 7 a.m.; the other steamers going out at the same time.

The first haul was made off Awarua Bay, 19 fathoms, mud bottom, but was only moderately successful. The second haul was made more to the northward; but after towing three-quarters of an hour the net came fast and hauled up badly torn. We steamed on then to Golden Bay, the starboard net being got ready on the way up. On opening out Separation Point a fierce gale was encountered, and increased the further we got into the open, and as work was impossible we ran back to Totaranui Bay, when all hands were put on to repair the port-side net, and by 6 p.m. this was done in good style. The weather continued very bad, and the steamers which left shelter at 7 a.m. returned before dark, being unable to weather it round Farewell Spit.

On the 28th, as the weather continued threatening, I decided to work down the west and south sides of Tasman Bay, and the anchor was hove up at 5.30 a.m. in Totaranui Bay. After passing Astrolabe the net was put down for the first haul at 7.45 a.m.

Four hauls were made with fairly satisfactory results, and good trawling-bottom was found throughout. Returned to Totaranui, and lay there at anchor on 29th, Sunday.

On the 30th the weather was still unfavourable for work outside, so I decided to work Golden Bay. Four hauls of the net were made with very good results.

A low glass still continuing, with indications of more bad weather, work was continued in Golden Bay on the 1st October. Two hauls of the net were made from 7.30 a.m. to 12 noon, when it was found necessary to go on to Nelson for medical attention to myself.

Left Nelson at 5 a.m. on the 2nd October for Farewell Spit; the glass low and indications of a coming storm, which we encountered by 8 o'clock, a fierce gale blowing, with bad sea and heavy rain. Work outside under such conditions was impossible, so I decided to try Golden Bay once more; but

when round Separation Point the gale was so fierce that it was impossible to work the nets, and we had to return to Totaranui to shelter. The gale continued all day.

The weather having cleared on the 3rd October, we left the anchorage in Totaranui Bay at 4.30 a.m. for Golden Bay, where two hauls of the net were made with satisfactory results.

The next three hauls were made from the east of Farewell Spit to Stephens Island. Throughout these hauls the bottom was mud and soft sand, and the results were only moderate.

As the freezer was not working satisfactorily, after hauling up at station 171, we left for Wellington to discharge fish, coal, and have the freezer repaired.

The Department having reconsidered the question of prospecting the grounds in the north, decided to work a section on the east coast from the Hauraki Gulf northward, and the "Nora Niven" left Wellington at 4 p.m. on the 4th October, and arrived at Port Ahuriri on the 6th. Repairs having been effected, the vessel left for Auckland on the 9th October, but owing to heavy weather had to put into Hicks Bay for shelter.

We left Hicks Bay on 13th October and arrived at Auckland on the following day, but delay was occasioned here owing to the illness of Captain McAlister, who was ordered ashore by the doctor.

Arrangements having been made with the owners for another captain to be employed temporarily, Captain Neilson was placed in charge, and the vessel left Auckland at 4 a.m. on the 17th October to prospect outside the usual trawling limits in the Hauraki Gulf.

Tiri to North Cape.

Operations were commenced at a point three miles north of Tiri Island at 7.15 a.m. on the morning of the 17th October. During the day four hauls were made, the net being towed in a northerly and easterly direction. Good catches of market-fish were made, but owing to the bottom over which one haul was made consisting of "horse-mussel" or "razorback" shell, the net was much torn, and a large number of fish escaped. The weather was fine, with bright sunshine and smooth sea.

On the 18th work was commenced to the westward of Channel Island, and the net towed in a zig-zag direction to the southward of Little Barrier Island. Five hauls were made, but the results were in all cases poor. During the last haul the net was very much torn, having met with foul bottom. The following day, Saturday, 19th October, we returned to Auckland to discharge fish, repair nets, and engage two seamen.

All the ground covered appeared to be unsuited for trawling, the bottom consisting of horse-mussel, coral, and dirty mud.

After landing the fish, fifty-five cases, we left Auckland at midnight on Sunday, the 20th October, and commenced trawling off the Little Barrier at 7.30 a.m. on the 21st.

The net was towed in the direction of the Hen and Chickens and two hauls were made, but the result was poor, and the bottom of a dirty nature. I therefore decided to proceed to the North Cape, calling at Russell on the way, and work back to Auckland.

We arrived at Russell at 9.30 p.m. and left at 6 a.m. next day, the 22nd October, for the North Cape, arriving at Great Exhibition Bay at 3 p.m. Here we made two hauls with very poor results, and the bottom being rock the net was much damaged. Work was continued here on the 23rd, and four hauls made, closer inshore and on better bottom, these giving fairly good results.

On the 24th three hauls were made, but the results were poor, and the net was again much damaged through coming in contact with rocky obstruction. These hauls were made in Rangaunu, Doubtless, and Takau Bays, after which the vessel was headed for Russell, where we lay for the night. The following day we made two hauls in this vicinity, but in each case rocky bottom was encountered, and the nets in consequence were badly damaged, so I decided to proceed at once to Tiri Island and try a haul in that vicinity before returning to Auckland. The result of this haul was the largest catch yet made. Cleaning and packing the fish occupied us until arrival at Auckland, where we landed eighty-two cases.

Cape Maria Van Diemen to Manukau.

After taking in stores and coaling at Auckland the vessel left for the west coast of the North Island on the 30th October, arriving off Cape Maria at 8 a.m. on the 1st November, and during the day four hauls were made to the southward of the Cape. The results were somewhat disappointing. On the 2nd, 3rd, 4th, and 5th we continued testing the grounds, the net being towed in a southerly direction. Three hauls were made on the 2nd, two fairly good and one very poor. On the 3rd we made four hauls to the southward of Hokianga, ending nineteen miles south-east of Mangonui Bluff, and on the 4th four hauls were again made, the result of each day's work being two fairly good and two very poor catches.

On the 5th November work was commenced fifteen miles S. x S. from Kaipara Light, four hauls being made, ending abreast of Manukau bar. The result in each instance was a good catch—a total of forty-eight cases for the day, principally schnapper and red-gurnard.

We commenced operations on the 6th November at the north entrance to Manukau Harbour, the net being towed outwards; thence to the southward, finishing for the day seven miles south of Manukau south light. In all four hauls were made, two very good and two fairly so.

On the 7th November, after trying another haul which gave very poor results, we steamed into Manukau Harbour, arriving at 11 a.m.

All the grounds trawled over in this section were found to be excellent bottom, though the catches on the whole were somewhat disappointing. The total catch since leaving Cape Maria was 179 cases.

Manukau to Wellington.

Owing to difficulty in getting coal from Auckland by rail we were unable to leave Manukau until the 12th November at 2 p.m., and on reaching the Heads found the weather so bad that we had to

anchor inside until the morning of the 14th, when a start was made and trawling commenced at a point $12\frac{1}{2}$ miles S. x W. of Manukau Heads, the net being towed in a zigzag southerly direction, and the result for the day was three fairly good and one poor haul.

Work on the 15th was commenced at a point thirteen miles north-west of Woody Point and finished four miles from Gannet Island, the result of four hauls being very similar to that of the previous day.

On the 16th we made three very good hauls off Kawhia Harbour, taking for the day sixty-three cases of fish, principally schnapper, gurnard, and tarakihi. The next day being Sunday we anchored inside Albatross Point, and on the 18th November commenced operations twelve miles S. $\frac{1}{2}$ W. from Albatross Point, trawling in a southerly direction and finishing for the day off the mouth of the Mokau River. Four hauls were made; all except the last were fairly good, forty-one cases being taken for the day. We continued trawling on the 19th, working towards New Plymouth; but results were poor, and we put into New Plymouth for coal and supplies, and to land fish—176 cases.

□ A course was shaped on the 21st November from New Plymouth in the direction of Farewell Spit, in order to test the intervening ground, and several hauls were made with very poor results. The bottom wherever tested was of a soft, dirty nature, and not until we were within eight miles of Farewell Spit light did the soundings show a cleaner bottom. At this point the net was towed for five miles, the result being a fair catch only.

On the 23rd work was commenced off West Wanganui Inlet, and the ground tested until off Farewell Spit light. The results were poor, and as bad weather was setting in we ran for shelter into Taranui Bay, remaining there over Sunday.

On the 25th November work was commenced about twenty-one miles W. x N. from Stephens Island, and the net towed in the direction of Wanganui. Several hauls were made with very poor results, the soundings showing soft, muddy bottom. The following day the wind was blowing strong from the north-north-west with heavy sea, and as the soundings showed sticky-clay bottom, I decided not to run the risk of losing nets, so we proceeded to Wellington, arriving there at 6 p.m.

On the 28th November the vessel left Wellington for Cloudy Bay with the object of dredging for oyster-beds said to exist in that locality; but although traces of oysters were found no satisfactory result could be arrived at, as the dredge proved unsuitable for the work.

On the 29th a haul of the trawl-net was made about five miles north of Wairau bar, and a very fair catch of mixed fish was obtained.

On the 2nd December Guard's Bank was tested with the trawl with very poor results, and we then tested ground $13\frac{1}{2}$ miles east of Stephens Island, towing in the direction of Wanganui. Several hauls were made, but the results were poor in all cases. Next day a trial was made of ground nine miles N. E. $\frac{1}{2}$ E. of Jackson's Head, and of ground twelve miles W. x S. $\frac{1}{2}$ S. of the south end of Kapiti Island. In each case with poor results.

The bottom here proved of a very dangerous nature for trawling, so I decided to finish operations at this point and proceed to Wellington, where we arrived on the evening of the 3rd December.

(d.) DAILY MEMORANDUM OF WORK DONE FROM THE COMMENCEMENT OF THE SECOND CHARTER OF THE "NORA NIVEN" ON THE 5TH SEPTEMBER TO THE 4TH DECEMBER, 1907.

September 5, 1907.—Inspected the nets and fishing-gear on board.

September 6 and 7.—Trawl-nets and gear being overhauled and repaired, and boilers blown down and cleaned.

September 9.—Station 107: "Nora Niven" left Glasgow Wharf at 8.40 a.m. to test trawl-nets and sample bottom in Wellington Harbour preparatory to taking out a party of members of Parliament to demonstrate to them how trawl-nets are worked. Made one short haul, shooting the net between Somes and Ward Islands and towing in towards Day's Bay Wharf. Encountered soft bottom; net hauled in full of mud. Very few fish.

Station 108: Left wharf with parliamentary party on board at 2.30 p.m. Steamed down the harbour and shot the net south-west of Ward Island in 13 fathoms, mud bottom. Towed three-quarters of an hour, and hauled up in 12 fathoms. Very few fish.

September 10.—Left Wellington wharf at 5 a.m. for west end of Cook Strait. Took a sounding at 1.30 p.m. $5\frac{1}{2}$ miles east of Stephens Island: depth, 43 fathoms; bottom, sand and shell. Sounded again 5 miles north of Stephens Island: depth, 43 fathoms; bottom, coral and stones. A strong westerly wind coming up, with a heavy choppy sea and falling glass, decided to run into Tasman Bay, where work could be continued until the weather settled. Anchored off Separation Point for the night.

September 11.—Station 109: Hauled up anchor off Separation Point, Tasman Bay, at 6 a.m. The soundings showing mud bottom, the net was shot for the first haul at 6.35 a.m. in 27 fathoms. Separation Point bearing S.W. x W. $\frac{1}{4}$ W., 5 miles. Towed on an E. $\frac{1}{4}$ N. course for two hours and a half, and hauled up off a mud bottom in 30 fathoms. The result of this haul was rather poor, the market-fish being represented by 12 soles, 29 schnapper, 35 gurnard, 14 kingfish, 20 tarakihi, and 30 red-cod.

Station 110: From hauling up at station 109 steamed $4\frac{1}{2}$ miles on a E. $\frac{1}{4}$ N. course, and shot the net for the next haul at 10 a.m. in 30 fathoms, mud bottom; Separation Point bearing W. $\frac{3}{4}$ S., $19\frac{1}{2}$ miles. Towed 5 miles on the same course, and hauled up from the same mud bottom in 36 fathoms at 11.30. This haul gave a large bag of fish, consisting principally of red-cod, with a fair quantity of soles, gurnard, tarakihi, and kingfish.

Station 111: After hauling up at last station steamed 3 miles, and shot the net at 12.15 p.m. in 26 fathoms, mud, Ragged Point bearing E. x N. $\frac{1}{2}$ N., $9\frac{1}{4}$ miles. Towed $5\frac{1}{2}$ miles on an easterly course, and hauled up $4\frac{1}{2}$ miles off Ragged Point; the point bearing N.E. $\frac{3}{4}$ E. Depth 30 fathoms, mud. This haul was rather unsatisfactory both as to quantity and variety of fish.

Station 112: From hauling up at last station steamed south-west, and shot the net in 30 fathoms, mud bottom. Ragged Point bearing N.E. x N. $\frac{3}{4}$ N., 8 miles, at 2.30 p.m. Hauled up at 4 p.m., depth 30 fathoms, mud bottom. The result of this haul was poor, consisting of a few schnapper, tarakihi, kingfish, and sharks. After hauling up, steamed south and anchored off the Croixelles for the night.

September 12.—Station 113: Hauled up anchor off Croixelles Harbour at 6.30 a.m. Steamed out and sounded: 20 fathoms, mud bottom. Shot the net for the first haul to-day at 7.15 a.m. Cape Soucis bearing S.E., $3\frac{1}{2}$ miles. Towed on a S. x W. $\frac{1}{2}$ W. course for an hour and three-quarters, and hauled from the same mud bottom in 18 fathoms; Cape Soucis bearing E. x N. $\frac{3}{4}$ N., 4 miles. This haul yielded a good quantity of flounders, schnapper, kingfish, gurnard, and red-cod.

Station 114: Steamed three miles from hauling at last station, and shot again at 9.15 in 20 fathoms, mud bottom; Graham Point bearing E. $\frac{1}{2}$ N., 4 miles. Towed an hour and a half, and hauled in 15 fathoms; east end Pepin Island bearing S. $\frac{3}{4}$ W., $2\frac{1}{2}$ miles. The result of this haul was very satisfactory, both as regards quantity and variety of fish.

Station 115: As the last haul gave good results it was considered advisable to test this locality further, and the net was shot again for another haul, west end Pepin Island bearing S. $\frac{3}{4}$ W., $1\frac{1}{2}$ miles; depth 15 fathoms, mud bottom. Towed two hours, and hauled up in 18 fathoms. The result of this haul was very satisfactory, giving 105 flounders, 111 schnapper, 53 soles, 210 gurnard, 32 red-cod, and 6 barracouta.

Station 116: Shot the net for the next haul at 1.30 p.m. in 15 fathoms, Pepin Island bearing S.E. $\frac{1}{4}$ E. Towed an hour and a half and hauled up in 16 fathoms, Nelson Lighthouse bearing south. The result of this haul was also satisfactory, being very similar to the two previous hauls as regards quantity and variety of fish.

Station 117: Shot the net for the last haul to-day at 3.15 p.m., $10\frac{1}{4}$ miles north of Nelson Lighthouse; depth 18 fathoms, and mud bottom. Hauled up from 19 fathoms at 4.45 p.m. This haul yielded 42 soles, 109 flounders, 63 schnapper, 97 gurnard, 31 red-cod, and 7 barracouta. Anchored off Nelson light all night.

September 13.—Station 118: Hauled up anchor at 6.30 a.m. Steamed 2 miles, and shot the net in 10 fathoms, Nelson Lighthouse bearing S. x E. $\frac{1}{2}$ E., 7 miles, at 7 a.m. Towed for two hours, and hauled up from 11 fathoms 4 miles north-east Boat Harbour Island. This haul only yielded moderate results, the market-fish being represented by flounders, soles, gurnard, red-cod, and barracouta.

Station 119: Shot the net for another haul at 9.20 a.m., depth 11 fathoms, and mud bottom; Boat Harbour Island bearing W.S.W., 4 miles. Towed an hour and a half, and hauled up in 13 fathoms. Result, a moderate quantity of fish, principally flounders and soles.

Station 120: From hauling up at last station steamed 2 miles, and shot for another haul 5 miles E. $\frac{1}{4}$ S. of Astrolabe, depth 15 fathoms, at 11.30 a.m. Hauled up at 1 p.m. 11 miles E. $\frac{1}{4}$ S. of Astrolabe. The result of this haul again only gave a moderate quantity of fish.

Station 121: Deepened the water to 18 fathoms and shot for another haul at 1.20 p.m., Nelson Lighthouse bearing S. $\frac{1}{2}$ E., $13\frac{1}{2}$ miles. Towed on an easterly course for an hour and three-quarters, and hauled up from the same depth that the net was shot in. This haul yielded a fair quantity of market-fish.

Station 122: Shot the net for the last haul to-day at 3.15 p.m., depth 18 fathoms, and mud bottom, Pepin Island bearing S.E. x S. $\frac{1}{2}$ S., 5 miles. Hauled at 4.45 p.m., Pepin Island bearing S. x E. $\frac{3}{4}$ E., depth 17 fathoms. Result, a very good haul of fish, principally schnapper, flounders, gurnard, and kingfish.

September 14.—Station 123: Hauled up anchor off Whangamoa Bay at 6 a.m., and steamed up the coast to test the grounds from Croixelles Harbour to the Current Basin, French Pass. Shot the net for the first haul to-day at 7.30 a.m. in 19 fathoms, mud bottom, $1\frac{1}{4}$ miles north-west of Cape Soucis. Towed on a north-east course for an hour and a half, and hauled up from 22 fathoms, Jules Island bearing S.E. x S., $3\frac{1}{4}$ miles. Result, 47 schnapper, 14 flounders, 6 soles, 14 red-cod, 16 gurnard, and a quantity of tiger-sharks.

Station 124: Shot the net again at 9.15 a.m., depth 22 fathoms, and soft bottom, 4 miles N. $\frac{1}{2}$ W. of Jules Island. Towed in toward the entrance of the Current Basin, and hauled up at 10.30 a.m., Cove Point bearing S.E., $1\frac{1}{2}$ miles. Interesting results were looked for from this haul, as it was thought that near the entrance to the Current Basin there would probably be large quantities of fish-food brought through by the strong currents. The result of the haul was, however, disappointing, as it consisted of only a few flounders, soles, schnapper, gurnard, and red-cod.

After hauling up at station 124 we left for Wellington, for the purpose of effecting repairs to the engines, landing fish, and coaling. Arrived at Wellington at 7 p.m.

September 15, Sunday.—Lying alongside Wellington wharf.

September 16.—Lying alongside wharf, Wellington. Landed fish, took in coal and water, and effected repairs to engines.

September 17.—Left Wellington at 10.15 a.m. for Farewell Spit and west coast. Arrived off Stephens Island at 4 p.m., and decided to steam on all night and begin work off the Karamea Bight in the morning. Glass high, and indications of fine weather.

September 18.—Station 125: Arrived off Kahurangi Point at 7 a.m. On account of the rocky nature of the coast decided to commence work further down the coast. Took soundings off the Heaphy River, and finding good bottom the net was shot for the first haul in 33 fathoms, soft-sand bottom, at 9.15 a.m., Heaphy River bearing S.E. x E. $\frac{1}{2}$ E., $3\frac{1}{4}$ miles. Towed on a course S. x E., and hauled up at 10.30 a.m. in 32 fathoms, bottom fine sand. This haul yielded very poor results.

Station 126: After hauling up at station 125 steamed S. $\frac{1}{2}$ E. for 5 miles, in order to work into shallower water. Shot the net for the next haul at 11.15 a.m., depth 28 fathoms, bottom fine sand, Kōhahai Bluff bearing E.N.E., $2\frac{1}{4}$ miles. Towed down the coast for 6 miles, and hauled up in

10 fathoms at 1 p.m. This haul only gave moderate results, market-fish being represented by soles, schnapper, tarakihi, hake, gurnard, and red-cod. This haul was disappointing, as the bottom and other conditions were favourable for getting a good supply of flatfish.

Station 127: After clearing the net at the last station it was shot right away for another haul at 1.30 p.m., depth 10 fathoms, bottom fine sand, Opararu River bearing E. x S. $\frac{1}{4}$ S., $1\frac{1}{2}$ miles. Continued towing down the coast, and hauled up at 3 p.m. in 8 fathoms 3 miles S.E. of the entrance to the Karamea River. This haul gave a very good variety of fish, but only a moderate quantity.

Station 128: As the indications were favourable for a good supply of fish, the net was put over for another haul at 3.15 p.m. in 12 fathoms, bottom soft sand, the position being 3 miles S.W. of the entrance to the Karamea River. Towed S. x E. for 6 miles, and hauled up 2 miles N.W. of the entrance to the Little Wanganui River. This haul gave a fine variety of market-fish and also a fair quantity. Steamed offshore, and anchored for the night in 15 fathoms.

September 19.—Station 129: Hove up anchor off Karamea River at 6.30 a.m., and the soundings (25 fathoms) showing good bottom, the trawl-net was shot for the first haul to-day at that depth, on a fine-sand bottom, at 7 a.m., Karamea River entrance bearing E., 4 miles. Towed S. x W. for two hours, and hauled up in 26 fathoms from a good sand bottom; the position being, Little Wanganui River bearing E. x S. $\frac{3}{4}$ S., 7 miles. This haul also gave a very good variety of fish, but only a moderate quantity.

Station 130: After hauling up at station 129, steamed 3 miles, and shot the net for the next haul at 9.30 a.m. in 22 fathoms, fine-sand bottom, Little Wanganui River bearing E. $\frac{1}{2}$ N., 6 miles. Towed for an hour and hauled up in 23 fathoms. Result, a very good variety of fish, but quantity rather poor.

Station 131: From last station steamed inshore 2 miles, and shot for another haul at 10.55 a.m., depth 22 fathoms, fine-sand bottom, Seal Rock bearing N.E. x E., $3\frac{1}{2}$ miles. Towed S. $\frac{1}{4}$ W. for an hour, and hauled up in 22 fathoms from a soft-sand bottom. The result of this haul was similar to others along this coast, giving a good variety of fish, but the quantity was rather poor.

Station 132: Put over the net for the next haul at 12 p.m. in 22 fathoms, bottom soft sand, Moki-hiniui entrance bearing E. $\frac{3}{4}$ S., $2\frac{3}{4}$ miles. Hauled up in 21 fathoms, 3 miles N.W. of Hector Township. This haul was an improvement as to quantity on the others made to-day.

Station 133: From last station steamed S.E. for $3\frac{1}{2}$ miles, and shot for another haul at 2 p.m., depth 18 fathoms, and the same fine-sand bottom as found all along this coast, Mautoria Rocks bearing E. $\frac{1}{4}$ S., $2\frac{1}{2}$ miles. Towed an hour and a quarter, and hauled up in 17 fathoms. This haul gave a similar variety of market-fish to other hauls down this coast, and gave a good quantity of very fine soles.

Station 134: Steamed for 3 miles, and shot for the last haul to-day at 3.45 p.m. in 17 fathoms, soft-sand bottom, Waimangaroa River bearing S.E. $\frac{3}{4}$ E. Towed in to 12 fathoms, and hauled up 2 miles west of Wareatea River at 5 p.m. This haul was similar to the others made to-day, giving a good variety of market-fish, but rather poor in quantity. After hauling up net steamed offshore and anchored for the night.

September 20.—Station 135: Hove up anchor at 6 a.m. Heavy sea running, with S.W. wind. Steamed inshore to try and get out of the swell, and shot the net for the first haul at 8 a.m. in 12 fathoms, dark-sand bottom, 4 miles N.E. x N. off the entrance to the Buller River. Towed on a N.W. course for 5 miles, and hauled up in 22 fathoms from a good soft-sand bottom. The result of this haul was very poor.

Station 136: Steamed south 2 miles, and shot for the next haul in 19 fathoms at 9.50 a.m., sand bottom, 5 miles N. x W. off the entrance of the Buller River. Towed S.W. for 4 miles, and hauled up in 12 fathoms. Result, poor as to quantity, but a very good variety of fish.

Station 137: Shot again for the next haul at 11.45 a.m. in 17 fathoms, Cape Foulwind bearing S.W. x S., $4\frac{1}{2}$ miles. Towed an hour and a half, and hauled up in 48 fathoms 5 miles N. $\frac{1}{4}$ W. of Cape Foulwind. This haul yielded 19 soles, 4 brill, 9 gurnard, 11 macrurus, and a quantity of ling, skate, and conger-eels.

Station 138: From last station steamed out 5 miles, and shot for another haul in 36 fathoms, mud bottom, at 1.45 p.m., Cape Foulwind bearing S. $\frac{3}{4}$ W., 10 miles. Towed on a westerly course for 4 miles and hauled up the net in 55 fathoms, 10 miles N. $\frac{1}{4}$ W. of Cape Foulwind. This haul was made in deeper water than any of the other hauls on this coast. The result was, however, very poor both as regards the quantity and variety of fish.

Station 139: After hauling up at station 138 steamed S. $\frac{1}{4}$ W. for 3 miles, and shot for the last haul in 55 fathoms at 3.20 p.m., bottom mud. Towed 3 miles on a N.W. course, and hauled up from 69 fathoms and mud bottom at 4.35 p.m. The result of this haul was again very poor.

As the weather was fine, with a steady glass, I decided to steam to the south of Hokitika and work north. After hauling up at station 139 steamed on south.

September 21.—Station 140: Arrived off Hokitika at 6 a.m., and commenced work to the south of the river. Finding good bottom where the first soundings were taken, the net was put over for the first haul at 6.15 a.m., depth 50 fathoms, bottom dark sand, Hokitika bearing N.E. x E., $8\frac{1}{2}$ miles. Towed on a course N. $\frac{1}{4}$ E. for an hour and a quarter, and hauled up in 49 fathoms from the same bottom as the net was shot in, Hokitika bearing S.E. x E., 6 miles. The result of this haul was poor, the market-fish consisting of a few schnapper, tarakihi, red-cod, and gurnard.

Station 141: After hauling up at last station steamed inshore to shallower water, and shot the net for the next haul in 11 fathoms, soft-sand bottom, at 8 a.m., Hokitika bearing S.E. x S. $\frac{3}{4}$ S., $3\frac{1}{2}$ miles. Towed up the coast for an hour and a quarter, and hauled up in 15 fathoms, Arahura River bearing S. $\frac{3}{4}$ E., 5 miles. The character of the bottom indicated good flatfish-grounds, but the result of the haul was disappointing in this respect, and also with regard to other fish taken,

Station 142 : From last station steamed out on a N.W. course for 3 miles, and shot for another haul in 41 fathoms, on a good sand bottom, at 9.45 a.m., Teremakau River bearing E. $\frac{1}{4}$ N., $5\frac{1}{2}$ miles. Towed on a N. x W. course for 6 miles, and hauled up in 45 fathoms from good bottom at 11 a.m. This haul gave a very good variety of fish, but the quantity was poor.

Station 143 : Steamed inshore from last station and shot for the next haul at 11.40 a.m. in 25 fathoms, bottom sand, Greymouth bearing N.E. x E. $\frac{3}{4}$ E., $7\frac{1}{2}$ miles. Towed on a north-easterly course for an hour and a half, and hauled up in 25 fathoms, 3 miles west of the entrance to Grey River. This haul was similar to the others made to-day, giving a fair variety but poor quantity of fish.

Station 144 : After hauling up at last station, steamed out about 3 miles, and shot for the next haul in 30 fathoms, sand bottom, at 1.45 p.m., Greymouth bearing E. x N. $\frac{1}{4}$ N., $5\frac{1}{2}$ miles. Towed 4 miles on a north-easterly course, and hauled up in 20 fathoms. This haul gave better results as regards quantity than any to-day.

Station 145 : Shot for the last haul to-day at 3.15 p.m. in 23 fathoms, good sand bottom, Elizabeth Point bearing E.S.E. Towed on an easterly course for 3 miles, then altered to N. x E. Hauled up in 17 fathoms at 4.30 p.m., Elizabeth Point bearing S.E. $\frac{1}{4}$ E., 3 miles. This haul gave very poor results, the only fish in the net when hauled up were 2 schnapper, 7 soles, 1 ling, 9 gurnard, 7 macrurus, and a few dogfish and skate. After hauling up steamed out about 10 miles, and lay-to for the night.

September 22.—Station 146 : As the weather was fine, but with low glass and indications of approaching bad weather, the men agreed to work to-day on the understanding that they got a day off when the vessel arrived at Wellington in exchange for this Sunday. Sounded at 6.15 a.m., and finding 82 fathoms the net was shot and towed out to over 100 fathoms and back to 85 fathoms. In shooting the net at 82 fathoms the position was Elizabeth Point bearing E. $\frac{1}{4}$ N., 11 miles; at 100 fathoms, Elizabeth Point bearing E. x S., 13 miles; and at hauling up, Elizabeth Point bearing E.S.E., 12 miles. Throughout the haul soft bottom was experienced, and only deep-water fish were taken—viz., hapuka, ling, kingfish, tarakihi, and macrurus.

Station 147 : After hauling up at last station steamed on an E. x N. course for 4 miles to get shallower water, and shot for the next haul in 41 fathoms, soft-sand bottom, at 9 a.m. Towed on a N.E. course for $6\frac{1}{2}$ miles, and hauled up in 28 fathoms. When net shot Elizabeth Point bore S.E. $\frac{1}{4}$ E., 10 miles, and in hauling, S.E. $\frac{1}{4}$ E., 10 miles. Result of this haul was poor.

Station 148 : Steamed 6 miles after hauling up at last station N. x E., arriving at a position $2\frac{1}{2}$ miles W. x S. of Razorback. Shot the net at 11.15 a.m. in 29 fathoms, bottom dark sand. Hauled up at 1 p.m. in 25 fathoms, Perpendicular Point bearing N.E. $\frac{1}{2}$ E. Result, a very small quantity of fish.

Station 149 : From last station steamed N.W., 5 miles, and shot for the next haul at 2 p.m. in 25 fathoms, dark-sand bottom. Towed N. x W., 5 miles, and hauled up in 24 fathoms. Result again very poor.

Station 150 : After hauling up at last station steamed N.E. x E. for 5 miles, and shot for the last haul at 3.50 p.m., Charleston bearing S.E. x E. $\frac{1}{2}$ E., $4\frac{1}{2}$ miles, depth 22 fathoms, and dark-sand bottom. Towed an hour and a half on a N.W. course, and hauled up in 24 fathoms, Charleston bearing E.S.E., $8\frac{1}{2}$ miles. This was a very poor haul both as to quantity and variety of fish. Lay-to for the night.

September 23.—Station 151 : The net was put over for the first haul to-day at 6.30 a.m., 13 miles N.W. of Cape Foulwind, in 50 fathoms, bottom sand. Towed 5 miles on a S.E. course, and hauled up in 55 fathoms at 8 a.m. Result, a fair quantity of red-cod, kingfish, tarakihi, and soles.

Station 152 : After hauling up at last station steamed inshore, inside the Steeples, and shot for another haul at 8.30 a.m. Towed 6 miles N.E. $\frac{3}{4}$ E., and hauled $2\frac{1}{2}$ miles off the entrance of the Buller River. The quantity of fish taken in this haul was rather poor. The fish included a number of soles and brill of splendid quality. After hauling up, went into Westport to coal, water, and land fish.

September 24.—Station 153 : Left Westport at 11 a.m. to test the deep water of Karamea, and then on to Farewell Spit. Weather thick, with strong N.E. wind and low glass. Steamed 25 miles N.E. of Westport entrance, and sounded : depth 52 fathoms, and good bottom. Put over the net at 3 p.m. Hauled up at 4 p.m., Karamea Beacon bearing E. x N., $11\frac{1}{2}$ miles. This haul gave a fair quantity of kingfish, with a few soles, schnapper, and tarakihi.

Station 154 : Steamed N.E. from last station, and shot for another short haul at 4.30 p.m. Depth 58 fathoms, sand bottom, Heaphy River bearing E. x N. $\frac{1}{2}$ N. Towed three-quarters of an hour, and hauled up as the weather was bad. Result, very few fish.

After hauling up, steamed up the coast, intending, if weather favourable, to work off Wanganui Inlet; but when we arrived off there the weather was so bad that we had to steam on round Cape Farewell, arriving off Farewell Spit at 4 a.m.

September 25.—Weather very bad with heavy sea, and gale blowing, with low glass. Several soundings were taken, the depth varying from 33 to 36 fathoms. At 8 a.m. it was decided to run for Tasman Bay to shelter. Experienced a very heavy sea until well in to Separation Point. Arrived in Awaroa Bay at 1 p.m. Four other steamers came in for shelter shortly after our arrival.

September 26.—At anchor in Tootararui Bay. Weather very stormy, strong gale, with heavy sea outside, glass low.

September 27.—Station 155 : Weather clearing. Left anchorage in Tootararui Bay at 7 a.m., and made out to try and locate a hapuka-bank which was reported to exist about 3 miles off. Put over the net at 8 a.m. in 19 fathoms, mud bottom, Tootararui Bay bearing W. x N. $\frac{1}{2}$ N., 3 miles. Towed an hour and a half, and hauled up in 18 fathoms, mud bottom. Result, a fair haul of schnapper, soles, tarakihi, gurnard, red-cod, and 11 blue-cod.

Station 156 : Shot again for another haul at 10 a.m., depth 18 fathoms, mud bottom, Totaranui bearing W.S.W., $3\frac{1}{2}$ miles. Towed half an hour, when the net came fast, and was hauled up badly torn. Position, Totaranui bearing S.W. x W. $\frac{1}{4}$ W., $2\frac{1}{2}$ miles.

After hauling up at station 156, steamed for Golden Bay, the starboard net being got ready on the way up. On opening out Separation Point a fierce gale was encountered, and it increased, with a choppy sea, as we got further in, making work impossible, and we ran back to Totaranui, when all hands were put on to repair the port-side net.

September 28.—Station 157 : The weather continuing unsettled, with a heavy sea outside Farewell Spit, I decided to work down the west and south side of Tasman Bay. Hauled up the anchor in Totaranui Bay at 5.30 a.m., and steamed two hours down the west coast, until south of Astrolabe. Finding suitable depth and bottom, the net was put over for the first haul at 7.45 a.m., depth 11 fathoms, and mud bottom, the position being Kaiteri Cove bearing W. x S. $\frac{1}{4}$ S., 3 miles. Towed on a S. $\frac{1}{2}$ E. course for 5 miles, and hauled up at 9 a.m. in 12 fathoms, Boat Harbour Island bearing W.S.W., 3 miles. Result, a fair haul of flounders, soles, schnapper, gurnard, tarakihi, red-cod, and barracouta.

Station 158 : As the prospects of getting on to good fish at the last station were encouraging, the net was shot right away for another haul at 9.15 a.m., depth 12 fathoms, mud bottom. Towed an hour and three-quarters, and hauled up in 16 fathoms, Boat Harbour Island bearing S.W. x W. $\frac{1}{2}$ W., 8 miles. This haul yielded a very fair quantity of flounders, soles, schnapper, gurnard, barracouta, and red-cod.

Station 159 : The last haul also giving encouraging results, after clearing the net it was shot again, the depth being 16 fathoms, mud bottom, and the time 11.15 a.m.; Boat Harbour Island bearing S.W. x W. $\frac{1}{2}$ W., 8 miles. Towed on an E. x S. course for 6 miles, and hauled up 4 miles west of Pepin Island. Result, considering the time the net was down, a very good haul of the best market-fish, including 96 flounders, 34 soles, 76 gurnard, 14 schnapper, 6 tarakihi, and a number of red-cod and kingfish.

Station 160 : As the prospects improved at every haul as we worked eastward, the net, as soon as cleared at the last haul, was shot again, depth 17 fathoms, bottom mud, time 1.30 p.m., position 4 miles west of Pepin Island. Towed for two hours and a half, and hauled up in 19 fathoms at 4 p.m., Pepin Island S. $\frac{1}{2}$ E., 6 miles. This proved to be the best haul to-day, giving 110 flounders, 54 soles, 80 schnapper, 63 gurnard, 56 red-cod, and a quantity of kingfish and tarakihi—all prime market-fish. After hauling up, we steamed back to Totaranui Bay, and anchored for the night.

September 29, Sunday.—At anchor in Totaranui Bay.

September 30.—Station 161 : Hove up anchor in Totaranui Bay at 5.30 a.m. As the weather was still unfavourable for work outside of Farewell Spit, I decided to work Golden Bay, where the net was shot for the first haul at 6.40 a.m., depth 13 fathoms, and bottom mud; position 4 miles N. x W. of Separation Point. Towed two hours and a quarter, and hauled up in 15 fathoms, Tata Island bearing S.W. x S., 3 miles. Result, a very good bag of mixed fish.

Station 162 : As the prospects at the last haul were encouraging, the net was shot, after clearing away from the last haul. Depth 15 fathoms, bottom mud, time 9.15 a.m. Towed two hours and a half, and hauled up in 15 fathoms, Streaky Head bearing W. x N., 5 miles. This haul gave a very fair bag of mixed fish.

Station 163 : Shot again for the next haul at 11.40 a.m., depth 15 fathoms, bottom mud; position, Streaky Head bearing W. x N. $\frac{1}{2}$ N. Towed 3 miles on a N.W. course into 12 fathoms, then altered the course and towed out 4 miles E. x N., and hauled up in 17 fathoms, Streaky Head bearing N. x S., $5\frac{1}{2}$ miles. This haul yielded a large bag of fish, principally schnapper, flounders, soles, gurnard, kingfish, and red-cod.

Station 164 : After hauling up at last station, shifted position two miles to the southward, and shot the net for the last haul at 2.15 p.m., depth 17 fathoms, and the same mud bottom which we have found all over this Bay; the position being N.W. x W. of Tata Island. Towed two hours on a S.E. $\frac{3}{4}$ E. course, and hauled up in 19 fathoms, Tata Island bearing S. The result of this haul was also very satisfactory, giving a good quantity and variety of the best market-fish. Blowing a gale all afternoon. After hauling up at station 164, returned to Totaranui Bay, and anchored for the night. Unwell.

October 1.—Station 165 : Unsettled weather, with low glass, and heavy swell outside. I decided to put in another day in Golden Bay. Hove up anchor in Totaranui Bay at 6 a.m. Shot the net 2 miles N.W. of Separation Point at 7.30 a.m., in 17 fathoms, mud bottom. Towed 6 miles on a N.W. course, and hauled up in 16 fathoms at 9.30 a.m., Separation Point bearing S.E. $\frac{1}{2}$ E. 7 miles. This haul gave a very good bag of schnapper, gurnard, red-cod, and a quantity of flounders.

Station 166 : After hauling up at last station, shifted ground 3 miles to the south-west, and shot for another haul at 10.10 a.m., 16 fathoms, mud bottom; Separation Point bearing E.S.E., 9 miles. Towed an hour and a half, and hauled up in 17 fathoms. Result, a fair haul of fish.

After hauling up at station 166 at 11.40 a.m., left for Nelson to get medical attention for myself.

October 2.—Left Nelson at 5 a.m. for outside Farewell Spit. Came on fierce gale, with heavy rain, at 8 a.m. With such weather work outside Farewell Spit was out of the question, and I decided to go into Golden Bay again; but when we rounded Separation Point the gale was so strong that there was no prospect of working, so we ran back to Totaranui Bay to shelter. Gale continued all day.

October 3.—Station 167 : Left anchorage in Totaranui Bay at 4.30 a.m. for Golden Bay. Shot the net for the first haul at 5.40 a.m. in 16 fathoms, Streaky Head bearing W. x S. $\frac{1}{2}$ S., 6 miles. Towed an hour and a half, and hauled up in 17 fathoms, Spit Light bearing N.E. $\frac{1}{2}$ N., 9 miles. Result, a good haul of mixed fish.

Station 168 : Shot for the next haul in 17 fathoms, mud bottom, at 7.30 a.m., Spit Light bearing N.E. $\frac{1}{2}$ N., $8\frac{1}{2}$ miles. Towed two hours and a half, and hauled up in 19 fathoms, Spit Light bearing

N. x E. $\frac{1}{4}$ E., $6\frac{1}{4}$ miles. This haul gave a very good variety of fish, but the quantity was not equal to any of the other hauls in this bay.

Station 169 : From hauling up at last station steamed $6\frac{1}{2}$ miles E. x N., and shot for another haul in 23 fathoms at 10.30 a.m., Farewell Spit Light bearing N.W. $\frac{1}{4}$ N., $8\frac{1}{2}$ miles. Towed 5 miles on an E. $\frac{1}{2}$ N. course, and hauled up in 25 fathoms at 12 p.m. Result, a good variety but only moderate quantity of fish.

Station 170 : From last station steamed out 11 miles on an E. $\frac{1}{2}$ N. course, and shot for another haul at 1.30 p.m., Farewell Spit Light bearing W., $21\frac{1}{2}$ miles, depth 30 fathoms, bottom sand and mud. Hauled up at 3 p.m. in 35 fathoms from a sand bottom, Farewell Spit Light bearing W. $\frac{1}{2}$ S., 26 miles. This haul was a rather poor one, the market-fish being represented by a few gurnard, kingfish, tarakihi, and schnapper.

Station 171 : Steamed 10 miles E. $\frac{1}{2}$ N. from last station, and shot for the last haul in 36 fathoms, 10 miles west of Stephens Island, bottom sand. Hauled up at 5.45 p.m. in 41 fathoms, sand bottom, Stephens Island bearing E. x S., 5 miles. This haul gave a fair variety of round fish, but no soles or flounders, the quantity being similar to the last haul.

After hauling up at station 171 left for Wellington to have the refrigerating-engines repaired, and to take coal and water. Arrived at Wellington at 7.30 a.m. on the 4th.

October 4.—The Department, having reconsidered the question of prospecting the grounds in the north, decided to work a section on the east coast from the Hauraki Gulf northward, and as there was a much better prospect of getting fine weather on the west coast during the month of November, it was considered advisable to do the east coast section at once. As the owners could have the repairs to the refrigerating-engines done better at Napier, the "Nora Niven" left Wellington for the north at 4 p.m. to-day.

October 5 and 6.—"Nora Niven" arrived at Port Ahuriri on the 6th.

October 7.—Repairs being effected to refrigerating-engines.

October 8.—Repairs to engines finished to-day.

October 9.—"Nora Niven" sailed from Port Ahuriri for Auckland.

October 10.—On run from Port Ahuriri to Auckland.

October 11.—Owing to heavy weather "Nora Niven" had to put into Hicks Bay for shelter.

October 12.—Sheltering in Hicks Bay.

October 13.—Left Hicks Bay for Auckland.

October 14.—Arrived Auckland at 5 p.m.

October 15.—Coaling at Auckland. Captain McAlister ill, and ordered ashore by doctor.

October 16.—"Nora Niven" was unable to proceed to sea to-day owing to Captain McAlister's illness. Making arrangements with the owners for another captain to be employed temporarily.

October 17.—"Nora Niven" left Auckland at 4 a.m. to prospect outside the trawling limits in the Hauraki Gulf. Captain Nielsen temporarily in charge.

Owing to continued indisposition, the Department, acting on my medical adviser's advice, decided to allow me to leave the vessel, and Mr. H. Stephenson, Inspector of Fisheries for the Bay of Islands, was put in charge for the remainder of the cruise. I accompanied the vessel to-day for the purpose of instructing Mr. Stephenson in the work, and from this date the records were kept and reports of the cruise were supplied by him.

October 17.—Station 172 : Auckland was left at 4 a.m. for the north of Tiri Island and outside of the trawling limits. The net was shot for the first time at 7.15 a.m. 3 miles due north of Tiri Island in 30 fathoms, mud bottom. Towed N. x E. for 2 hours, and hauled up from 26 fathoms, mud bottom. The result of this haul was a large bag of fish, principally schnapper.

Station 173 : The net was shot again 10 miles N.E. of Tiri Island in 24 fathoms, sand bottom. Towed an hour and thirty-five minutes, and hauled up, Cape Colville bearing E.N.E., $9\frac{1}{2}$ miles. This haul yielded fair results, the principal market-fish being schnapper and John-dory, with a considerable quantity of horse-mussel shell and sponges.

Station 174 : The net was shot again 8 miles W.S.W. of Cape Colville in 30 fathoms, bottom mud and sand. Towed an hour and three-quarters, and hauled up from a mud bottom in 27 fathoms, 5 miles S.W. of Cape Colville. The net came up badly torn in the belly and badly chafed at the cod-end, through being hauled over rough bottom. This haul consisted principally of John-dory and schnapper, and although a large number escaped, owing to the net being torn, yet fully half a ton were landed on deck.

Station 175 : The net was shot for the last haul to-day 5 miles S.W. Cape Colville, in a depth of 26 fathoms, mud-and-sand bottom. Towed 4 miles, and hauled up in 25 fathoms. The bottom throughout the haul proved to be clean. This haul yielded excellent results, the catch consisting principally of schnapper, dory, and trevalli. After hauling from last station we steamed for Man-o'-war Bay, Waiheke Passage, where the Chief Inspector of Fisheries was landed, and we anchored for the night.

October 18.—Station 176 : Hove up anchor at Man-o'-war Bay at 5 a.m., and steamed out to $4\frac{1}{2}$ miles W. $\frac{1}{2}$ S. of Channel Island, where the net was shot in 27 fathoms, mud-and-sand bottom, at 7.45 a.m. Towed an hour and a quarter in a N.W. x N. direction, and hauled up in 27 fathoms. This haul gave very good results, consisting again principally of schnapper and a few other varieties of market-fish.

Station 177 : The net was shot again at 9.55 a.m., 6 miles N.W. $\frac{3}{4}$ W. of Channel Island, depth 25 fathoms, bottom mud and sand. As soundings indicated rough bottom, the net was only towed an hour and hauled up in 27 fathoms, bottom coral and shell. The result of this haul, poor both as regards the quantity and variety of fish.

Station 178 : From last station steamed 5 miles S. x E., and shot the net at 12 noon, 4 miles S.S.E. from Little Barrier, depth 28 fathoms, bottom mud and sand. Hauled up $4\frac{1}{2}$ miles W. $\frac{1}{4}$ S. of the Little Barrier in 28 fathoms, bottom coral and shell. This was also a short haul, and the results were as poor as the previous one.

Station 179 : From station 178 steamed south, 5 miles, and shot the net at 2 p.m. 6 miles N.N.E. from Flat Rock in 29 fathoms, bottom sand and shell. Towed an hour and twenty minutes S. x W., and hauled up in 29 fathoms from a sand-and-shell bottom. Good trawling-bottom was experienced with this haul, and the result was a decided improvement, both as regards quantity and variety of market-fish.

Station 180 : The net was shot for the last haul to-day at 3.40 p.m., 3 miles N.E. x E from Flat Rock, depth 29 fathoms, sand-and-shell bottom. Soundings indicating rocky bottom, the net was hauled up after towing three-quarters of an hour. The result of this haul was very good for the short time the net was down, yielding 300 schnapper, 80 John-dory, and a number of other market-fish. After hauling up at 4.25 p.m. we steamed a course for Auckland for the purpose of taking Captain McAlister on board.

October 19.—Lying alongside Auckland wharf landing fish and repairing net.

October 20.—Left Auckland at midnight for an extended cruise north.

October 21.—Station 181 : Arrived to the west of the Little Barrier at 7.30 a.m., when the net was put over for the first haul, 4 miles W. x S. $\frac{1}{2}$ S. of Little Barrier Island, depth 31 fathoms, bottom sand and shell. Towed $4\frac{1}{2}$ miles N.N.W., and hauled up at 9.5 a.m. from 30 fathoms, sand-and-shell bottom. The result of this haul was very poor.

Station 182 : After hauling up at the last station steamed 17 miles in a north-westerly direction, and shot the net at 12.15 p.m., 2 miles N.E. x N. from the outer island of Hen and Chickens, depth 50 fathoms, mud-and-shell bottom. Towed 4 miles N.W. $\frac{3}{4}$ W., and hauled up at 1.15 p.m. in 55 fathoms, mud-and-shell bottom. The result of this haul being poor as regards quantity. The market-fish were represented by John-dory, kingfish, moki, tarakihi, gurnard, and schnapper. As the steamer had to return to Auckland for cleaning boilers and coaling before going round the North Cape to work the west coast, I decided, in order to make the most of the time at my disposal on the east coast, to go as far north as necessary and work back, and therefore, after hauling up at station 182, we steamed north, calling at Russell on the way.

October 22.—Station 183. Left Russell at 6 a.m. for Great Exhibition Bay, near the North Cape. Arrived there and shot the net at 3 p.m. in 32 fathoms, the soundings made showing sand and shell ; but the net had only been towed ten minutes when it fouled, and when hauled up it was found that the foot-rope was cut through, showing plainly that it had come in contact with rocky bottom.

Station 184 : Soundings taken in the vicinity of the last haul showing rough bottom, we steamed in a westerly direction 6 miles, and shot the net in 34 fathoms, on a sand bottom, at 4.35 p.m. Towed an hour and hauled up from 30 fathoms, bottom sand and shell. This haul yielded poor results, and after taking in the net we anchored for the night.

October 23.—Station 185 : Upheaving the anchor, we steamed inshore for 2 miles, and shot the net at 7.45 a.m. in 23 fathoms, on a clean sand bottom. Towed S.E. $\frac{1}{2}$ E. and hauled up at 9.10 a.m., 15 fathoms, sand-and-mud bottom. This haul yielded very good results, giving a large haul of tarakihi, moki, schnapper, and maumau.

Station 186 : After hauling up at the last station, steamed an hour N.N.W., and shot net at 10.40 a.m. in 14 fathoms, bottom white sand. Towed 5 miles N.N.W., and hauled up at 12.5 p.m. in 9 fathoms from hard-sand bottom. This haul also yielded very good results, consisting of schnapper, tarakihi, trevalli, and a large quantity of moki.

Station 187 : After hauling up from station 186, went closer inshore, and shot the net for the third haul to-day in 9 fathoms, hard-sand bottom, at 12.20 p.m. Towed N.N.W. an hour and forty minutes, and hauled up in 7 fathoms, bottom hard sand, 3 miles S.S.E. of Coal Point and abreast of Parengarenga Harbour. This haul was poor.

Station 188 : After hauling up at last station, steamed down the coast 5 miles, and shot the net 6 miles S.E. $\frac{1}{2}$ S. from Coal Point at 2.25 p.m., depth 11 fathoms, hard-sand bottom. Towed S.E. two hours and twenty-five minutes, and hauled up in 17 fathoms, hard-sand bottom. This was a good haul both as regards quantity and quality of fish. Steamed south to Ohora Bay, and anchored for the night.

October 24.—Station 189 : Hove up the anchor in Ohora Bay at 6.30 a.m., and steamed offshore into 11 fathoms. Shot the net at 7.30 a.m., lead showing hard-sand bottom. Towed for half an hour, when the net fouled, and was hauled up badly torn and foot-rope carried away. Catch here was also poor. Several soundings were taken out to deeper water ; but, the bottom being too rough for safe trawling, we decided to steam south to Doubtless Bay.

Station 190 : Arrived off Doubtless Bay 11.10 a.m., and mud bottom being found in 55 fathoms, the net was shot and towed E. x S. for two hours and ten minutes, and hauled up in 50 fathoms. This haul yielded fair results, principally tarakihi.

Station 191 : After hauling up from station 190 several soundings were taken, and showed a risky bottom, so we steamed south 17 miles, and shot the net at 4.30 p.m. off Takau Bay in 35 fathoms, bottom fine sand. Towed S.E. 2 miles, and hauled up from the same depth and character of bottom as we shot in. This was a very poor haul as regards fish-taking : the net came up with large quantities of marine vegetation. After hauling up we steamed into Russell, and anchored for the night.

October 25.—Station 192 : Left Russell wharf at 6 a.m., and arrived off Whale Rock, Bay of Islands, at 7.30. The net was shot for the first haul to-day 2 miles N.N.W. of Whale Rock buoy ; depth 40 fathoms, and a mud bottom. Towed north an hour and ten minutes when, the soundings showing

rock bottom, the net was hauled up in 45 fathoms and found to be badly torn. This was a poor haul, the only fish represented being John-dory, tarakihi, and twenty-four red-schnapper.

Station 193 : Steamed south from the last haul to 4 miles E. $\frac{1}{2}$ N. of Whangamumu, and finding a sand-and-mud bottom in 40 fathoms the net was put over at 10.40 a.m. After towing for an hour, the lead showing rocky bottom, the net was hauled up, and again found to be badly damaged. Result of this haul was nil. Finding that it would take up the rest of the day to repair the nets, it was decided to proceed on towards Auckland. Anchored off Tiri Island for the night.

October 26.—Station 194 : Hove up the anchor off Tiri at 5.30 a.m., and the net was shot at 5.55 a.m., 5 miles N. x W. from Tiri Island, in 19 fathoms, on a good mud-and-shell bottom. Towed an hour and fifty minutes, and hauled up from the same depth and character of bottom that the net was shot in. This haul yielded a very large bag of fish, consisting principally of John-dory, gurnard, and a very large quantity of schnapper. After hauling up, we went on to Auckland for the purpose of landing fish, cleaning boilers, coaling, &c.

October 27, 28, and 29.—Alongside Auckland wharf.

October 30.—Alongside Auckland wharf all day. Left Auckland at midnight for Cape Maria, in order to commence trawling down the west coast.

November 1.—Station 195 : Cape Maria was passed at 8 a.m. Owing to the heavy swell it was impossible to undertake any work off the Pandora Bank, and the net was shot 8 miles S.E. of Cape Maria at 9.30 a.m. in 20 fathoms, bottom grey sand. Towed S.E. for 5 miles, and hauled up in 25 fathoms, bottom grey sand, at 11.5 a.m. This haul yielded very fair results as to quantity, and consisted of John-dory, barracouta, tarakihi, gurnard, schnapper, trevalli, kahawai, crayfish, and sharks.

Station 196 : From hauling up at last station steamed inshore for 4 miles, and shot net in 17 fathoms, 3 miles S.E. x S. from Motu Pia at noon, bottom grey sand. Towed S. x E. $\frac{1}{2}$ E. for an hour, and hauled up in 19 fathoms, bottom grey sand, this haul also yielding fair results.

Station 197 : Steamed S.E. x E. 5 miles, and shot the net at 2 p.m. in 15 fathoms, bottom grey sand. Towed S.E. an hour and a half, and hauled up in 10 fathoms. The result of this haul was satisfactory, quantity and variety being better than the two previous ones.

Station 198 : Steamed inshore 4 miles, and shot the net for the last haul for the day at 4 p.m., 4 miles W. $\frac{1}{2}$ S. from Utea ; depth 14 fathoms, and the bottom the same grey sand as we have had since rounding Cape Maria. Towed S.E. for 4 miles, and hauled up in 15 fathoms from the same character of bottom. This haul yielded similarly satisfactory results to the three previous hauls made to-day, and after hauling up the net anchored for the night.

November 2.—Station 199 : Hove up the anchor at 6.30 a.m., and steamed out 7 miles. Shot the net at 8 a.m., 23 fathoms, on a sand-and-shell bottom. Towed S.E. an hour and a half, and hauled up in 25 fathoms from a fine sandy bottom. Good even sand bottom was found throughout the haul, and a fair bag of fish was taken.

Station 200 : Steamed south from last station for 8 miles, and shot the net 4 miles S. x W. from Reef Point at noon, in 25 fathoms, fine-sand bottom. Towed S.E. for an hour and a half, and hauled up the net in 24 fathoms, bottom fine sand. This haul yielded a satisfactory quantity of market-fish, consisting of John-dory, moki, tarakihi, gurnard, schnapper, skate, trevalli, and crayfish.

Station 201 : Steamed down the coast 7 miles from hauling up at station 200, and shot again 2 miles south of Whangapapa River, in 20 fathoms, sand-and-shell bottom. Towed S. E. for 3 miles, and hauled up from a fine-sand bottom, in 17 fathoms, at 4.45 p.m. This is the poorest haul made since rounding Cape Maria. Anchored for the night.

November 3.—Station 202 : Hove up anchor at 6.30 a.m., and steamed S.E. for 17 miles. The net was put over for the first haul to-day at 9 a.m., 10 miles N.N.W. from Mangonui Bluff, depth 35 fathoms, sand-and-shell bottom. Towed S.E. for 3 miles, and hauled up from a sand-and-shell bottom in 38 fathoms, at 10.15 a.m. This haul only yielded fair results with regard to quantity, and the variety similar to what we have obtained all along the west coast.

Station 203 : Steamed 3 miles after hauling up, and again shot the net, in 35 fathoms, fine-sand bottom, 3 miles S. x W. from Mangonui Bluff, at 11 a.m. Towed S.E. for 3 miles, and hauled up from the same depth and bottom as the net was shot in at 12.10 p.m. The result of this haul was similar to the last as to quantity and variety of fish.

Station 204 : Continued working south, and shot the net for another haul at 1.40 p.m., 5 miles S.S.E. from Mangonui Bluff, depth 27 fathoms, bottom fine sand. Towed S.E. for an hour and hauled up in 25 fathoms from a fine-sand bottom. Result, a very satisfactory haul of market-fish, principally schnapper, tarakihi, and trevalli.

Station 205 : Steamed S.E. 7 miles from last station, and shot the net for the last haul to-day at 3.50 p.m., 15 miles S. $\frac{1}{2}$ S. from Mangonui Bluff, depth 25 fathoms, and the usual fine-sand bottom. Towed S.E. for an hour, and hauled up at 4.50 p.m., and, though a short haul, the result was satisfactory, consisting principally of schnapper, gurnard, tarakihi, and trevalli. After hauling up, anchored for the night.

November 4.—Station 206 : Hove up anchor at 6.30 a.m., steamed S.E. 5 miles, and shot the net, 26 miles S.E. from Mangonui Bluff, at 7.30 a.m.; depth 23 fathoms, bottom fine sand. This haul yielded very satisfactory results both as to quantity and variety.

Station 207 : After hauling up at last station, steamed 5 miles, and put over the net for the next haul 13 miles N.W. $\frac{1}{2}$ W. from Kaipara North Head at 10.30 a.m.; depth 20 fathoms, fine-sand bottom. Towed S.E. an hour and a quarter, and hauled up in 22 fathoms at 11.45 a.m. This haul only yielded fair results.

Station 208 : After hauling up at station 207, steamed S.E. x S. 10 miles, and put down the net for another haul at 1.20 p.m., the position being 6 miles S.W. $\frac{1}{2}$ W. from Kaipara Light, depth

22 fathoms, bottom fine sand. Towed east for an hour and twenty minutes, and hauled up in 10 fathoms from a dark-sand bottom at 2.40. This haul gave a fair variety of marketable fish, but the quantity was rather poor. After passing Kaipara a very decided change in the appearance of the bottom was noticeable, the sand changing from white to a fine, dark sand.

Station 209: From last station steamed east for 3 miles, and shot the net for the last haul for the day at 3.30 p.m., 9 miles S. x E. from Kaipara Light, depth 12 fathoms, bottom dark sand. Towed S.E. x E. for 4 miles, and hauled up from the same character of bottom and depth as the net was shot in. Result, a very good bag of schnapper and gurnard. We then anchored for the night.

November 5.—Station 210: Hove up anchor at 7 a.m., steamed S.E. 2 miles, and shot the net at 7.40 a.m., 15 miles S. x S. from Kaipara Light; depth 14 fathoms, dark-sand bottom. Towed S.E. an hour and fifty minutes, and hauled up at 9.30 a.m. in 11 fathoms, even dark-sand bottom. This haul yielded very good results both as regards quantity and variety of fish.

Station 211: Steamed S.E. 4 miles, and shot the net at 10.10 a.m., 22 miles S.E. $\frac{3}{4}$ S. from Kaipara Light; depth 14 fathoms, bottom dark sand. Towed S.E. for 4 miles, and hauled up from the same bottom in 13 fathoms at 11.20 a.m. Result very good.

Station 212: From station 211 steamed S. x W. 4 miles, and shot the net in 23 fathoms, dark-sand bottom, 12.15 p.m.; position 4 miles S.W. $\frac{1}{4}$ S. from Oaia Island. Towed S.E. for two hours, and hauled up from the same character of bottom and depth as the net was shot in. The result of this haul was very satisfactory both in quantity and variety of fish.

Station 213: Steamed S x W. 4 miles, and put over the net for the last haul to-day, 4 miles W. $\frac{1}{2}$ S. from Parera Island; depth 23 fathoms, dark-sand bottom. Towed S. x E. $\frac{1}{2}$ E. for 5 miles, and hauled up in 22 fathoms from a dark-sand bottom at 4.30 p.m. In comparison with the time the net was down, this haul yielded similar results to the last one. Anchored for the night off Manukau Heads.

November 6.—Station 214: Hove up anchor at 6.30 a.m. off Manukau Heads, steamed 6 miles W. x N., and shot the net for the first haul to-day, at 8 a.m., 11 miles W. x S. from Paratutai Island; depth 30 fathoms, and the usual dark-sand bottom. Towed S.W. x S. for 5 miles, and hauled up at 9.30 a.m., bottom dark sand. Result very good variety, consisting of soles, blue-cod, John-dory, king-fish, moki, gurnard, schnapper, skate, and trevalli.

Station 215: From station 214 steamed S.E. $\frac{1}{2}$ S. 5 miles, and shot the net at 10.30 a.m., 16 miles S.W. $\frac{1}{2}$ W. from Paratutai Island; depth 40 fathoms, bottom sand and shell. Towed S.S.E. for 5 miles, and hauled up from the same bottom in 38 fathoms at noon. Result very satisfactory.

Station 216: From station 215 steamed 5 miles N.E. $\frac{1}{2}$ E., and shot the net at 1.10 p.m., 13 $\frac{1}{2}$ miles S.W. x S. $\frac{1}{2}$ S. from Paratutai Island; depth 30 fathoms, bottom fine sand. Towed E. $\frac{1}{2}$ N. for 5 miles, and hauled up at 2.30 p.m. in 23 fathoms. Result very satisfactory.

Station 217: After hauling up from station 216, steamed 6 miles N.E. $\frac{1}{2}$ E., and put over the net for the last haul for the day at 3.5 p.m., the position then being 10 miles S. x W. $\frac{1}{2}$ W. from Paratutai Island, depth 18 fathoms, fine-sand bottom. Towed 2 $\frac{1}{2}$ miles E.N.E., when the course was altered to N.E. $\frac{1}{2}$ N., and we towed up the coast another 2 $\frac{1}{2}$ miles. Hauled up in 10 fathoms at 4.30 p.m. Result very good. Anchored for the night where the net was hauled in.

November 7.—Station 218: Hove up anchor at 6 a.m., steamed offshore for a mile, and put down the net, at 6.30 a.m., 7 miles S. x W. from Manukau South Head; depth 13 fathoms, bottom fine sand. Towed W.N.W. for 5 miles, and hauled up in 20 fathoms at 7.50, bottom fine sand. Result, a fair haul.

After hauling at station 218, steamed to Onehunga to land fish, coal, and take in stores.

November 8, 9, 10, and 11.—Lying at Onehunga wharf. The long detention here was caused by the difficulty of getting coal from Auckland by rail.

November 12.—Left Onehunga at 2 p.m., but on reaching Manukau Heads found the bar unworkable and the weather very bad, so anchored inside the Heads.

November 13.—Weather still bad, with heavy sea outside. Remained inside Manukau Heads all day.

November 14.—Hove up anchor inside Manukau Heads at 5 a.m. Crossed the bar at 6 a.m.

Station 219: Steamed south 12 $\frac{1}{2}$ miles, shot the net at 8 a.m. in 30 fathoms, sand-and-shell bottom, the position being S. x W. from Manukau Heads. Towed S.E. x S. for 5 miles, and hauled up at 9.35 in 38 fathoms, bottom sand and shell. This haul yielded fairly good results.

Station 220: After hauling up at last station, altered the course and steamed east 6 miles, and shot net for next haul at 11.10 a.m., position being 17 miles S. $\frac{1}{2}$ E. from Manukau Heads; depth 25 fathoms, sand-and-shell bottom. Towed S. E. for 2 hours, distance 6 miles. Hauled up in 20 fathoms from the same character of bottom as the net was shot in. This haul also yielded fair results, giving indications of getting on to flatfish-grounds.

Station 221: Steamed east 5 miles after hauling up, and shot the net 6 miles off the mouth of the Waikato River at 2.15 p.m.; depth 16 fathoms, with fine-sand bottom. Towed S.S.E. for 5 miles, and hauled up from the same depth and bottom that the net was shot in. The result of this haul was also satisfactory, giving a fair quantity of schnapper and also a quantity of soles, brill, and John-dory. Although some flatfish were taken in the last two hauls, yet the quantity did not come up to our expectations, considering the character of bottom and outlet from the Waikato River.

Station 222: After hauling up at station 221 steamed south for 4 miles, and shot again at 4 p.m. 11 miles S.W. x S. $\frac{1}{4}$ S. from South Waikato Head; depth 21 fathoms, fine-sand bottom. Towed S.S.W. for an hour, 4 miles, and hauled up in 23 fathoms, fine-sand bottom. Although this haul was only a short one, the results were satisfactory. After hauling up, anchored for the night.

November 15.—Station 223: Hove up anchor at 7 a.m., and steamed E. x S. 6 miles, and put over the net for the first haul 12 $\frac{1}{2}$ miles N.W. x W. $\frac{1}{2}$ W. from Woody Head; depth 23 fathoms, bottom fine sand. Towed E.S.E. for 5 miles, and hauled up at 9.35 a.m. in 20 fathoms, 8 miles N.W. x W.

from Woody Head. This was a very good haul, and gave more flatfish than any other made down the west coast.

Station 224: After hauling up at last station the course was altered: steamed S.E. x S. for 6 miles, and the net was shot for the second haul to-day at 10.50 a.m., the position being $8\frac{1}{2}$ miles S.W. x W. from Woody Head; depth 28 fathoms, and bottom fine sand. The net was towed S.W. x S. $\frac{1}{2}$ S. for 5 miles, and hauled up in 30 fathoms at 12.30 p.m. The result of this haul was very satisfactory, both as regards quantity and variety of fish.

Station 225: From last station we steamed on 4 miles in the same direction that the last haul was made, and put over the net for the next haul at 1.30 p.m., 5 miles N.E. x E. from Gannet Island; 23 fathoms, sand-and-shell bottom. The net was towed S. x W. an hour and a half, distance 5 miles, and hauled up in 25 fathoms from a good sand-and-shell bottom. This haul yielded a good variety of fish, but the quantity was not equal to the previous hauls.

Station 226: Altered the course E. x S. after hauling up at last station, and steamed $4\frac{1}{2}$ miles, and shot the net at 3.50 p.m., 4 miles S.S.W. from Gannet Island; depth 33 fathoms, sand-and-shell bottom. Towed E. $\frac{1}{2}$ S. for an hour, 4 miles, and hauled up in the same depth as that in which the net was shot. The sounding made before hauling up showed the bottom to be sand and rock. The net came up slightly damaged. The result of this haul was rather poor compared with the others made since leaving the Manukau. After hauling up, we steamed inshore, and anchored for the night under Albatross Point.

November 16.—Station 227: Hove up anchor at 7 a.m., and steamed out for 4 miles, and shot the net for the first haul at 8 a.m., the position being N. x W. from Albatross Point 4 miles, depth 16 fathoms, bottom fine sand. Towed N. x W. $\frac{3}{4}$ W. for two hours, 7 miles, and hauled up in 25 fathoms from the same character of bottom. This haul yielded very good results.

Station 228: After hauling up at last station, steamed S.W. $\frac{1}{2}$ S. 14 miles, and shot the net at 11.45 a.m., 9 miles W.S.W. from Albatross Point; depth 30 fathoms, fine-sand bottom. Towed S.W. $\frac{1}{2}$ W. for 5 miles, and hauled up at 1.30 p.m. in 34 fathoms, fine-sand bottom. This haul was also a very good one, consisting principally of schnapper, gurnard, tarakihi, and other varieties of market-fish.

Station 229: Altered the course after hauling up, and steamed E.S.E. 6 miles, and shot the net again at 2.30 p.m., 11 miles S.W. $\frac{3}{4}$ S. from Albatross Point, the depth being the same as the last haul was made in—30 fathoms—fine-sand bottom. Towed N.E. $\frac{3}{4}$ N. for an hour and a half, 5 miles, and hauled up in 33 fathoms from the same fine-sand bottom. This haul yielded very good results. After hauling up, steamed to the north of Albatross Point, where we anchored.

November 17, Sunday.—Lay at anchor under Albatross Point.

November 18.—Station 230: Hove up anchor under Albatross Point at 6 a.m., and steamed S. x W. 12 miles. The net was shot for the first haul at 8 a.m., 12 miles S. $\frac{1}{2}$ W. from Albatross Point; depth 30 fathoms, bottom fine sand. Towed S.W. $\frac{1}{2}$ W. an hour and a half, 5 miles, and hauled up in 27 fathoms from the same fine-sand bottom. This haul yielded a very good bag of fish.

Station 231: After hauling up at Station 230 altered the course to S.W., and steamed 6 miles, good sand-and-shell bottom being found at 31 fathoms. The net was shot for the next haul 10 miles W.S.W. from Rua Point, at 10.30 a.m. Towed S.S.W. for an hour and a half, 5 miles, and hauled up in 33 fathoms. This haul yielded fair results.

Station 232: After hauling up at last station altered the course to S.E., and steamed in for 6 miles. Put over the net for the next haul at 1 p.m., 13 miles S.W. x S. $\frac{1}{2}$ S. from Rua Point, in 28 fathoms, fine-sand bottom. Towed S. $\frac{1}{2}$ W. for an hour and a half, 5 miles, and hauled up in 30 fathoms. Result, very fair quantity and variety of fish.

Station 233: The course was altered after hauling up at station 232, and we steamed out 6 miles, and shot the net at 3.30 p.m., 17 miles W. $\frac{1}{2}$ N. from Mokau River; depth 30 fathoms, and bottom coarse sand. The net was towed S.W. x S. $\frac{1}{2}$ S. for 5 miles, and hauled up at 4.35 p.m. in 35 fathoms, coarse-sand bottom. This haul was a poor one, both as regards quantity and variety of fish. After hauling up, anchored for the night.

November 19.—Station 234: Hove up anchor at 6.30 a.m., and steamed S.E. for 6 miles, and put over the net for the first haul to-day at 8 a.m., 12 miles N. $\frac{1}{2}$ W. from Raleigh (Waitara), in 33 fathoms, coarse-sand and shell bottom. Towed S.S.W. for 5 miles, and hauled up at 9.35 a.m. in 38 fathoms, coarse-sand and shell bottom. Result, very satisfactory bag of fish.

Station 235: After hauling up, altered the course: steamed W. 6 miles, and shot the net for the next haul $14\frac{1}{2}$ miles N. $\frac{1}{4}$ W. from New Plymouth, at 10.45 a.m.; depth 45 fathoms, and bottom coarse sand. Towed S.W. $\frac{1}{2}$ W. for $5\frac{1}{2}$ miles, and hauled up the net at 12.40 p.m. from the same depth and bottom in which it was shot. Result rather poor.

Station 236: From station 235 steamed S. x W. 6 miles. Shot the net at 1.45 p.m., $8\frac{1}{2}$ miles N.W. $\frac{1}{4}$ W. from New Plymouth; depth 43 fathoms, and bottom coarse sand. Towed E. an hour, $3\frac{1}{2}$ miles, then altered the course to S.S.E., and towed in that direction an hour, $3\frac{1}{2}$ miles. Hauled up at 3.45 p.m. in 50 fathoms, coarse-sand bottom. This was a poor haul. After hauling up, we steamed into New Plymouth to get a supply of coal and provisions, and land fish. Arrived at New Plymouth Breakwater at 6 p.m.

November 20.—At New Plymouth. Coaled, obtained provisions, and landed fish, and left the Breakwater at 4 p.m., and anchored under Moturoa Island.

November 21.—Station 237: Hove up anchor off Moturoa Island at 4 a.m., and steamed south to 8 miles S.S.W. from Cape Egmont, when the net was shot in 50 fathoms, on a soft-mud bottom, at 8.15 a.m. Towed S.S.W. for 7 miles, and hauled up at 10 a.m. in 58 fathoms, bottom soft mud. The result of this haul was very poor.

Station 238 : After hauling up at station 237, decided to trawl across to Farewell Spit. Steamed 12 miles, and shot the net for the next haul at 11.50 a.m., the position being—lat. $39^{\circ} 41' S.$, long. $173^{\circ} 25' E.$ The depth was 61 fathoms, and bottom soft mud. Towed S.S.W. for an hour and a half, 5 miles, and hauled up in 62 fathoms from the same bottom. The result of this haul was almost a blank, the only fish in the net being 6 kingfish and 2 tarakihi.

Station 239 : Steamed on the same course 10 miles from last station, and shot the net for the next haul at 3 p.m., in 60 fathoms, soft-mud bottom, the position being—lat. $39^{\circ} 59' S.$, long. $173^{\circ} 12' E.$ Towed on the same course S.S.W. for an hour and a half, and hauled up in 60 fathoms, bottom mud. This haul was also a very poor one, consisting of a few kingfish and tarakihi. Lay-to for the night.

November 22.—Station 240 : Shot the net for the first haul to-day at 7.30 a.m., the position being—lat. $40^{\circ} 12' S.$, long. $173^{\circ} 1' E.$; depth 65 fathoms, and bottom soft mud. Towed S.S.W. for an hour and a half, and hauled up in 68 fathoms from soft-mud bottom. This haul was also very poor.

After hauling up at last station, steamed in towards Farewell Spit, taking soundings about every half-hour.

Station 241 : The net was shot for the next haul at 3.15 p.m., 9 miles N.W. x N. from Farewell Spit Light; depth 36 fathoms, bottom fine sand. Towed S.W. x W. for 5 miles, and hauled up at 5 p.m. in 11 fathoms from a fine-sand bottom. This haul gave satisfactory results. Lay-to for the night.

November 23.—Station 242 : Steamed down coast 19 miles, and shot the net at 7.15 a.m. $1\frac{1}{2}$ miles W. $\frac{1}{2}$ S. from the south headland of Wanganui Inlet; depth 21 fathoms, fine-sand bottom. Towed E. $\frac{1}{2}$ N. for 6 miles, and hauled up at 8.50 a.m. in 21 fathoms, and fine-sand bottom. This haul gave a very good variety of fish, but rather poor in quantity, which was rather disappointing, as it was expected that good hauls of flatfish would be obtained off this inlet.

Station 243 : Blowing a gale, and heavy sea to the south of Cape Farewell prevented any further work being done off Wanganui Inlet, and we had to steam to the east of the cape, and trawled with wind and sea. The net was shot at 10.15 a.m., 8 miles W. x N. from Farewell Spit Light, in very shallow water, lead only showing 4 fathoms, bottom fine sand. Towed N. x E. $\frac{1}{2}$ E. 6 miles, and hauled up at 11.55 a.m. in $8\frac{1}{2}$ fathoms from the same character of bottom. This haul was a very poor one as regards quantity generally, but gave a considerable number of soles.

Station 244 : Steamed S.E. from last station 7 miles. Shot the net at 1 p.m., 2 miles N.E. from Farewell Spit light; depth $9\frac{1}{2}$ fathoms, fine-sand bottom. Towed S.E. for an hour and a half, 6 miles, and hauled up in 13 fathoms from a fine-sand bottom. This haul was fairly satisfactory. After hauling up, steamed into Tōtaranui Bay; anchored.

November 24, *Sunday*.—Lay at anchor in Tōtaranui Bay.

November 25.—Station 245 : Hove up anchor in Tōtaranui Bay at 5 a.m., steamed out N.E. 30 miles, and shot the net at 9.40 a.m., 21 miles W. x N. from Stephens Island; depth 35 fathoms, soft-mud bottom. Towed N.E. $\frac{1}{4}$ N. for 4 miles, and hauled up at 11 a.m. in 40 fathoms, the same bottom the net was shot in. This haul yielded very poor results.

Station 246 : Weather threatening, with a considerable sea running, making work very difficult. Steamed on the same course, after hauling up, for 28 miles, testing the bottom by sounding with the lead in four places. At 3.10 p.m. decided to try another haul. Shot the net in 47 fathoms on a soft-mud bottom, the position being—lat. $40^{\circ} 14' S.$, long. $174^{\circ} 11' E.$ Towed N.E. $\frac{1}{4}$ N. for an hour and a half, 5 miles, and hauled up in 48 fathoms, soft-mud bottom. This haul was a very poor one, the only fish taken being 22 kingfish. After hauling up, lay-to for the night.

November 26.—Weather very bad, with heavy sea running. At 5 a.m. took soundings, which showed a depth of 48 fathoms, and sticky-clay bottom, so, owing to the bad state of the weather and risk of losing nets on such a bottom, I decided to abandon the work for the present and steam for Wellington. Arrived at Wellington 6 p.m.

November 27.—Lying in Wellington. Landed fish, and took in stores, &c.

November 28.—Left Wellington at 10 a.m. for Cloudy Bay for the purpose of prospecting for oyster-beds, which are reported to exist in that locality. Had a stormy passage across Cook Strait, blowing a W.N.W. gale, with very heavy sea. Anchored for the night in Port Underwood.

November 29.—Station 247 : Hove up anchor in Port Underwood at 7 a.m., and steamed out 8 miles. It was decided to make one haul of the trawl-net in Cloudy Bay before commencing dredging for oysters, and the net was shot at 9.15 a.m. 5 miles north of the Wairau bar, in 7 fathoms, mud bottom. Towed S.E. x E. for 5 miles, and hauled up at 10.50 a.m. in $7\frac{1}{2}$ fathoms. The result of this haul was rather poor as regards quantity, but a very good variety was taken.

After hauling up the trawl-net, commenced prospecting for oyster-beds. Made ten hauls with the oyster-dredge; found traces of oysters, but failed to locate any bed. Anchored in Port Underwood for the night.

November 30.—Hove up anchor in Port Underwood at 6 a.m. Owing to thick, squally weather, and the difficulty of picking up a position from where we left off the previous day, dredging was somewhat delayed; however, at 8 a.m. the weather cleared, and a start was made. Four casts of the dredge were made during the forenoon, but no satisfactory result was obtained. As there seemed little prospect of doing any good here, owing to the dredge being too light and unsuitable for using in such a vessel, I considered it would be only waste of time to remain any longer, and so I decided to leave for the west side of Cook Strait, in order to finish the trawling there. Anchored on Guard's Bank all night.

December 1, *Sunday*.—Lay at anchor in Guard's Bay.

December 2.—Station 248 : Hove up anchor in Guard's Bay at 7 a.m., and shot the net there for a haul before going out to the Strait. The net was put over at 7.30 a.m. in 9 fathoms, sand-and-mud bottom, towed 5 miles, the first $2\frac{1}{2}$ miles W. x S., and the other $2\frac{1}{2}$ miles N.W. x W. Hauled up at

9 a.m. from the same depth and character of bottom as the net was shot in. The net came up full of weeds, and contained very few fish.

Station 249 : After hauling up at station 248, steamed out N. x E. 15 miles, and shot the net for the next haul 12½ miles east of Stephens Island at 11.30 a.m. ; depth 55 fathoms, and bottom mud. Towed N.N.E. for 5 miles, and hauled up at 12.45 p.m. in 61 fathoms, mud bottom. The result of this haul was very poor, but the net came up practically free from weeds.

Station 250 : Weather threatening, with considerable sea running. Bottom being rather dangerous, we steamed N.N.E. for 12 miles, taking soundings. The net was put over for another haul at 2.30 p.m., 23½ miles N.E. x N. from Stephens Island ; depth 70 fathoms, bottom mud. Towed on the same N.N.E. course for 4 miles, and hauled up at 3.45 p.m. in 72 fathoms, from the same mud bottom. This haul proved to be almost a blank, the only fish taken being 9 kingfish and 3 schnapper. As the weather came on very bad, a gale blowing, with a heavy sea, we returned to Guard's Bay for shelter, and anchored for the night.

December 3.—Station 251.—As the weather moderated through the night, we hove up anchor in Guard's Bay at 6.30 a.m., and steamed out on a N.E. ½ E. course for 15 miles, taking several soundings on the way out to ascertain the character of bottom. The net was put over for the first haul at 9.10 a.m., 9 miles N.E. ½ E. from Jackson's Head ; depth 55 fathoms, bottom coarse sand. Towed in a N.E. ½ E. course for 5 miles, and hauled up at 10.45 a.m., in 75 fathoms, from a coarse-sand bottom. The result of this haul was poor, the fish consisting of 20 red-cod, 24 kingfish, 9 hapuka, 1 shark.

Station 252 : After hauling up at station 251, steamed on a S.E. course, 5 miles, and shot the net for another haul at 11.50 a.m., 12 miles W. x S. ½ S. from south end Kapiti Island ; depth 85 fathoms, bottom coarse sand. Towed N.E. ½ E. for 6 miles, and hauled up at 1.20 p.m. from the same depth and character of bottom as that in which the net was shot. The result of this haul was also very poor, only yielding 22 kingfish, 2 hapuka, 2 skate, and 6 sharks. After hauling up at this station the bottom was tested with the lead for a considerable distance, but found to be very soft and dangerous, similar to the bottom off Motunau Island during the first cruise, when two trawl-nets were lost. Considering the dangerous character of the bottom, and that the vessel has to be handed over to the owners at Wellington to-morrow, it was decided not to risk losing any gear by shooting the net again, so left for Wellington at 2 p.m., arriving at 9 p.m.

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE "NORA NIVEN."

Date.	Station.	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Trawl down.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	
1907.									
Sept. 9	107	10 a.m.	Wellington Harbour, E. of Somes Island	13	Mud	11 a.m.	Wellington Harbour, between Somes Island and Day's Bay	11	Mud
"	9	3.15 p.m.	Wellington Harbour, S.W. of Ward Island	13	"	4 p.m.	Wellington Harbour, between Somes Island and Day's Bay	13	"
"	11	6.35 a.m.	Tasman Bay, Separation Point, bearing S.W. x W. $\frac{1}{2}$ W. 5 miles	27	"	9 a.m.	Tasman Bay, Separation Point, bearing W. x S. 15 miles	30	"
"	11	10 a.m.	Tasman Bay, Separation Point, bearing W. $\frac{3}{4}$ S. 19 $\frac{1}{2}$ miles	26	"	11.30 a.m.	Tasman Bay, Separation Point, bearing W. $\frac{3}{4}$ S. 24 $\frac{1}{2}$ miles	26	"
"	11	12.15 p.m.	Tasman Bay, Ragged Point, bearing E. x N. $\frac{1}{2}$ N. 9 $\frac{1}{4}$ miles	26	"	1.30 p.m.	Tasman Bay, Ragged Point, bearing N.E. $\frac{3}{4}$ E. 4 $\frac{1}{2}$ miles	30	"
"	11	2.30 p.m.	Tasman Bay, Ragged Point, bearing N.E. x N. $\frac{3}{4}$ N. 8 miles	30	"	4 p.m.	Tasman Bay, Ragged Point, bearing N.E. x E. 8 $\frac{1}{2}$ miles	30	"
"	12	7.15 a.m.	Tasman Bay, Cape Soucis, bearing S.E. 3 $\frac{1}{2}$ miles	19	"	9 a.m.	Tasman Bay, Cape Soucis, bearing E. x N. $\frac{3}{4}$ N. 4 miles	18	"
"	12	9.15 a.m.	Tasman Bay, Graham Point, bearing E. $\frac{1}{2}$ N. 4 miles	20	"	10.45 a.m.	Tasman Bay, E. end, Pepin Island, bearing S. $\frac{3}{4}$ W. 2 $\frac{1}{2}$ miles	15	"
"	12	11 a.m.	Tasman Bay, W. end Pepin Island, bearing S. $\frac{3}{4}$ W. $\frac{1}{2}$ mile	15	"	1 p.m.	Tasman Bay, E. end, Pepin Island, bearing S. x W. $\frac{3}{4}$ W. 2 $\frac{1}{2}$ miles	18	"
"	12	1.30 p.m.	Tasman Bay, Pepin Island, bearing S.E. $\frac{1}{4}$ E. 2 $\frac{1}{2}$ miles	15	"	3 p.m.	Tasman Bay, Nelson Lighthouse, bearing S. 9 miles	16	"
"	12	3.15 p.m.	Tasman Bay, Nelson Lighthouse, bearing S. 10 $\frac{1}{4}$ miles	18	"	4.45 p.m.	Tasman Bay, Nelson Lighthouse, bearing S. x E. $\frac{1}{2}$ E. 10 miles	19	"
"	13	7 a.m.	Tasman Bay, Nelson Lighthouse, bearing S. x E. $\frac{1}{2}$ E. 7 miles	10	"	9 a.m.	Tasman Bay, Boat Harbour Island, W.S.W. 4 miles	11	"
"	13	9.20 a.m.	Tasman Bay, Boat Harbour Island, bearing W.S.W. 4 miles	11	"	10.40 a.m.	Tasman Bay, Fisherman Island, bearing W. x N. $\frac{1}{4}$ N. 4 $\frac{1}{2}$ miles	13	"
"	13	11.30 a.m.	Tasman Bay, Astrolabe, bearing 5 miles E.	15	"	1 p.m.	Tasman Bay, Astrolabe, bearing 11 miles E.	18	"
"	13	1.20 p.m.	Tasman Bay, Nelson Lighthouse, bearing S. $\frac{1}{2}$ E. 13 $\frac{1}{4}$ miles	18	"	3 p.m.	Tasman Bay, Pepin Island, bearing S.S.E. 13 miles	18	"
"	13	3.15 p.m.	Tasman Bay, Pepin Island, bearing S.E. x S. $\frac{1}{2}$ S. 5 $\frac{1}{2}$ miles	18	"	4.45 p.m.	Tasman Bay, Pepin Island, bearing S. x E. $\frac{3}{4}$ E. 2 $\frac{1}{2}$ miles	17	"
"	14	7.30 a.m.	Tasman Bay, Cape Soucis, bearing S.E. 1 $\frac{1}{4}$ miles	19	"	9 a.m.	Tasman Bay, Jules Island, bearing S.E. x S. 3 $\frac{1}{4}$ miles	22	"
"	14	9.15 a.m.	Tasman Bay, Jules Island, bearing S.E. x S. 3 $\frac{1}{4}$ miles	22	"	10.30 a.m.	Tasman Bay, Cone Point, bearing S.E. 1 $\frac{1}{2}$ miles	22	"
"	18	9.15 a.m.	West Coast, Heaphy River, bearing S.E. x E. $\frac{3}{4}$ E. 3 $\frac{1}{2}$ miles	33	Fine sand	10.30 a.m.	West Coast, Heaphy Island, bearing N.E. x N. $\frac{1}{4}$ N. 5 $\frac{1}{4}$ miles	32	Fine sand
"	18	11.15 a.m.	West Coast, Kohaihai Bluff, bearing E.N.E. 2 $\frac{1}{4}$ miles	28	"	1 p.m.	West Coast, Oparuru River, bearing E. x S. $\frac{1}{4}$ S. 1 $\frac{1}{2}$ miles	10	"
"	18	1.30 p.m.	West Coast, Oparuru River, bearing E. x S. $\frac{1}{4}$ S. 1 $\frac{1}{2}$ miles	10	"	3 p.m.	West Coast, Karamea River entrance, bearing N.E. x N. 3 miles	8	"
"	18	3.15 p.m.	West Coast, Karamea River entrance, bearing N.E. $\frac{3}{4}$ mile	12	"	5 p.m.	West Coast, Little Wanganui River entrance, bearing S.E. $\frac{1}{4}$ E. 2 miles	10	"

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE
"NORA NIVEN"—continued.

Date.	Station.	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Trawled.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	Bottom.
1907.									
Sept. 19	129	7 a.m.	West Coast, Karamea River entrance, bearing E. $4\frac{1}{2}$ miles	25	Fine sand	9.50 a.m.	West Coast, Little Wanganui River entrance, bearing E. x S. $\frac{1}{4}$ S. 7 miles	26	Fine sand
"	130	9.30 a.m.	West Coast, Little Wanganui River, bearing E. $\frac{1}{2}$ N. 1 mile	22	"	10.30 a.m.	West Coast, Seal Rocks, bearing E. $3\frac{1}{4}$ miles	23	"
"	131	10.55 a.m.	West Coast, Seal Rock, bearing N.E. x E. $2\frac{1}{4}$ miles	22	"	12 noon	West Coast, Mokihinui River entrance, bearing E. x S. $2\frac{1}{4}$ miles	22	"
"	132	12 noon	West Coast, Mokihinui River entrance, bearing E. $\frac{1}{4}$ S. $2\frac{1}{4}$ miles	22	"	1.15 p.m.	West Coast, Hector Township, bearing S.E. 3 miles	21	"
"	133	2 p.m.	West Coast, Mantoria Rocks, bearing E. $\frac{1}{4}$ S. $2\frac{1}{4}$ miles	18	"	3.15 p.m.	West Coast, Mantoria Rocks, bearing N.E. x E. $\frac{1}{4}$ E. $4\frac{1}{2}$ miles	17	"
"	134	3.45 p.m.	West Coast, Waimangaroa River, bearing S.E. $\frac{1}{4}$ E. $2\frac{1}{4}$ miles	17	"	5 p.m.	West Coast, Wareatea River, bearing E. x S. $\frac{1}{4}$ S. $1\frac{1}{4}$ miles	12	"
"	135	8 a.m.	Off Westport, East Mole, bearing S.W. x S. $\frac{1}{4}$ S. 4 miles	12	Dark sand	9.15 a.m.	Off Westport, W. Mole, bearing S. $\frac{1}{4}$ E. $6\frac{1}{2}$ miles	22	Dark sand
"	136	9.50 a.m.	Off Westport, East Mole, bearing S. x E. $4\frac{1}{2}$ miles	19	"	11.15 a.m.	Off Westport, W. Mole, bearing S.E. x E. $2\frac{1}{4}$ miles	12	"
"	137	11.45 a.m.	Cape Foulwind Lighthouse, bearing S.W. x S. $4\frac{1}{2}$ miles	17	"	1.15 a.m.	Cape Foulwind Lighthouse, bearing S. x E. $\frac{1}{4}$ E. $5\frac{1}{4}$ miles	48	"
"	138	1.45 p.m.	Cape Foulwind, bearing S. $\frac{1}{4}$ W. 10 miles	36	Mud	3 p.m.	Cape Foulwind, bearing S. x E. $\frac{1}{4}$ E. 10 miles	55	Mud
"	139	3.20 p.m.	Cape Foulwind, bearing S.E. x S. $\frac{1}{4}$ S. $7\frac{1}{2}$ miles	55	"	4.35 p.m.	Cape Foulwind, bearing S.E. x S. $\frac{1}{4}$ S. $10\frac{1}{2}$ miles	69	Dark sand
"	140	6.45 a.m.	Hokitika, bearing N.E. x E. $\frac{1}{4}$ E. 8 miles	50	Dark sand	7.30 a.m.	Hokitika, bearing S.E. x E. 6 miles	48	"
"	141	8 a.m.	Hokitika, bearing S.E. x S. $\frac{1}{4}$ S. $3\frac{1}{2}$ miles	11	"	9.15 a.m.	Arahura River, bearing S. $\frac{1}{4}$ E. 5 miles	15	"
"	142	9.45 a.m.	Teremakau River, bearing E. $\frac{1}{4}$ N. $5\frac{1}{2}$ miles	41	"	11 a.m.	Greymouth, bearing N.E. x E. $\frac{1}{4}$ E. $7\frac{1}{2}$ miles	45	"
"	143	11.40 a.m.	Greymouth, bearing N.E. $\frac{1}{4}$ N. $6\frac{1}{2}$ miles	25	"	1.10 p.m.	Greymouth, bearing E. x N. $\frac{1}{4}$ N. 3 miles	25	"
"	144	1.45 p.m.	Greymouth, bearing E. x N. $\frac{1}{4}$ N. $5\frac{1}{2}$ miles	30	"	3 p.m.	Greymouth, bearing S.E. $\frac{1}{4}$ E. 5 miles	23	"
"	145	3.15 p.m.	Elizabeth Point, bearing E.S.E. 2 miles	23	"	4.30 p.m.	Point Elizabeth, bearing S.E. $\frac{1}{4}$ E. 3 miles	17	"
"	146	6.15 a.m.	Elizabeth Point, bearing E. $\frac{1}{4}$ N. 11 miles	82	"	7.45 a.m.	Point Elizabeth, bearing E.S.E. 12 miles	85-103	"
"	147	9 a.m.	Elizabeth Point, bearing S.E. $\frac{1}{4}$ E. 10 miles	41	"	10.30 a.m.	Point Elizabeth, bearing S. x E. $\frac{1}{4}$ E. 10 miles	28	"
"	148	11.15 a.m.	Perpendicular Point, bearing N.E. $\frac{1}{4}$ E. $3\frac{1}{2}$ miles	25	"	1 p.m.	Brighton Point, bearing E. 5 miles	25	"
"	149	2 p.m.	Charleston, bearing N. x E. 8 miles	25	"	3.15 p.m.	Charleston, bearing E. 8 miles	24	"
"	150	3.50 p.m.	Charleston, bearing S.E. x E. $\frac{1}{4}$ E. $4\frac{1}{2}$ miles	22	"	5 p.m.	Cape Foulwind, bearing N.E. $\frac{1}{4}$ E. $6\frac{1}{2}$ miles	24	"

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE "NORA NIVEN"—continued.

Date.	Station.	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Traveled.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	Bottom.
1907. Sept. 23 " 23 " 23 " 23 " 23 " 27 " 27 " 28 " 28 " 28 " 28 " 30 " 30 " 30 " 30 " 30 " 30 " 30	151	6.30 a.m.	Cape Foulwind, bearing S.E. 13 miles	50	Dark sand	8 a.m.	Cape Foulwind, bearing S.E. 8 miles	55	Dark sand
	152	8.30 a.m.	Cape Foulwind, bearing S. $\frac{3}{4}$ W. 24 miles	10	"	10 a.m.	Westport Entrance, bearing S. x E. $\frac{1}{2}$ E. 24 miles	16	"
	153	3 p.m.	Little Wanganui. N. Head, bearing E. $\frac{1}{2}$ S. 12 miles	52	"	4 p.m.	Karamea Beacon, bearing E. x N. 11 $\frac{1}{2}$ miles	55	"
	154	4.30 p.m.	Heaphy River, bearing E. x N. $\frac{1}{2}$ N. 8 miles	58	"	5.15 p.m.	Heaphy River, bearing E. x S. 7 miles	60	"
	155	8 a.m.	Totaranui, bearing W. x N. $\frac{1}{2}$ N. 3 miles	19	Mud	9.30 a.m.	Totaranui, bearing W.S.W. 3 $\frac{1}{2}$ miles	18	Mud
	156	10 a.m.	Totaranui, bearing W.S.W. 3 $\frac{1}{2}$ miles	18	"	10.45 a.m.	Totaranui, bearing S.W. x W. $\frac{1}{4}$ W. 2 $\frac{1}{2}$ miles	17	Coral
	157	7.45 a.m.	Kaiterri Cove, bearing W. x S. $\frac{1}{2}$ S. 3 miles	11	"	9 a.m.	Boat Harbour Island, bearing W. S.W. 3 miles	12	Mud
	158	9.15 a.m.	Boat Harbour Island, bearing W. S.W. 3 miles	12	"	11 a.m.	Coat Harbour Island, bearing S.W. x W. $\frac{1}{4}$ W. 8 miles	16	"
	159	11.15 a.m.	Boat Harbour Island, bearing S.W. x W. $\frac{1}{4}$ W. 8 miles	16	"	1 p.m.	Pepin Island, N.W. Extreme, bearing E. $\frac{3}{4}$ N. 4 miles	17	"
	160	1.30 p.m.	Pepin Island, Summit, bearing S. $\frac{1}{4}$ E. 3 miles	17	"	4 p.m.	Pepin Island, Summit, bearing S. $\frac{1}{4}$ E. 6 miles	19	"
	161	6.40 a.m.	Separation Point, bearing S.W. x S. 4 miles	13	"	8.55 a.m.	Tata Island, bearing S.W. x S. 3 miles	15	"
	162	9.15 a.m.	Tata Island, bearing S.E. 3 miles	15	"	11.15 a.m.	Streaky Head, bearing W. x N. 5 miles	15	"
	163	11.40 a.m.	Streaky Head, bearing W. x N. $\frac{1}{2}$ N. 5 miles	15	"	2 p.m.	Streaky Head, bearing N. x S. 5 $\frac{1}{2}$ miles	17	"
	164	2.15 p.m.	Tata Island, bearing S.E. $\frac{3}{4}$ E. 8 miles	17	"	4.10 p.m.	Tata Island, bearing S. 3 miles	19	"
	165	7.30 a.m.	Tata Island, bearing S.W. x S. $\frac{1}{2}$ S. 4 miles	17	"	9.30 a.m.	Separation Point, bearing S.E. $\frac{1}{2}$ E. 7 miles	16	"
	166	10.10 a.m.	Separation Point, bearing E.S.E. 9 miles	16	"	11.40 a.m.	Separation Point, bearing S.E. x E. $\frac{1}{4}$ E. 5 miles	17	"
	167	5.40 a.m.	Streaky Head, bearing W. x S. $\frac{1}{2}$ S. 6 miles	16	"	7.10 a.m.	Spit Light, bearing N.E. $\frac{1}{2}$ N. 9 miles	17	"
Oct. 1 " 1 " 3 " 3 " 3 " 3 " 3 " 3 " 3	168	7.30 a.m.	Spit Light, bearing N.E. $\frac{1}{2}$ N. 8 $\frac{1}{2}$ miles	17	"	9 a.m.	Spit Light, bearing N. x E. $\frac{3}{4}$ E. 6 $\frac{1}{2}$ miles	19	"
	169	10.30 a.m.	Farewell Spit Light, bearing N.W. $\frac{1}{4}$ N. 8 $\frac{1}{2}$ miles	23	"	12 p.m.	Farewell Spit Light, bearing W. x N. $\frac{1}{2}$ N. 11 $\frac{1}{2}$ miles	25	Sand and mud
	170	1.30 p.m.	Farewell Spit Light, bearing W. 21 $\frac{1}{2}$ miles	30	Sand and mud	3 p.m.	Farewell Spit Light, bearing W. $\frac{1}{2}$ S. 26 miles	35	Sand
	171	4.15 p.m.	Stephens Island, bearing E. 10 miles	36	Sand	5.45 p.m.	Stephens Island, bearing E. x S. 5 miles	41	"

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE
 "NORA NIVEN"—continued.

Date.	Station	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Trawled.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	Bottom.
1907.									
Oct. 17	172	7.15 a.m.	Tiri, bearing S. x W. $\frac{1}{4}$ W. $3\frac{1}{2}$ miles	18	Mud	9.15 a.m.	Motorua, bearing W. $\frac{3}{4}$ S. 4 miles; Tiri, bearing S. x W. $\frac{1}{4}$ W. 6 miles	26	Mud
"	173	10.15 a.m.	Tiri, bearing S.W. $\frac{3}{4}$ S. $8\frac{1}{2}$ miles	24	Sand	11.50 a.m.	Tiri, bearing S.W. $\frac{3}{4}$ W. 13 miles	30	"
"	174	12.10 a.m.	Cape Colville, bearing N.E. x E. $\frac{1}{2}$ E. 10 miles	30	Mud and sand	1.50 p.m.	Cape Colville, bearing N.E. $\frac{3}{4}$ E. 5 miles	27	"
"	175	3 p.m.	Cape Colville, bearing N.E. $\frac{1}{2}$ E. 6 miles	26	"	4 p.m.	Mount 2842, bearing E.N.E. 8 miles	25	"
"	176	7.45 a.m.	Cape Colville, bearing E. x S. $\frac{3}{4}$ S. 6 miles	27	"	9 a.m.	Cape Colville, bearing S.E. x S. 10 miles	27	Mud and sand
"	177	9.55 a.m.	Cliff Island, bearing N.E. x N. 8 miles	25	"	10.55 a.m.	Cliff Island, bearing N.E. x E. 6 miles	27	Coral and shell
"	178	12 noon	2383, Little Barrier, bearing N.N.W. $6\frac{1}{2}$ miles	28	"	1.10 p.m.	Mount 2383, bearing N.N.E. 7 miles	28	"
"	179	2 p.m.	Maori Rock, bearing W.S.W. 7 miles	29	Sand and shell	3.20 p.m.	Maori Rock, bearing W. x N. $6\frac{1}{2}$ miles	29	Sand and shell
"	180	3.40 p.m.	Maori Rock, bearing W. x N. $6\frac{1}{2}$ miles	29	"	4.25 p.m.	Nelson Rock, bearing W.N.W. $3\frac{1}{2}$ miles	29	Rocky
"	21	7.30 a.m.	S. Extreme, Little Barrier, bearing E. $5\frac{1}{2}$ miles	31	"	9.5 a.m.	N. Extreme, Little Barrier, bearing E. 6 miles	30	Sand and shell
"	21	12.15 p.m.	E. Extreme, Maro Tiri, bearing S.W. x S. 2 miles	50	Mud and shell	1.15 p.m.	Cape Tewara, bearing S.W. x W. 8 miles	55	Mud and shell
"	22	3 p.m.	Grenville Point, bearing S.S.W. 7 miles	34	Sand and shell	3.10 p.m.	Grenville Point, bearing S. x W. 8 miles	32	Rocky
"	22	4.35 p.m.	Paxton Point, bearing S.W. $\frac{3}{4}$ S. 4 miles	34	Sand	5.35 p.m.	Paxton Point, bearing S. x E. $4\frac{1}{4}$ miles	30	Sand and shell
"	23	7.45 a.m.	Paxton Point, bearing S. x E. 4 miles	23	Fine sand	9.10 a.m.	Paxton Point, bearing E. x N. $\frac{1}{2}$ N. $2\frac{1}{2}$ miles	15	Sand and mud
"	23	10.40 a.m.	Paxton Point, bearing S. $\frac{3}{4}$ E. $3\frac{1}{2}$ miles	14	White sand	12.5 p.m.	Paxton Point, bearing S.E. x S. $\frac{3}{4}$ S. 7 miles	9	Hard sand
"	23	12.20 p.m.	Coal Point, bearing N. x W. $\frac{1}{2}$ W. 4 miles	9	Hard sand	2 p.m.	Coal Point, bearing W. x N. $\frac{3}{4}$ N. $2\frac{1}{4}$ miles	7	"
"	23	2.15 p.m.	Coal Point, bearing N. x W. $\frac{3}{4}$ W. $5\frac{1}{2}$ miles	11	"	4.50 p.m.	Paxton Point, bearing W.S.W. 1 mile	17	"
"	24	7.30 a.m.	Perforated Point, bearing N.W. $1\frac{1}{2}$ miles	11	"	8 a.m.	Cape Perpendicular, bearing S.W. x W. $2\frac{1}{2}$ miles	12	Rocky
"	24	11.10 a.m.	Flat Head, bearing S. x E. 3 miles	55	Green mud	1.20 p.m.	Cone Rock, bearing S. 2 miles	50	"
"	24	4.30 p.m.	Mautara Bay, N. Extreme, bearing W. x N. $\frac{1}{4}$ N. 4 miles	35	Fine sand	5.10 p.m.	Needles, bearing S.E. $\frac{1}{4}$ E. 3 miles	35	Sand
"	25	7.30 a.m.	Cape Brett, bearing E. x N. $6\frac{1}{2}$ miles	40	Mud	8.40 a.m.	Cape Brett, bearing E.S.E. $6\frac{1}{4}$ miles	45	Rocky
"	25	10.40 a.m.	Home Point, bearing N.E. 3 miles	40	Sand and mud	11.40 a.m.	Home Point, bearing W. $\frac{3}{4}$ S. 6 miles	40	"
"	26	5.55 a.m.	Motorua S. Extreme, bearing S.W. x W. $\frac{1}{4}$ W. 5 miles	19	Mud and shell	7.45 a.m.	Motorua, bearing W. $4\frac{1}{2}$ miles	19	Mud and shell

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE
"NORA NIVEN"—continued.

Date.	Station.	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Trawled.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	Bottom.
1907.									
Nov. 1	195	9.30 a.m.	Cape Maria, bearing N.W. 8 miles ..	20	Grey sand	11.5 a.m.	Cape Maria, bearing N.W. $\frac{1}{4}$ N. 13 miles	25	Grey sand
"	196	12 noon	Cape Maria, bearing N.W. $\frac{3}{4}$ W. 15 miles	17	"	1 p.m.	Mongonui Rock, bearing N.E. $\frac{1}{2}$ E. 4 miles	19	"
"	197	2 p.m.	Cape Maria, bearing N.W. $\frac{1}{2}$ W. 23 miles	15	"	3.30 p.m.	Utea, bearing E. $\frac{1}{2}$ S. 6 $\frac{1}{2}$ miles	10	"
"	198	4 p.m.	Utea, bearing E. x N. 3 miles	14	"	5.5 p.m.	Utea, bearing N. $\frac{1}{2}$ E. 4 miles	15	"
"	199	8 a.m.	Utea, bearing N.N.E. 11 miles ..	23	Sand and shell	9.30 a.m.	Wangatautia Hill, bearing E. $\frac{3}{4}$ S. 9 miles	25	Fine sand
"	200	12 noon	Reef Point, S. Extreme, bearing N. x E. $\frac{1}{4}$ E. 4 $\frac{1}{2}$ miles	25	Fine sand	1.30 p.m.	Herekino River, bearing N.E. x E. 5 miles	24	"
"	201	3.45 p.m.	Whangape, bearing N. $\frac{1}{2}$ E. 3 miles	20	Sand and shell	4.45 p.m.	Hokianga Light, bearing E.S.E. 8 miles	17	"
"	202	9 a.m.	Koatu Point, bearing N. x E. 5 miles	35	"	10.15 a.m.	Mauganui Bluff, bearing E. $\frac{1}{2}$ N. 4 miles	38	Sand and shell
"	203	11 a.m.	Mangonui, bearing N.E. x E. 3 miles	35	Fine sand	12.10 p.m.	Mauganui Bluff, bearing N. x E. 3 miles	35	Fine sand
"	204	1.40 p.m.	Mangonui, bearing N.N.W. 5 miles	27	"	2.50 p.m.	345, Hill, bearing E. x S. $\frac{1}{2}$ S. 9 $\frac{1}{2}$ miles	25	"
"	205	3.50 p.m.	345, Hill, bearing E. x N. $\frac{1}{4}$ N. 5 miles	25	"	4.50 p.m.	345, Hill, bearing N.N.E. 4 miles ..	25	"
"	206	7.30 a.m.	345, Hill, bearing N.W. x N. $\frac{1}{2}$ N. 7 miles	23	"	9.15 a.m.	345, Hill, bearing N.W. x N. 11 miles	22	"
"	207	10.30 a.m.	N. Spit, Kaipara, bearing S.E. $\frac{1}{2}$ E. 12 miles	20	"	11.45 a.m.	N. Spit, Kaipara, bearing S.E. x E. 8 miles	22	"
"	208	1.20 p.m.	N. Spit, Kaipara, bearing N.E. x N. $\frac{1}{2}$ N. 5 $\frac{1}{2}$ miles	22	"	2.40 p.m.	Kaipara Light, bearing N. 8 miles	10	Dark sand
"	209	3.30 p.m.	Kaipara Light, bearing N. x W. $\frac{1}{2}$ W. 9 miles	12	Dark sand	4.45 p.m.	Kaipara Light, bearing N.W. x N. $\frac{1}{4}$ N. 12 miles	12	"
"	210	7.40 a.m.	Kaipara Light, bearing N.W. x N. 14 $\frac{1}{2}$ miles	14	"	9.30 a.m.	Oaia Island, bearing S.E. $\frac{1}{2}$ E. 9 $\frac{1}{2}$ miles	11	"
"	211	10.10 a.m.	Oaia Island, bearing S. E. x E. $\frac{1}{4}$ E. 6 $\frac{1}{2}$ miles	14	"	11.20 a.m.	Oaia Island, bearing E. x S. $\frac{1}{4}$ S. 3 miles	13	"
"	212	12.15 p.m.	Oaia Island, bearing N.E. $\frac{3}{4}$ N. 3 miles	23	"	2.15 p.m.	Waitakiri, bearing N. 4 miles	23	"
"	213	3 p.m.	Manukau, N. Head, bearing E. x S. $\frac{1}{4}$ S. 6 miles	23	"	4.30 p.m.	Manukau, S. Head, bearing E. x N. $\frac{3}{4}$ N. 7 miles	22	"
"	214	8 a.m.	Manukau, S. Light, bearing E. $\frac{3}{4}$ N. 12 miles	30	"	9.30 a.m.	Manukau, S. Head, bearing E. x N. $\frac{1}{2}$ N. 17 miles	40	"
"	215	10.30 a.m.	Manukau, S. Light, bearing N.E. x E. 17 miles	40	Sand and shell	12 noon	Manukau, S. Head, bearing N.E. $\frac{1}{4}$ N. 18 miles	38	Sand and shell
"	216	1.10 p.m.	Manukau, S. Light, bearing N.E. x N. 14 miles	30	Fine sand	2.30 p.m.	Manukau, S. Head, bearing N. x E. $\frac{1}{4}$ E. 12 miles	23	Fine sand

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE "NORA NIVEN"—continued.

Date.	Station.	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Trawled.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	Bottom.
1907. Nov. 6	217	3.5 p.m.	Manukau, S. Light, bearing N. x W. $\frac{1}{2}$ W. 10 miles; Warahu, bearing N.N.E. 2 miles	18	Fine sand	4.30 p.m.	Warahu, bearing E. x S. $2\frac{1}{2}$ miles ..	10	Fine sand
"	218	6.30 a.m.	Warahu, bearing E. $\frac{1}{2}$ S. $3\frac{1}{2}$ miles ..	13	"	7.50 a.m.	Manukau, S. Head, bearing N.E. x N. $5\frac{1}{2}$ miles	20	"
"	219	8 a.m.	Manukau, S. Head, bearing N. x E. $13\frac{1}{2}$ miles	30	Sand and shell	9.35 a.m.	Manukau, S. Head, bearing N. x E. $\frac{1}{2}$ E. 18 miles	38	Sand and shell
"	220	11.10 a.m.	Waikato, N. Head, bearing E. 14 miles	25	"	1.10 p.m.	Waikato, N. Head, bearing E.N.E. 10 miles	20	"
"	221	2.15 p.m.	Waikato, N. Head, bearing N.E. $\frac{1}{2}$ E. $6\frac{1}{2}$ miles	16	Fine sand	3.30 p.m.	Waikawa, bearing N.E. x E. $\frac{1}{2}$ E. 6 miles	16	Fine sand
"	222	4 p.m.	Kapiapia Rock, bearing E. x N. $\frac{1}{4}$ N. 9 miles	21	"	5 p.m.	Kapiapia Point, bearing N.E. x E. $\frac{1}{2}$ E. 12 miles	23	"
"	223	8 a.m.	Kapiapia Rock, bearing N.E. x N. 9 miles	23	"	9.35 a.m.	Whangaroa, bearing E. x S. $\frac{1}{4}$ S. $8\frac{1}{2}$ miles	20	"
"	224	10.50 a.m.	Woody Head, bearing E. $\frac{1}{4}$ N. 9 miles	28	"	12.30 p.m.	Waipapa, bearing E. x N. $11\frac{1}{2}$ miles	30	"
"	225	1.30 p.m.	Waipapa Point, bearing E.N.E. $14\frac{1}{2}$ miles	23	Sand and shell	3 p.m.	Gannet Island, bearing E. x N. $\frac{1}{2}$ N. 6 miles	35	Sand and shell
"	226	3.50 p.m.	Gannet Island, bearing N.N.E. 4 miles	33	"	4.50 p.m.	Gannet Island, bearing N.W. x N. 5 miles	33	Sand and rock
"	227	8 a.m.	Albatross Point, bearing S. x E. $\frac{1}{2}$ E. 4 miles	16	Fine sand	10 a.m.	Taranaki Point, bearing E. $\frac{1}{4}$ N. 6 miles	25	Fine sand
"	228	11.45 a.m.	Albatross Point, bearing E. x N. $\frac{1}{2}$ N. 9 miles	30	"	1.30 p.m.	Albatross Point, bearing N.E. x E. $\frac{1}{2}$ E. $13\frac{1}{2}$ miles	34	"
"	229	2.10 p.m.	Albatross Point, bearing N.E. x N. 10 $\frac{1}{2}$ miles	30	"	3.40 p.m.	Albatross Point, bearing N.E. x N. 5 miles	33	"
"	230	8 a.m.	Tokana Puna Rock bearing E. x N. 5 miles	30	"	9.30 a.m.	Rua Point, bearing E. $\frac{1}{2}$ N. $4\frac{1}{2}$ miles	27	"
"	231	10.30 a.m.	Rua Point, bearing E. x N. $\frac{1}{2}$ N. 10 miles	31	Shell and sand	12 noon	Rua Point, bearing N.E. x E. $14\frac{1}{2}$ miles	33	Shell and sand
"	232	1 p.m.	Tokarara Point, bearing E. x N. $\frac{1}{4}$ N. 9 miles	28	Fine sand	2.30 p.m.	Awakino River, bearing E. $\frac{1}{4}$ N. $10\frac{1}{2}$ miles	30	Fine sand
"	233	3.30 p.m.	Mokau, bearing N.E. $\frac{1}{4}$ S. $16\frac{1}{2}$ miles	30	Coarse sand	4.35 p.m.	Mokau River, bearing E. x N. $19\frac{1}{2}$ miles	35	Coarse sand and shell
"	234	8 a.m.	Raleigh, bearing S. $\frac{3}{4}$ E. $12\frac{1}{2}$ miles ..	33	Coarse sand and shell	9.35 a.m.	Raleigh, bearing S.E. x S. $\frac{3}{4}$ S. $8\frac{1}{2}$ miles	38	Coarse sand
"	235	10.45 a.m.	New Plymouth, bearing S. $\frac{1}{4}$ E. $14\frac{1}{2}$ miles	45	Coarse sand	12.40 p.m.	New Plymouth, bearing S.E. x S. $\frac{1}{2}$ S. 12 miles	45	"
"	236	1.45 p.m.	New Plymouth, bearing S.E. $\frac{3}{4}$ E. $8\frac{1}{2}$ miles	43	"	3.45 p.m.	New Plymouth, bearing S.E. $\frac{3}{4}$ E. 3 miles	50	"

TABLE SHOWING TIME, LOCALITY, DEPTH, AND NATURE OF THE BOTTOM IN RESPECT OF EACH HAUL OF THE TRAWL-NET DURING THE CRUISE OF THE
"NORA NIVEN"—continued.

Date.	Station	Trawl Shot.			Trawl Hauled.			Time Trawl down.	Distance Trawled.
		Time.	Locality.	Depth in Fathoms.	Bottom.	Time.	Locality.	Depth in Fathoms.	
1907.									
Nov. 21	237	8.15 a.m.	Cape Egmont, bearing N.N.E. 8 miles	50	Soft mud	10 a.m.	Cape Egmont, bearing N.N.E. 16 miles	58	Soft mud
"	238	11.50 a.m.	Cape Egmont, bearing N.N.E. 28 miles	61	"	1.20 a.m.	Cape Egmont, bearing N.N.E. 34 miles	62	"
"	239	3 p.m.	Cape Egmont, bearing N.N.E. 46 miles	60	"	4.30 p.m.	Cape Egmont, bearing N.N.E. 51 miles	60	"
"	240	7.30 a.m.	Cape Egmont, bearing N.N.E. 58 miles	65	"	9 a.m.	Cape Egmont, bearing N.N.E. 64 miles	68	"
"	241	3.15 p.m.	Farewell Light, bearing S.E. x S. $\frac{3}{4}$ S. 9 miles	36	Fine sand	5 p.m.	Farewell Light, bearing S.E. x E. $\frac{1}{4}$ E. 8 miles	11	Fine sand
"	242	7.15 a.m.	Wanganui, S. Head, bearing E. x N. $\frac{1}{4}$ N. 2 miles	21	"	8.50 a.m.	Archway Island, bearing E. $\frac{3}{4}$ N. 1 $\frac{1}{2}$ miles	21	"
"	243	10.15 a.m.	Pillar Point, bearing S.W. x W. $\frac{1}{4}$ W. 4 miles	4	"	11.55 a.m.	Farewell Light, bearing S.E. x E. 6 $\frac{1}{2}$ miles	8 $\frac{1}{2}$	"
"	244	1 p.m.	Farewell Light, bearing S.W. 2 miles	9 $\frac{1}{2}$	"	2.30 p.m.	Farewell Light, bearing W.N.W. 7 miles	13	"
"	245	9.40 a.m.	Stephens Island, bearing E. x S. 21 miles	35	Soft mud	11 a.m.	Stephens Island, bearing E. x S. $\frac{3}{4}$ S. 19 miles	40	Soft mud
"	246	3.10 p.m.	Stephens Island, bearing S. 28 miles	47	"	4.40 p.m.	Stephens Island, bearing S. $\frac{1}{4}$ W. 32 miles	48	"
"	247	9.15 a.m.	Robertson's Point, bearing N. $\frac{3}{4}$ E. 4 miles	7	Mud	10.50 a.m.	Robertson's Point, bearing N.W. x W. $\frac{3}{4}$ W. 8 miles	7 $\frac{1}{2}$	Mud
Dec. 2	248	7.30 a.m.	Guards Bay	9	Sand and mud	9 a.m.	Guards Bay	9	Sand and mud
"	249	11.30 a.m.	Stephens Island, bearing W. $\frac{1}{4}$ N. 12 $\frac{1}{2}$ miles	65	Mud	12.45 p.m.	Stephens Island Light, bearing W. x S. $\frac{1}{4}$ S. 15 miles	61	Mud
"	250	2.30 p.m.	Stephens Island, bearing S.W. $\frac{1}{4}$ W. 23 miles	70	"	3.45 p.m.	Stephens Island Light, bearing S.W. 27 $\frac{1}{2}$ miles	72	"
"	251	9.10 a.m.	Cape Jackson, bearing S. x W. $\frac{1}{4}$ W. 8 $\frac{1}{2}$ miles	55	Coarse sand	10.45 a.m.	Cape Jackson, bearing S.W. x S. $\frac{1}{4}$ S. 12 miles	75	Coarse sand
"	252	11.50 a.m.	Kapiti Island, S.W. end, bearing E. x N. $\frac{1}{4}$ N. 12 miles	85	"	1.20 p.m.	Kapiti, bearing E. x N. 5 $\frac{1}{2}$ miles	85	"

(g.) 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 107, 108, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 245, 247.
- Sole (*Peltorhampus novæ-zealandiæ*): Taken at stations 107, 108, 109, 110, 114, 115, 116, 117, 118, 119, 120, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 139, 140, 141, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 157, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 172, 203, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 227, 228, 229, 230, 232, 234, 235, 241, 242, 243, 244, 247, 248.
- Lemon-sole (*Ammotretis rostratus*): Taken at stations 125, 126, 127, 129, 171, 199, 201, 202, 204, 220, 248.
- Megrim (*Ammotretis sp. ind.*): Taken at stations 214, 249.
- Brill (*Ammotretis guntheri*): Taken at stations 127, 128, 133, 137, 148, 152, 197, 198, 206, 207, 208, 210, 211, 212, 213, 215, 221.
- Hake (*Lotella rhacinus*): Taken at stations 125, 129, 155, 210.
- Blue-cod (*Percis colias*): Taken at stations 110, 111, 155, 164, 165, 166, 185, 189, 205, 206, 214, 215, 234, 248.
- Red-cod (*Lotella bachus*): Taken at stations 109, 110, 111, 113, 114, 115, 116, 117, 118, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 137, 140, 141, 143, 144, 147, 148, 149, 150, 151, 152, 155, 157, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 220, 247, 251.
- John-dory (*Zeus faber*): Taken at stations 125, 151, 162, 163, 164, 165, 168, 169, 172, 173, 174, 175, 176, 177, 179, 180, 181, 182, 192, 194, 195, 196, 197, 198, 200, 201, 206, 207, 210, 211, 212, 213, 214, 215, 216, 217, 218, 221, 222, 224, 226, 227, 242.
- Mackerel (*Scomber australasicus*): Taken at stations 191, 228, 230.
- Kingfish (*Seriola lalandii*): Taken at stations 109, 111, 112, 113, 114, 122, 123, 146, 151, 153, 154, 155, 157, 158, 159, 160, 162, 164, 165, 166, 168, 169, 170, 171, 182, 202, 203, 206, 209, 212, 213, 214, 215, 216, 217, 218, 219, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 249, 250, 251, 252.
- Barracouta (*Thyrsites atun*): Taken at stations 108, 115, 116, 117, 118, 120, 121, 124, 125, 129, 157, 158, 167, 170, 171, 172, 176, 178, 195.
- Moki (*Latris ciliaris*): Taken at stations 172, 178, 181, 182, 184, 185, 186, 187, 188, 199, 200, 206, 208, 229, 231, 234, 235, 242, 243, 244, 247, 248.
- Tarakihi (*Chilodactylus macropterus*): Taken at stations 107, 109, 110, 111, 112, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 138, 139, 140, 141, 143, 144, 146, 147, 148, 150, 151, 153, 154, 155, 157, 159, 160, 169, 170, 171, 173, 179, 181, 182, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 214, 215, 216, 217, 219, 220, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 244, 245, 247, 248.
- Gurnard (*Trigla kumu*): Taken at stations 109, 110, 111, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 144, 145, 152, 154, 155, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 177, 181, 182, 184, 185, 188, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 241, 242, 243, 244, 248.
- Ling (*Genypterus blacodes*): Taken at stations 108, 123, 125, 127, 128, 132, 137, 138, 139, 141, 145, 146, 147, 148, 155, 157, 161, 162, 163, 164, 165, 166, 167, 168, 169, 171, 241, 242, 244, 247.
- Hapuka (*Oligorus gigas*): Taken at stations 143, 144, 174, 185, 219, 226, 229, 231, 234, 235, 237, 242, 244, 247, 249, 251, 252.
- Schnapper (*Pagrus unicolor*): Taken at stations 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 143, 145, 147, 148, 149, 152, 153, 154, 155, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 185, 186, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 239, 240, 241, 242, 243, 244, 245, 247, 249, 250.
- Conger-eel (*Conger vulgaris*): Taken at stations 136, 137, 139, 148, 150, 151, 215.
- Trevalli (*Caranx georgianus*): Taken at stations 110, 115, 169, 172, 175, 176, 185, 186, 195, 196, 197, 198, 199, 200, 201, 204, 207, 208, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 229, 230, 231, 232, 233, 235.
- Kahawai (*Arrapis salar*): Taken at stations 168, 195, 199, 210, 211, 212, 218.
- Warehou (*Neptonemus brama*): Taken at stations 140, 232, 233, 242, 243.
- Macrurus australis: Taken at stations 125, 126, 127, 128, 129, 130, 131, 132, 133, 135, 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147, 148, 149, 150, 152, 154.

(c.) WEATHER, TEMPERATURE, OBSERVATIONS, ETC., MADE DURING THE CRUISE OF THE "NORA NIVEN."

Date.	Time.	Locality.	Temperature, Water (Surface).	Temperature, Water (Bottom).	Temperature (Air).	Barometer.	Wind.		Weather-conditions.	Sea.
							Direction.	Force.		
1907.										
Sept. 9	Noon	Wellington Harbour	Deg. Fahr. 51	Deg. Fahr. 51	Deg. Fahr. 54	In 29.50	E.	Light ..	Cloudy	Slight N. swell.
" 10	"	Cook Strait, off Stephens Island	51	50	56	29.60	W.	"	"	Calm.
" 11	"	Tasman Bay	52	50	52	29.30	S.E.	Moderate	Cold rain	N. swell.
" 12	"	"	51	51	50	29.40	"	Light ..	Cold rain-showers	Calm.
" 13	"	"	52	51	58	29.70	Calm	"	Fine ..	"
" 14	"	Current Basin, French Pass	51	51	56	29.70	"	"	"	"
" 17	"	Cook Strait	51	51	54	29.80	"	"	"	"
" 18	"	Karamea Bight	53	52	55	29.80	"	"	"	"
" 19	"	"	52	51	53	29.70	N.W.	Strong	Rain ..	Swell.
" 20	"	Off Westport	52	51	52	29.75	S.W.	"	Showers	Heavy swell.
" 21	"	Off Greymouth	53	51	54	29.80	"	"	Fine ..	"
" 22	"	"	52	51	55	29.60	Calm	"	"	"
" 23	"	Off Westport	53	52	56	29.80	"	"	"	"
" 24	"	"	52	51	55	29.50	N.E.	Moderate	Heavy rain; very thick	Moderate.
" 25	"	Off Farewell Spit	52	51	54	29.10	N.W.	Full gale	Rain very thick	Heavy sea.
" 26	"	Tasman Bay	52	51½	55	29	"	Gale ..	Rain-showers	"
" 27	"	"	52	52	54	29.40	"	"	"	"
" 28	"	"	53	52	56	29.30	"	Moderate	Fine ..	"
" 29	"	"	52	51	56	29.10	"	"	Showers	Heavy outside, calm in bay.
" 30	"	Golden Bay	53	52	55	29.10	"	Strong	Fine ..	Heavy outside.
Oct. 1	"	"	52	51	57	29.50	Calm	"	"	"
" 2	"	Tasman Bay (Awaroa)	52	51	54	29.20	N.W.	Gale ..	Heavy showers	Calm.
" 3	"	Off Farewell Spit	52	51½	56	29.30	"	Light ..	Cloudy	Rough.
" 17	"	Hauraki Gulf	58	54	60	29.85	E.	"	Clear ..	Heavy swell.
" 18	"	"	56	55	56	29.90	N.N.E.	"	Cloudy	Calm.
" 21	"	Little Barrier	58	57.5	58	29.80	N.N.W.	"	"	Moderate.
" 22	"	Great Exhibition Bay	57	56	57	29.75	N.E.	"	Clear ..	"
" 23	"	"	57	56	57	29.70	N.W. to S.W.	Strong	Rain-squalls	Calm.
" 24	"	Off Doubtless Bay	56	55	68	29.70	S.W.	"	"	Lumpy.
" 25	"	Off Whanganumu	55	56	64	29.60	"	Moderate	Fine ..	Moderate.
" 26	"	Auckland Harbour	57	59	63	29.50	"	Strong	Cold rain-showers	Moderate swell.
Nov. 1	11 a.m.	West Coast, from Cape Maria	59	61	62	29.70	E.N.E.	Moderate	Fine and cloudy	Moderate.
" 2	Noon	Reef Point, Ahipara Bay	59	60	68	29.60	S.	Strong	Cold rain-showers	Heavy swell.
" 3	"	Mangonui Bluff, S. Hokitanga	50	54	64	29.60	S.S.E.	"	"	"
" 4	"	Off Kaipara Heads	58	60	63	29.30	E.	Moderate	Fine ..	Moderate.
" 5	"	Off Otaia Island, N. of Manukau	59	60	66	29.90	N.E.	Strong	"	Smooth.
" 6	"	18 miles S.W. of Manukau Light	60	62	62	29.30	"	Moderate	"	"
" 7	10.30	South Manukau Heads	59	60	60	29.50	N.N.E.	Light ..	"	"
" 14	"	19 miles S.E. of Manukau Light	62	63	60	29.50	"	Moderate	"	Heavy swell.
" 15	"	8 miles W. of Woody Head	59	60	59	29.80	S.W.	"	"	Moderate.
" 16	"	9 miles E.N.E. S. entrance Kawhia Harbour	61	65	59	29.60	S.W. & W.S.W.	Light	"	Smooth.

(i.) WEATHER, TEMPERATURE, OBSERVATIONS ETC., MADE DURING THE CRUISE OF THE "NORA NIVEN"—continued.

Date.	Time.	Locality.	Temperature, Water (Surface).	Temperature, Water (Bottom).	Temperature (Air).	Barometer.	Wind.		Weather-conditions.	Sea.
							Direction.	Force.		
1907. Nov. 18 ..	10.30	15 miles W.S.W. from Rua Point S. Kawhia.	Deg. Fahr. 58	Deg. Fahr. 59	Deg. Fahr. 60	In. 29.60	N.W.	Moderate	Fine ..	Moderate.
" 19 ..	"	14 miles off New Plymouth	58	59	64	29.70	S.W.	"	" ..	Heavy swell.
" 21 ..	"	Lat. 39-41 S., long. 173-25 E.	59	61	59	29.80	S.S.W.	Strong	" ..	"
" 22 ..	"	Lat. 40.12 S., long. 173.1 E.	59	62	60	29.70	W.S.W.	Moderate	" ..	Smooth.
" 23 ..	"	8 miles W.N.W. from Farewell Spit Light	60	63	59	29.30	"	Strong	Rain squalls and cloudy	Heavy sea.
" 25 ..	"	23 miles W. x N. from Stephens Island	55	60	60	29.70	W.N.W.	Very strong	Cloudy ..	"
" 29 ..	"	Off Blenheim bar	61	62	60	29.35	S.E.	Moderate	Light rain-squalls	Smooth.
" 30 ..	10.45	Cloudy Bay ..	54	62	61	29.80	E.	Light ..	Fine ..	"
Dec. 2 ..	"	15 miles E. from Stephens Island	53	63	57	29.50	W.	Moderate gale	Squally ..	Heavy sea.
" 3 ..	"	12 miles W. x S. $\frac{1}{2}$ S. from S. end Kapiti	54	55	59	29.65	S.	Moderate	Fine ..	Smooth.

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Courses :

Trawling-stations:

Soundings, in Fathoms:

c, coarse; d, dark; f, fine; gn, green; gy, grey; m, mud;
r, rock; s, sand; sf, soft; sh, shells.

SCALE: 10 miles to an inch.

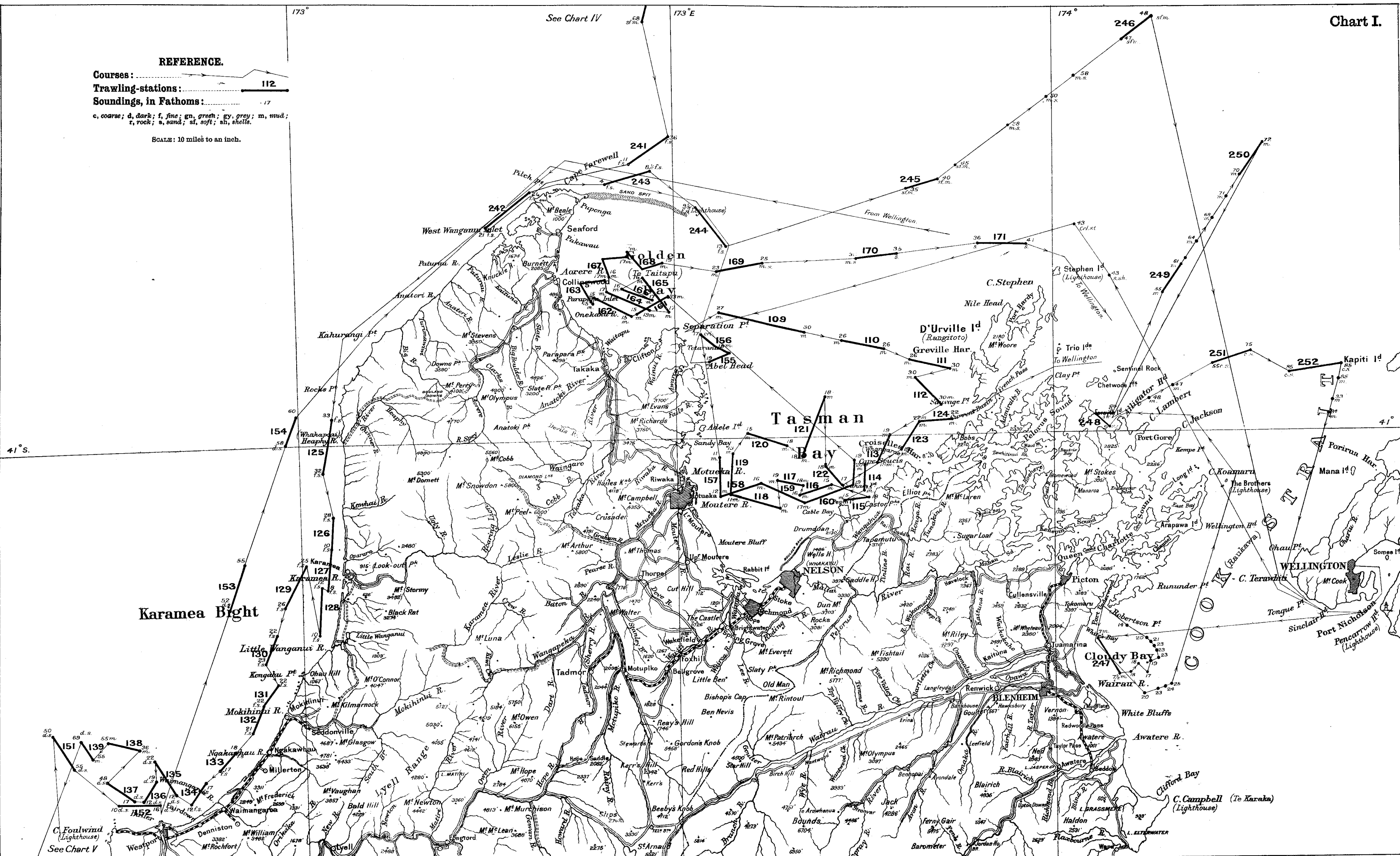


Chart II.

175°E.

See Chart III

REFERENCE.

Courses :

Trawling-stations:

Soundings, in Fathoms:

174

30

c, coarse; d, dark; f, fine; gn, green; gy, grey; m, mud;
r, rock; s, sand; sf, soft; sh, shells.

SCALE: 16 miles to an inch.

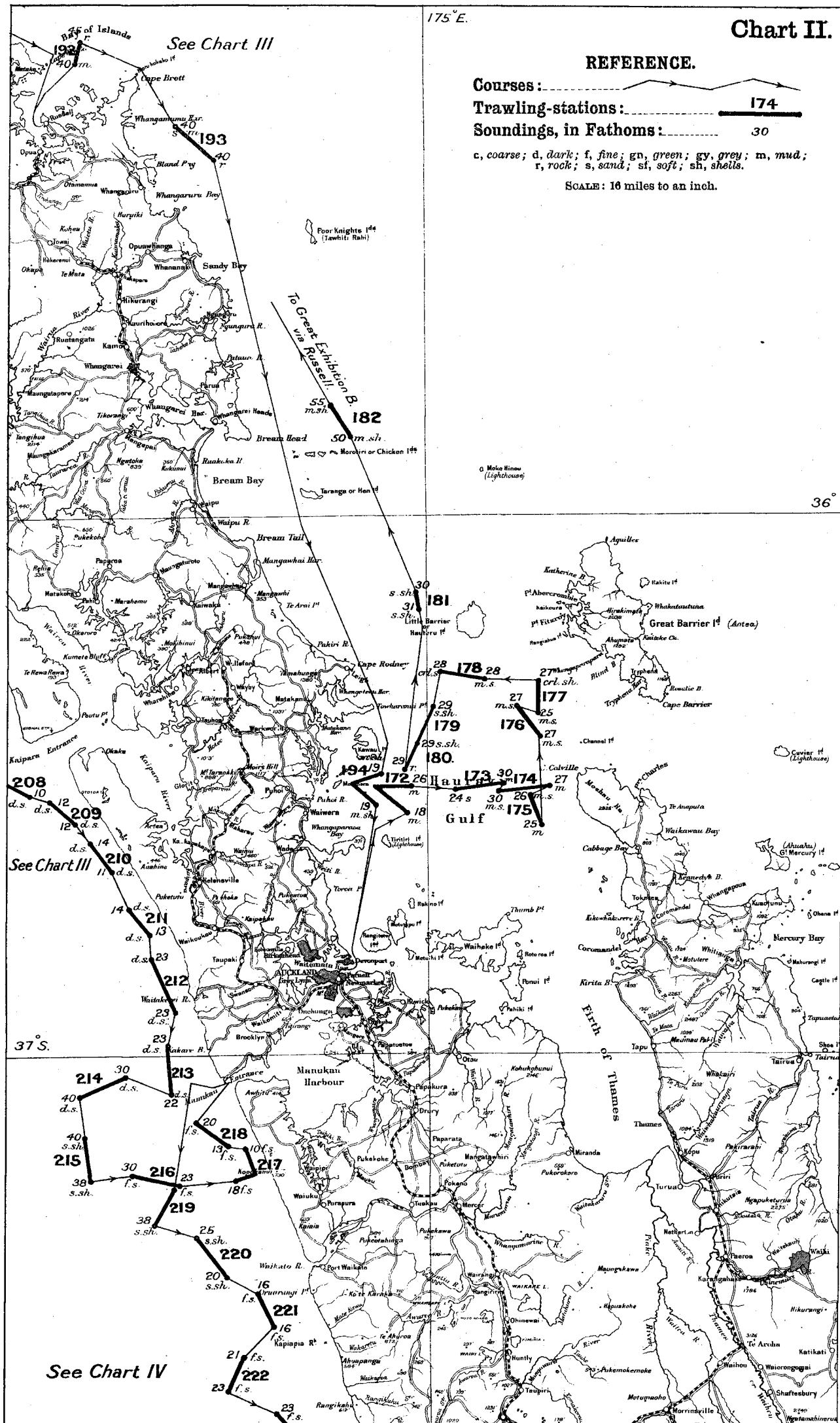
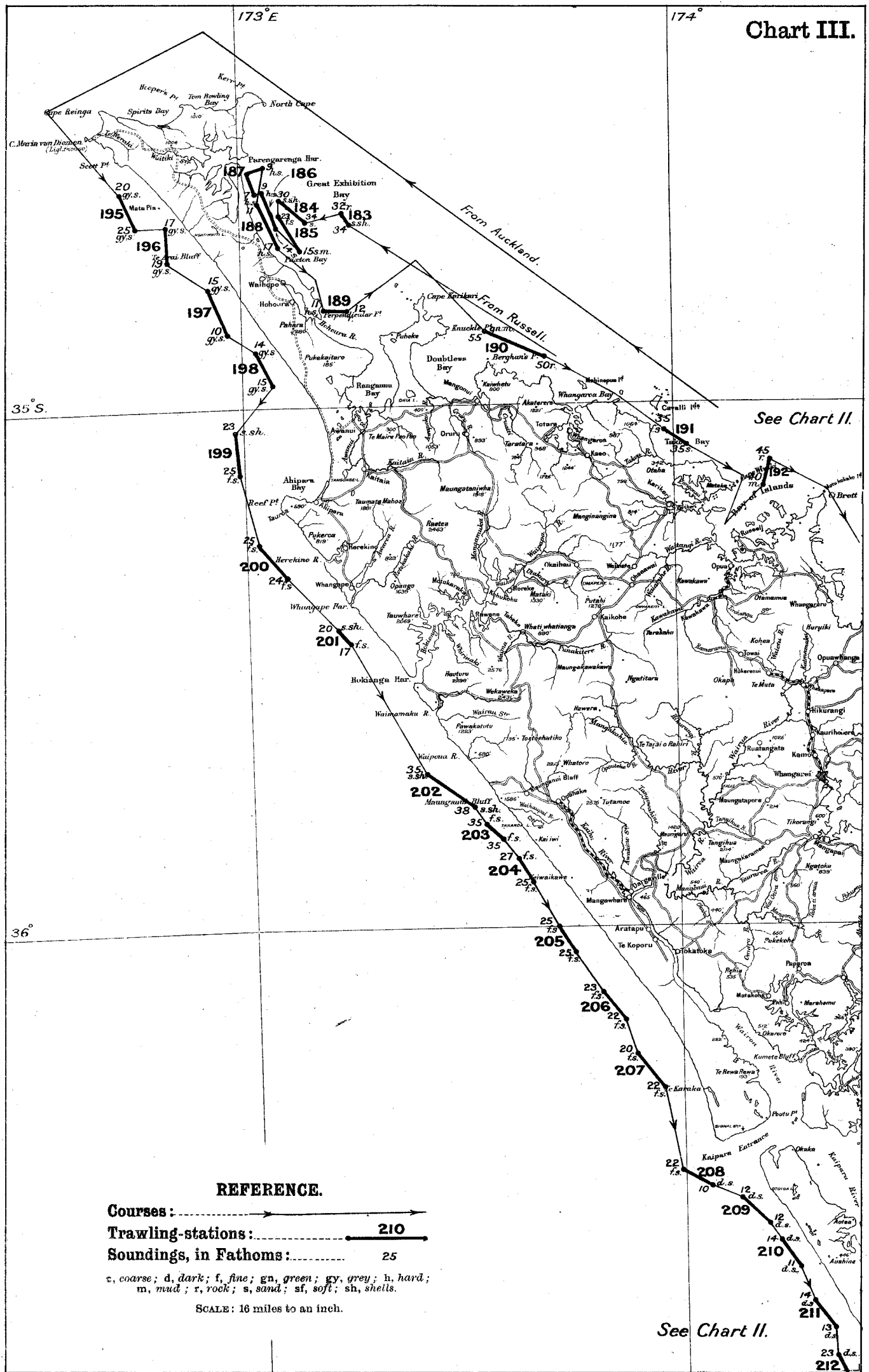


Chart III.



See Chart II.

