1933.

NEW ZEALAND.

MARINE DEPARTMENT.

ANNUAL REPORT FOR 1932-33.

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

YOUR EXCELLENCY,— Marine Department, Wellington, 28th October, 1933.

I do myself the honour to transmit for your Excellency's information, the report of the Marine Department for the financial year ended the 31st March last.

I have, &c.,
JOHN G. COBBE,
Minister of Marine.

His Excellency the Governor-General of the Dominion of New Zealand.

REPORT.

THE SECRETARY, MARINE DEPARTMENT, to the Hon. the MINISTER OF MARINE.

SIR,— Marine Department, Wellington, 26th October, 1933.

I have the honour to submit the annual report on the operations of the Marine Department for the financial year ended 31st March, 1933 :—

FINANCIAL.

The following statement summarizes the revenue and the expenditure of the Department (excluding Westport Harbour) for the past four years in comparison with the figures for 1922–23 :—

Branch.	1922–23.	1929–30.	1930–31.	1931–32.	1932–33.
		Revenue.			
Shipping Branch—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Light dues	39,688 16 8	82,710 19 6	84,062 0 5	78,334 6 0	87,297 17 7
Engagement and discharge fees	3,179 11 0	2,614 3 0	2,235 3 6	2,002 13 0	1,561 10 11
Survey fees	3,095 9 0	5,037 12 6	4,184 18 11	3,809 5 0	3,551 3 5
Examination fees, &c.	395 12 6	296 5 0	367 1 0	252 13 6	264 17 6
Miscellaneous	1,289 0 4	2,236 4 2	1,726 15 1	1,543 7 3	1,717 14 1
Harbours—					
Pilotage, port charges, &c.	764 14 6	2,206 1 4	1,431 17 4	1,293 4 1	1,860 7 5
Foreshore revenue	1,126 14 1	4,817 17 9	4,559 17 3	2,611 18 9	2,498 11 3
Inspection of Machinery—					
Inspection fees, &c.	17,126 19 6	20,790 14 9	22,535 16 4	22,801 19 8	18,981 3 10
Examination fees, &c	667 0 0	369 7 0	384 17 6	384 7 0	401 0 0
Fisheries—					
Sale of oysters	7,702 9 6	7,698 0 9	6,431 13 8	5,430 8 5	5,101 9 4
Fishing-boat license fees, &c.	324 9 6	668 3 8	638 15 10	691 0 3	560 1 6
Rental of toheroa-beds	10 0 0	300 0 0	300 0 0	309 0 0	317 18 6
Government steamers—					
Freight, passage-money, &c.	1,785 0 7	1,733 2 6	1,213 3 9	756 10 10	1,527 12 4
Ross Sea revenue	..	7,871 5 0	2 10 0	600 0 0	..
Miscellaneous revenue	2,800 11 4	15 11 4	14 8 10	26 1 7	27 17 1
Totals	79,956 8 6	139,365 8 3	130,098 19 5	120,846 15 4	125,669 4 9
		Expenditure.			
Head Office	9,612 2 8	9,273 9 10	9,708 14 1	8,931 6 9	7,124 6 0
Harbours	4,826 13 2	3,846 14 8	3,225 6 7	2,409 16 0	1,919 12 1
Lighthouses	27,834 14 8	26,793 14 5	23,691 3 4	21,244 8 4	20,145 7 2
Mercantile marine	15,150 17 11	27,142 19 10	27,373 3 1	21,216 13 0	19,383 12 5
Inspection of Machinery	27,015 0 0	21,957 5 10	24,652 11 7	22,800 13 1	14,636 5 6
Fisheries	9,580 7 1	9,180 13 4	7,804 12 11	7,207 0 7	8,784 6 10
Government steamers	21,697 19 6	20,820 19 5	21,257 3 11	17,557 3 1	16,561 18 1
Miscellaneous services	2,655 3 8	361 19 4	130 10 8	1 14 8	0 18 11
Grants and subsidies	1,510 0 0	1,350 0 0	175 0 0	125 0 0	629 3 4
Depreciation	8,156 0 10	10,020 15 6	10,067 9 0	13,343 13 2	13,598 8 3
	128,038 19 6	130,748 12 2	128,085 15 2	114,837 8 8	102,783 18 7
Interest on capital	15,716 7 3	17,557 2 4	18,378 5 0	20,325 19 2	20,609 4 5
Totals	143,755 6 9	148,305 14 6	146,464 0 2	135,163 7 10	123,393 3 0

It is gratifying to note that the operations of the Department realized a surplus of £2,276 1s. 9d. after making full provision for depreciation and interest on capital. This is the best result that has been obtained since the commercial balance-sheet system was instituted twelve years age, during which period the financial transactions of the Department have worked out as follows :—

Year.	Before paying Interest on Capital.	After paying Interest on Capital.
	£ s. d.	£ s. d.
1921–22	Deficiency 74,146 4 2	Deficiency 95,153 14 11
1922–23	,, 48,082 11 0	,, 63,798 18 3
1923–24	,, 9,759 8 1	,, 27,231 4 9
1924–25	,, 2,144 4 11	,, 19,882 0 6
1925–26	Surplus 517 2 2	,, 17,294 8 10
1926–27	,, 5,881 5 2	,, 12,124 0 10
1927–28	,, 5,941 6 0	,, 12,178 12 0
1928–29	,, 17,531 8 1	Surplus 1,474 15 2
1929–30	,, 8,494 8 11	Deficiency 8,940 6 3
1930–31	,, 1,891 10 5	,, 16,365 0 9
1931–32	,, 5,877 19 4	,, 14,316 12 6
1932–33	,, 22,885 6 2	Surplus 2,276 1 9

In my last report it was pointed out that, owing to the decline in revenue consequent upon the prevailing depression, the Department had adopted a policy of rigid economy. The numbers of staff in all branches were reduced to a minimum, and every item of expenditure was closely reviewed and curtailed wherever possible. The full effect of these economy measures was reflected in the accounts for the year under review. Excluding interest on capital and depreciation, the expenditure has decreased by £28,832 15s. 10d. during the past two years.

Westport Harbour.

The following statement shows the revenue and expenditure in respect of Westport Harbour for the past twelve years :—

Year.	Expenditure.	Revenue.	Year.	Expenditure.	Revenue.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
1921–22 ..	63,950 1 10	25,836 19 3	1927–28 ..	65,828 1 7	65,909 8 1
1922–23 ..	50,738 17 5	38,700 8 1	1928–29 ..	68,871 13 0	64,214 5 6
1923–24 ..	46,619 1 11	42,285 7 4	1929–30 ..	64,877 10 5	66,274 17 3
1924–25 ..	44,666 14 0	50,378 11 0	1930–31 ..	53,436 16 9	53,013 2 11
1925–26 ..	51,909 4 11	57,539 12 11	1931–32 ..	46,803 2 4	34,602 12 9
1926–27 ..	52,769 12 6	62,976 13 10	1932–33 ..	40,974 8 9	30,516 6 1

The loss for the year under review amounted to £10,458 2s. 8d. after making full provision for all charges in the way of depreciation, interest, and sinking fund. This loss is due to the unprecedented depression in the coal industry, which, unfortunately, is showing no signs of improvement.

The increasing use of electricity for industrial and household purposes and of oil for ship-propulsion has had a disastrous effect on the coal trade, upon which the harbour depends for practically the whole of its revenue.

The bunkering business has fallen away very considerably, the number of vessels which called at Westport for bunker coal during the past eight years being as follows :—

Year.	Number of Vessels.	Year.	Number of Vessels.
1925–26	20	1929–30	57
1926–27	44	1930–31	24
1927–28	51	1931–32	10
1928–29	54	1932–33	7

At one time it was considered that the shrinkage in the bunkering trade was due to a large extent to the rate of exchange being favourable to the purchase of Australian coal, but the increase of the New Zealand rate to a parity with Australia does not appear to have had any appreciable effect so far as Westport is concerned.

The following statement shows the net tonnage of shipping entered the port, the tonnage of coal shipped, and the financial result for each year since the Department has had control of the harbour :—

Year.	Net Tonnage of Shipping entered.	Tonnage of Coal shipped.	Financial Result.	£	s.	d.
1921–22	273,706	480,873	Deficiency	38,113	2	7
1922–23	332,401	573,487	,,	12,038	9	4
1923–24	275,762	442,070	,,	4,333	14	7
1924–25	334,827	556,669	Surplus	5,711	17	0
1925–26	386,669	552,949	,,	5,630	8	0
1926–27	459,670	637,165	,,	10,207	1	4
1927–28	466,021	623,256	,,	81	6	6
1928–29	458,712	604,778	Deficiency	4,657	7	6
1929–30	479,623	625,835	Surplus	1,397	6	10
1930–31	352,228	513,503	Deficiency	423	13	10
1931–32	234,936	336,873	,,	12,200	9	7
1932–33	223,936	282,163	,,	10,458	2	8

For the seven years from 1924–25 to 1930–31 (inclusive) there was an average annual surplus of £2,563 16s. 11d., but during the past two years with a heavy decline in coal export the finances of the harbour have shown a considerable deficit.

In order to minimize the loss, the Department has been compelled to reduce expenditure in every possible direction. The extension of the breakwaters had to be discontinued and the bucket dredge "Maui" laid up. As it is essential to maintain a satisfactory depth on the bar, the suction dredge "Eileen Ward" has been kept in commission.

The effect of various economies has been to reduce the expenditure by about £6,000 compared with 1931–32, but this saving was offset to a large extent by the decrease of approximately £4,000 in revenue.

Harbour Board Legislation.

During the year the following legislation affecting harbours in the Dominion was enacted :—

Okarito Harbour Act.—This Act empowers the Governor-General from time to time, by Order in Council, to vest the control and management of Okarito Harbour, on the west coast of the South Island, in any person or persons for a period not exceeding in any case twenty-five years; and to direct that any specified provisions of the Harbours Act, 1923, shall apply as if such person or persons were a Harbour Board within the meaning of that Act.

An application for a vesting Order in Council has been made to Government by the Okarito Harbour Co., Ltd., with a view to the Construction of harbour-works necessary to facilitate the milling and export of timber and other produce of the district, and the Order in Council has now been issued.

Napier Harbour Board Empowering Act.—This Act deals with the following matters :—

(*a*) It authorizes the sale by the Board of portions of certain areas of endowment land described in the Act, the proceeds to be applied to the improvement and roading of the balance of those areas.

(*b*) It authorizes the Board, with a view to adjustment of the boundaries of Ahuriri Lagoon, the bed of which was raised by the earthquake, to buy, sell, acquire, or exchange areas on or adjacent to the outside boundaries of the lagoon, and provides machinery for dealing with any Native lands affected.

Otago Harbour Board Empowering Act.—This Act deals with the following matters :—

(*a*) It authorizes the Board to carry out certain works for enlarging the canal known as the Water of Leith, for the purpose of flood-prevention, and to take and acquire lands necessary for the work.

(*b*) It provides for a reallocation of the loan-money authorized by the Board's Acts of 1926 and 1929 to enable the cost of the above work to be met out of such loan-money, and to enable the programme of works, authorized by those Acts, to be varied.

(*c*) It authorizes the sale of certain endowment lands to the Dunedin Drainage Board for use in connection with its drainage works.

(*d*) It authorizes the Board to apply the whole or any portion of its reserve funds to the purchase of debentures issued in respect of the Board's loans becoming due in 1934.

Whangarei Harbour Board Vesting Act.—This Act vests certain tidal and other land in the Board as an endowment.

Harbour-works.

Westport Harbour.—No further construction work has been carried out on this harbour for the year. Owing to heavy westerly weather damaging the piles, the whole of the trestling erected for breakwater extension has been dismantled.

The mean depth of water over the bar at the end of the year was practically the same as it was at the end of each of the two previous years, but the average working depth at high water was about 1 ft. less this year than last year. The depth on the bar has during the year been very erratic owing to numerous freshes in the river and to strong easterly sets.

The suction dredge " Eileen Ward " removed a total quantity of 440,335 cubic yards from the bar, 81,365 cubic yards from the fairway and berthages in the river, and 9,350 cubic yards from the floating-basin. The average working-depth in the river was maintained at practically the same as last year. A considerable shoaling which had taken place in the berthages was removed, but average depths were slightly less throughout the year than during the previous year.

The " Eileen Ward " was laid up for about ten weeks during the year for overhaul. Only 50 per cent. of the working year was taken up with dredging operations owing to bad weather, repairs, and overhaul. The rainfall for the year was 66·99 in., as against 114·55 in. last year.

Work on the dredges and other plant kept the workshops staff fully employed. The overhaul of the dredge " Eileen Ward " was carried out at Westport instead of at Wellington.

The signal-stations, beacons, and harbour lights were all kept in good order.

Extensive willow-planting was carried out with unemployed labour along the river-banks during the year. Fencing was renewed and extended where necessary.

Karamea Harbour.—This harbour has not been worked by shipping since November, 1931. The Oparara Quarry and training-wall works were closed down at the beginning of the year, and the plant has been dismantled and overhauled. No works were carried out in connection with the port during the year.

The entrance to the harbour is now very bad, the river-mouth having worked so far to the northwards that the river has very little scouring effect on the entrance. Added to this drawback, is the fact that nearly 80 per cent. of the water of the river escapes into the Otumahana Lagoon, which again reduces the effect of scour, and results in the water on the bar being very shallow.

Large quantities of debris shaken down by the earthquake are still being carried down by the river and deposited in the tidal reaches. Until this action is very much reduced it is of very little use to attempt to improve the working-conditions of the harbour.

Little Wanganui.—Owing to the unsatisfactory condition of the Karamea Harbour, the port of Little Wanganui has become the only sea outlet for the produce of the district once served by the two harbours.

The earthquake has, however, had a deleterious effect on this harbour also, and a large sand-and-shingle bank formed at the entrance, making navigation very difficult. Recently the river has cut through the bank, and the entrance is now a most favourable one.

Surveys were made with a view to constructing works that would improve the harbour, but the flood of February last so improved the entrance, as above stated, that no work is at present necessary. It may be necessary at some time to try to fix the mouth in its present most favourable position, but expenditure in this direction at the present time is out of the question.

The Karamea Shipping Co.'s a.s. " Fairburn " called at this port thirty-one times during the year.

Waikokopu.—No further construction work was carried out at this harbour during the year, but several blocks of concrete were placed in the breakwater to strengthen it and prevent loss of stone. Maintenance work was attended to as required on the wharf and breakwater.

Waitangi Wharf, Chatham Islands.—A contract for the erection of this wharf and the approach road was let to the Rope Construction Co. Work was started just prior to the 31st March, 1933. Timber is on the way for the wharf from Australia. Thirty-nine holes have been bored for piles for the timber protection-work to the approach road.

Pitt Island Wharf.—The timber is on the site for this wharf, but no construction has yet been done on it.

Tikinui Wharf.—The approach road to this wharf was completed during the year.

Whitianga Wharf.—This wharf was completed early in the year, and is now in service. A shed 40 ft. by 30 ft. was erected, and an approach road with a cattle-race.

Rotoroa Island.—During the month of November the hull of the old s.s. " Rimu " was sunk near the jetty on Rotoroa Island to provide shelter from the prevailing rough weather.

Lighthouses.

Very little new work has been done on lighthouses during the year. Maintenance and improvements have been carried out where necessary.

Baring Head.—The reserve at this lighthouse was fenced in during the year, and a double scrub fence was constructed to enclose the plantation surrounding the reserve. A number of native trees were also planted.

Puysegur Point.—The outer boarding of the two bays in the tower of this lighthouse was completed. Other miscellaneous repairs were also effected.

Cape Maria van Diemen.—Repairs were made to the main tower and outbuildings, and rails, sleepers, &c., were sent forward for the renewal of the tram line.

Godley Head.—The apparatus for converting the light from a fixed to a flashing one was installed during the year.

Akaroa.—A new lightning-arrester was fixed on this lighthouse.

Farewell Spit.—Repairs to the bracing and stairways were effected, and the whole structure cleaned down and given three coats of paint.

A number of minor repairs have been effected at various stations, and all buildings have been properly maintained.

Lighthouse Tender.

The work of tendering the coastal lighthouses has been efficiently carried out by the s.s. "Matai." In addition to this work, the vessel made one trip to the Chatham Islands with stores and provisions, which, owing to the absence of the regular trading-vessel, had become practically exhausted.

Adjustment and Inspection of Ships' Compasses.

The regulations for the adjustment of compasses have been carefully administered, and compasses continue to be maintained in a good state of efficiency. The results of the investigation of adjustments show that the work of the Compass Inspectors and Adjusters has been carefully performed. In a few cases it has been necessary to exercise extra supervision on account of the changing magnetic forces in the vessels.

Admiralty Charts.

The number of Admiralty charts stocked by the Department as agent for J. D. Potter and Co., London, has been further increased during the year by the addition of several new charts which have, at different times, been asked for. The charts held by the Department cover a considerable portion of the globe, and it has been necessary, in order to ensure that purchasers receive them corrected to date, to make a considerable number of corrections to them on account of the many changes in navigational details which have taken place during the year. The importance of using up-to-date charts cannot be too strongly urged on mariners, as the value of the chart obviously depends upon it showing a complete record of the changes which have been reported since its publication.

Examination of Masters and Mates.

During the year examinations were held in Auckland, Wellington, and Lyttelton, and were conducted in a satisfactory manner, and in accordance with the Imperial Board of Trade requirements. Examinations were discontinued at Lyttelton in May, and the rooms were closed on account of the decrease in the number of candidates applying for examination.

The system of dividing the examination into three parts—signals, written, and oral—which was introduced in 1931, is working satisfactorily, and is a great advantage to candidates who gain a partial pass, as they are required to pass only in the part they previously failed in, provided they present themselves before the expiration of six months.

Candidates continue to present themselves well prepared for examination, and definite improvement in the work is shown by the low percentage of 7·9 for total failures.

The number of examinations has increased considerably, and is partly the result of the 1931 regulations, which allow special service in home trade to be accepted for foreign-going certificates.

During the year eighty-four examinations were held, of which four were for signals only, one for yacht master in New Zealand waters, and one for colonial pilot. For certificates of competency the percentage of total passes was 49·2, a slight increase on last year, 25·4 per cent. for partial passes, 17·5 per cent. for partial failures, and 7·9 per cent. for total failures. Two candidates passed for a square-rigged sailing-ship endorsement, and one for fore-and-aft sailing-ship endorsement.

Examination in Form and Colour Vision.

These examinations continue to be held at Auckland, Wellington, Lyttelton, and Dunedin. During the year fifty-one candidates were examined, one of whem failed in the lantern test. No special, referred, or appeal examination was held during the year.

Helm or Steering Orders.

A great change from the long-established practice of giving helm orders was made on 1st January, when the direct system was brought into use on all British vessels.

The new orders, which are directly opposite to the old ones, were agreed upon at the "International Convention for the Safety of Life at Sea, 1929," and left a choice of form in which they could be given, the orders "Starboard" and "Port" or "Right" and "Left" being optional. In order to secure uniformity of practice in view of this choice, and also to consider the best methods of making the change the Imperial Board of Trade and representatives from the Navy and mercantile marine held a conference, and recommended the adoption of "Port" and "Starboard" for the new orders. They also made suggestions and recommendations which have proved of considerable help in making the change and carrying on the new orders.

Although it was fully expected that members of the mercantile marine would soon adapt themselves to the change, great credit is due to them for learning the new orders so quickly, and for carrying on so that, up to the present, no accident, resulting from confusion between the old and the new orders, has been reported.

Quite a number of masters and officers have stated that they experienced no difficulty in making the change, and in carrying on under the new system, and that any inconvenience felt at first has practically disappeared.

Marine Casualties.

During the year the casualties on or near our coast varied considerably in their nature, and one of them was, unfortunately, accompanied by loss of life.

The number of casualties this year is smaller than usual, and the greater part of them being minor accidents, due to fire, collision, grounding in small harbours, damage by heavy seas, &c. Where it was found necessary, the casualties were investigated by Departmental officers holding preliminary inquiries.

The circumstances attendant on three of the casualties warranted the holding of a Magisterial inquiry. Such inquiry was held into the loss of the s.s. "Kaponga," which grounded on the Greymouth Bar and became a total wreck; the stranding of the o.e.v. "Echo" near Pencarrow Head, and a collision at Napier Inner Harbour entrance between the o.e.v. "Tu Atu" and the labour launch "Doris" which resulted in the loss of ten lives.

The New Zealand Nautical Almanac and Tide-tables.

This publication for 1933 (31st edition) was published, as usual, on 1st November. In co-operation with the different Harbour Boards, every effort is made to keep the port information up to date, so that masters may have the latest available. It is published early so as to be available to Masters likely to be away from the Dominion at the beginning of the year.

The 1931 International Code of Signals.

It is intended that this new code should be brought into international use on 1st January, 1934. A British edition of it was published in 1932, and was brought into voluntary use on 1st January, 1933, so as to enable masters and officers to become familiar with the code and its procedure, and to afford them an opportunity of exercising signals with it.

The new code, while mainly for use with ships, also contains a considerable number of signals suitable for the use of aircraft. It is now published in two volumes, Volume I for visual and sound signals and Volume II for radio signalling.

Alterations have been made to the pilot and quarantine signals, but they will not come into operation until special notice has been given of their adoption.

Notices to Mariners.

Information relative to changes in navigational aids and to the discovery of obstructions, wreckage, or other dangers to navigation, and general information necessary for the use of mariners was published in the form of Notices to Mariners, of which sixty-seven have been issued during the year.

Radio Beacons and Direction-finders.

The provision of these beacons, as an added safeguard to life and property, is still increasing in different parts of the world, and they are now found in many parts where navigation, when it is impeded or endangered, can be assisted by them. The services rendered by the beacons, together with other important reasons, have been recognized and valued to such an extent by owners and masters, that nearly all vessels trading to the Dominion from places where such services are available have been fitted with direction-finders to take advantage of them.

The value of these beacons in assisting navigation on our coast was recognized by the Department soon after their inception, and one was erected at Cape Maria Van Diemen in 1926. It was then proposed to provide two more beacons, but action in their erection was delayed for several good reasons. The proposal was again being examined, when the urgent need for the curtailment of expenditure appeared and put the question beyond consideration for the time being. It is hoped, however, as soon as things improve to proceed with the erection of two beacons as part of a service considered by the Department as necessary to help towards the safe navigation of ships fitted with direction-finding installation.

Survey of Ships.

The following table shows the number of certificates issued to ships during the year, the figures for the previous year being shown in parentheses:—

Sea-going steam and motor ships	155	(153)
Sea-going sailing-ships	5	(5)
Restricted-limits steam and motor ships and motor-launches	401	(401)
	561	(559)

The number of surveys for certificates dropped from a total of 816 in the year 1927 to 559 in 1932. The returns of this year show a slight increase of two compared with the previous year. During the year ending the 31st March, 1933, seventeen vessels were surveyed for the first time. Of these, five were sea-going and twelve were restricted-limit vessels. The motor-ship "Atua," a new cargo-vessel, was built at Auckland. She is constructed of wood, and has a gross and register tonnage of 208 tons and 104 tons respectively. The propelling machinery consists of two sets of 100 b.h.p. imported Diesel engines driving twin screws, and on her trial trip in September, 1932, the vessel attained a speed of nine knots. On completion of construction and survey, a foreign-going certificate was issued, and one trip was made to Norfolk Island. Owing to the present slackness in coastal trade, the vessel has been laid up in Auckland for some months. Another vessel which has been surveyed for the first time is the motor-ship "Port Whangarei" (508 tons gross and 286 tons register), formerly the steamship "Marion Sleigh." She was converted to a motor-ship in Sydney, where two sets of Diesel engines each of 250 b.h.p. were installed, and entered the New Zealand coastal trade in November, 1932. The s.s. "Gabriella" was first surveyed in the Dominion in November, 1932. She has been engaged in the intercolonial trade for some years, and up to the date of the survey carried out by the Department had run under surveys conducted by the Australian Commonwealth authorities. The "South Sea," a steam trawler of 322 tons gross and 127 tons register, was formerly the s.s. "Ferriby," of Hull, England. She arrived in New Zealand during the year, and was surveyed by the Department in January, 1933.

Another sea-going vessel to be surveyed for the first time during the year was the ferry steamer "Rangatira." This vessel arrived in New Zealand waters in October, 1931, and ran under a certificate issued by the Imperial Board of Trade until 2nd July, 1932, when a departmental survey was made at the Port of Wellington. The "Rangatira" is the first vessel engaged in New Zealand trade to be fitted with electric couplings. The propelling machinery consists of two sets of turbo alternators each comprising one turbine direct-coupled to an alternator which supplies power to a double-unit synchronous-induction motor direct-coupled to the propeller shafting. The machinery develops 13,000 shaft horse-power, and a service speed up to 22 knots can be obtained. The six oil-fired boilers providing the steam-power carry a working-pressure of 425 – 446 lb. per square inch, which, at present, is the highest steam-pressure carried in the Dominion, ashore or afloat. The boilers are water-tube of the Yarrow type with superheater. The steam, water, and superheater drums are made of forged steel without longitudinal seams. The Lyttelton–Wellington ferry service is now maintained by three turbine-driven steamers, and the increase in boiler-pressure since the oldest of the vessels, the "Maori," went into commission is of interest.

The comparison is as follows:—

		Boiler-pressure. lb.
"Maori"	built 1907	140
"Wahine"	built 1913	200
"Rangatira"	built 1931	425–446

One hundred and seventy-six vessels were surveyed for efficiency and seaworthiness under section 226 of the Shipping and Seamen Act. There were also fourteen tonnage and other surveys, making a total of 190 surveys carried out in addition to the usual annual surveys, as against a total number of 257 additional surveys in the previous year. Twelve overseas vessels sustained damage during the year and were surveyed for seaworthiness by the Department's Surveyors. The "Pakeha," which put back to Wellington when two days out from Auckland with the stokehold bilges flooded, and reported hull leakage, which on investigation was found to come from defective engine-room pipes and connections; the "Norfolk," with defects in the forward ballast-tanks; the "Huntingdon," with bottom plating set up and frames and floors buckled, due to pounding in heavy weather on passage from the United Kingdom in ballast; the "Tymeric," with the keelson and several frames and intercostals buckled by grounding at Wanganui; and the "Cumberland," with damage to bridge and shelter decks by fire at Lyttelton, were the most important of these surveys.

It might be supposed that, as so few ships are being built nowadays, a large proportion of those in commission are old vessels. The fact is, however, that the relative number of vessels of ten years of age and less under survey this year is double the number surveyed ten years ago. Further, in the case of vessels over thirty years old, the number surveyed this year is 12·7 per cent. of the total, whereas ten years ago the corresponding percentage was 25. The probable explanation of this is that the hulls and propelling machinery of modern vessels are more efficient, and show lower fuel consumption per unit of horse-power than the old vessels. At one time the deciding factor in the scrapping of a vessel was the cost of repairs, but at the present time, ships are more often laid up on account of their inefficiency as reflected in increased running-costs as compared with modern ships.

The Department's instructions relating to equipment of fire-extinguishing appliances on board ship have been in operation since August, 1931, and the standard of fire-fighting equipment in vessels surveyed by the Department has been brought up to date during the past year.

The attention of Surveyors of Ships has been directed to the provisions of the new helm or steering orders, and actual trials of the steering-gear of ships under survey have been made to ensure that the new orders have been complied with.

The stock of Safe Working Loads Regulations, two thousand of which were printed in 1927, is getting low. Before the regulations are reprinted it seems desirable that they should be revised to bring them into line with the British Standard Specifications for Crane Chain, Ships' Cargo Lifting Blocks, and Wire Rope for shipping purposes, issued since 1927, and this is being done.

Twenty-four international load-line certificates have been issued to ships under the authority of the Department. All these certificates were issued as provisional certificates pending the passing of the necessary legislation to bring the provisions of the International Load Line Convention into force in New Zealand. In no instance, except that of the "Paua" was the load-line altered. The "Paua" is an oil-tanker, and this class of ship obtains a deeper loading under the Convention Rules. The load draught of the "Paua" has been increased 2½ in.

Registration of Shipping.

On the 31st December, 1932, there were on the Register of Vessels in the Dominion 58 sailing-vessels of 5,380 tons register, 225 steamers of 103,185 tons register, and 236 motor-vessels of 8,800 tons register, as compared with 65 sailing-vessels of 5,892 tons register, 231 steamers of 95,929 tons register, and 234 motor-vessels of 8,118 tons register at the end of the previous year.

The number of seamen employed on board was 3,560, as compared with 3,597 for the year 1931.

Government Shipping Offices.

In the Government shipping offices the administration of the Shipping and Seamen Act has been efficiently carried out. Appended is a statement showing the number of seamen engaged and discharged at the various ports during the year, and the fees received for such transactions. The total

number engaged and discharged was 8,830 and 8,694 respectively, as against 10,985 and 10,911 respectively during the previous year. The transactions at the four main ports were as follows, the figures in parentheses being those of the previous year.

Port.	Engagements.	Discharges.	Fees.					
			£	s.	d.	£	s.	d.
Auckland	2,701 (3,515)	2,813 (3,363)	513	19	0	(634	3	0)
Wellington	4,014 (4,104)	3,675 (4,271)	685	5	0	(781	17	0)
Lyttelton	439 (1,116)	433 (1,106)	73	4	0	(188	11	0)
Dunedin	352 (883)	406 (814)	74	4	0	(162	4	0)

Engagement of Seamen.

This service has been maintained. A record of seamen applying for work is kept for the purpose of filling vacancies.

Sick and Injured Seamen.

The total amount paid by shipowners to sick and injured seamen, under the provisions of the Shipping and Seamen Act, 1908, and its amendments, was £9,908 15s. 3d., as against £12,498 4s. 5d. for the previous year, a decrease of £2,589 9s. 2d.

Examination of Marine Engineers.

In the course of the year 204 candidates were examined for marine engineers' certificates of competency at the various centres throughout the Dominion.

Of these, 108 were examined for third-class, for second-class, and for first-class ordinary and motor certificates of Imperial validity; of the 74 third-class candidates who presented themselves for examination, 45 were successful and 29 unsuccessful; of the 11 second-class ordinary and motor candidates examined, 8 were successful and 3 unsuccessful; and of the 23 candidates examined for first-class ordinary and motor certificates and motor endorsements, 16 passed and 7 failed in the examinations.

In the case of second-class candidates the above particulars are comprised of 9 candidates for ordinary certificates, 6 of whom were successful; and 2 candidates for motor rertificates, both of whom were successful.

In the case of first-class candidates the foregoing return comprised 17 candidates for ordinary certificates, 11 of whom were successful; 4 candidates for motor certificates, of whom 3 were successful; and 2 candidates for motor endorsements of ordinary certificates, both of whom were successful.

Of the 16 candidates who were successful for first-class ordinary and motor certificates, 10 candidates passed at the first attempt, 4 at the second attempt, and 2 at the third attempt. Of the 8 candidates who were successful for second-class ordinary and motor certificates, 4 candidates passed at the first attempt, 2 at the second attempt, 1 at the third attempt, and 1 at the fourth attempt. In the case of the 45 candidates who were successful for third-class marine certificates, 29 passed at the first attempt, 12 at the second attempt, 3 at the third attempt, and 1 at the fourth attempt.

The remaining 96 candidates were examined for certificates of competency which are valid in New Zealand only. Of these, 62, 43 of whom were successful, were examined for service in sea-going vessels propelled by some motive power other than steam; 31, 27 of whom were successful, for service in vessels propelled by some motive power other than steam plying within restricted limits: and 3 were successful for service in steam-driven vessels plying within restricted limits.

The examinations for first-class, for second-class ordinary, and motor certificates, also those for third-class certificates, are held at the four main centres only.

Examinations for certificates of competency which are valid in New Zealand only are held at the fifteen centres throughout the Dominion.

Inspection of Boilers and Machinery.

Boilers and Pressure Vessels.

The following is a statement of the number of inspections made during this year, the corresponding figures for the previous year being shown in parentheses:—

	Number.	
Boilers and pressure vessels inspected for the first time	167	(226)
Air-receivers inspected for the first time	75	(142)
Total inspections of all boilers and pressure vessels	7,658	(7,914)

New rules relating to the construction of land boilers have been in operation since May, 1932, and are giving satisfaction to the Department and makers and owners of boilers. Circular instructions promoting uniformity of practice in the removal of brickwork from boilers for the purpose of examination of the shell plates, and in the stripping of lagging from the barrels of locomotive or locomotive-type boilers constructed with lap seams for the purpose of close examination of the seams were issued during the year.

The latter instruction was issued after the cause of lap-seam cracks in the barrels of two traction-engine boilers had been closely investigated by the Department. These two boilers were made by the same manufacturer in England, and were imported in the years 1925 and 1926 respectively. Each

worked at a pressure of 200 lb. per square inch, and was engaged in city road repairs. A leak developed in one boiler in April, 1932, when the boiler was seven years old, and, on examination, it was found that the shell-plate had cracked at the outer lap of the longitudinal seam in the barrel. A similar defect occurred in the other boiler in June, 1932, when the boiler was six years old. Fortunately, both defects were found, and the barrels condemned for further use before complete rupture occurred. A third case of a lap seam crack, which has quite recently occurred in a threshing-engine boiler, is under investigation.

The matter of the detection of lap-seam cracks in boilers of this class, which are invariably covered with insulating material, has given the Department much concern, and after the experience from these two boilers it was decided to require the removal of lagging from locomotives and loco-type boilers with longitudinal lap seams which cannot normally be examined internally when the boilers are first inspected after they are five years old. In the case of boilers with lap seams which can be inspected internally the stripping of lagging is not required until the boilers are ten years old. When the boilers are stripped at the periods stated hydraulic tests are applied and further tests made at five and ten yearly intervals thereafter. The instruction has now been in force since August, 1932, and the majority of the boilers of the locomotive type with lap seams have been examined and tested in accordance with the requirements. Many defects have thus been brought to light and cases of deterioration have been arrested before they had progressed to a stage requiring costly repairs.

Some owners expressed dissatisfaction with the Department's requirements, mainly on account of the cost of removing the pulp asbestos with which most of the barrels of the traction boilers were lagged. The advantages of a mattress filled with asbestos were pointed out, and a great many boiler barrels have now been so lagged. The asbestos mattress can be easily removed, has superior insulating properties, and a longer life and is not much more expensive in first cost than the pulp asbestos. It is ultimately much less expensive than pulp, as the pulp soon dries out and cracks with the jarring of the traction on the roads, and thus loses a good deal of its insulating-capacity. To save owners inconvenience and delay, the Department has supplied light and portable testing-pumps to Inspectors for use in the field where it is necessary to carry out hydraulic tests.

Towards the end of the year a mishap occurred to a large Lancashire boiler used at a colliery. The boiler was under its usual steaming load when the fireman attendant heard a thump and on investigating the cause found that the crown of the left-hand furnace had collapsed. The damage was examined by the Department's officers, and the cause of the collapse was fully inquired into. Three rings of the furnace collapsed inwards and the metal of the crown was found discoloured, pointing to the material at this part having been heated to a red heat. The damage was extensive, but the metal, although forty years old, was in good condition and did not rip. The distance of the water-level to the crown of the furnace was measured and found to be 20 in. There was no undue accumulation of scale nor any evidence of grease or oil having found access to the boiler. The right-hand furnace carried a small fire at the time of the failure, and was not appreciably distorted, and no other parts of the boiler were seriously damaged.

The collapse of the furnace was due to overheating of the plates through shortness of water within the boiler. There was no evidence to show how the shortness of water had occurred. It was estimated that at least two hours and three-quarters elapsed from the time the water disappeared from a visible reading in the water-gauge glass to the time of the accident, and the conclusion was come to that during this time the boiler-attendant did not give proper attention to the level of the water in the boiler.

Machinery.

The total number of machinery inspections for the year was 24,559. Among these 15 cranes and 12 lifts were inspected for the first time.

Nine fatal accidents and fifty non-fatal accidents were reported and investigated during the year. The corresponding numbers of accidents for last year were 5 and 42 respectively. Four of the fatal accidents were connected with machinery which had not been inspected by the Department or for which certificates were not in force, and one fatality occurred with farm machinery not now subject to annual inspection. Another fatality, the cause of which was investigated, was due to a fall from a window opening out from a lift-well, and could not be classed as a machinery accident. The remaining three fatal accidents were connected with certificated machinery. In one case a boy aged twelve years, after delivering his father's tea at a sawmill, wandered about the mill and became entangled in the driving mechanism of a saw. The machinery was efficiently guarded, and there was no evidence to show how the child got into the position in which he was found after the accident. In another case, a manager of a sawmill descended into a pit containing transmission machinery in order to clean a belt while the machinery was running. He was caught in the machinery and received injuries from which he died. The pit was adequately guarded, and a notice was posted nearby warning employees against entering the pit whilst the machinery was in motion. It is somewhat disturbing to find a manager of a plant taking such grave risks with running machinery. He should have been the first to set a good example and enforce safe practices.

The third fatal accident connected with certificated machinery occurred at a colliery. A steam locomotive, with a certificated engine-driver in charge, was engaged in shunting operations making up a train of loaded coal-wagons. The operations were being carried out on a slight incline and, when a load of approximately 60 tons was connected and before the air-brakes had been coupled to the six trucks containing the load, the train got out of control and moved down the line. The

line dipped to a grade of 1 in 40 some little distance from the mine and the runaway train attained an estimated speed of 60 miles per hour. It failed to negotiate a bend in the line and crashed through a bridge into a creek below. The engine-driver was killed. The locomotive was well equipped with hand and air brakes, but these were not sufficient to control the load under the conditions prevailing at the time of the accident. No doubt, if the air-brakes had been coupled to the loaded trucks the accident would not have occurred.

One of the accidents which occurred with uncertificated machinery illustrates the grave risks taken by persons with little or no knowledge of mechanics. A man was killed by flying fragments of a circular saw. From investigations into the cause of the accident it was found that the saw had been cracked for some time and that it was driven at a very dangerous speed. The power was supplied by a motor-car by means of a belt drive from a rear wheel. The speed of the saw spindle was 4,440 revolutions per minute and the speed of the saw at its perimeter 23,130 ft. per minute, whereas the maximum safe peripheral speed of a well-conditioned circular saw of the type used is considered to be 15,000 ft. per minute. Under these conditions the saw was bound to fail, and unfortunately it flew to pieces when the owner was standing directly in front of it. The plant had not been inspected by the Department.

Of the 50 non-fatal accidents reported 3 were connected with machinery not subject to inspection by the Department. Sixteen of the remaining accidents occurred at wood-working machines, of which 9 were circular saws; 5 occurred at transmission machinery, 4 at lifts, and 3 at power-presses. Hand and finger injuries were received in 32 cases, and 20 of the accidents were with machinery which was fully protected. Seventeen of the injured persons were under twenty-one years of age, and 19 of the accidents could be attributed only to carelessness. The circumstances of every accident were inquired into by the Department's officers, and, where possible, additional safeguards were fitted to prevent similar accidents. During the year circular instructions having reference to the guarding of mincing machines and to the safe speeds of circular saws were issued.

Examinations of Land Engineers, Engine-drivers, and Electric-tram Drivers.

These examinations were held at the various offices of the Inspectors of Machinery throughout the Dominion at the regular intervals provided for in the regulations—viz., in the months of May, August, November, and February. In addition, a few special examinations were granted, but the holding of special examinations is not encouraged, as it is considered that the regular examinations are of sufficient frequency, and, except in very exceptional circumstances, candidates are expected to arrange that they may attend the scheduled examinations.

The full list of places where the examinations were held is shown in an appended return, as also is the number of candidates examined at each place. The classes of certificates for which examinations were held were: Extra first-class stationery engineer, first-class engine-driver, second-class engine-driver, steam winding-engine driver, electric winding-engine driver, locomotive-engine driver, traction-engine driver, locomotive- and traction-engine driver, electric-tram driver, and electric-tram driver (one-man car).

The total number of candidates examined was 386. Of this number, 269 were successful and 117 failed in their examinations; 313 certificates were issued, which includes 269 to successful candidates in their examinations. The remainder were replacements and issues under the provisions of sections 53, 59, and 62 of the Inspection of Machinery Act, 1928.

Prosecutions.

During the year legal proceedings for offences under the various statutes administered by the Department were instituted in 43 cases. Prosecutions under each Act were as follows: Fisheries, 29; Shipping and Seamen Act, 7; Inspection of Machinery, 7.

Fisheries.

The report of the Chief Inspector of Fisheries, which is appended hereto, deals exhaustively with the operations of this Division during the year.

The sale of rock-oysters was well maintained, the total quantity disposed of being 4,414 sacks, realizing £5,046 17s. 8d., compared with 4,360 sacks, realizing £5,430 8s. 5d. during the previous season. The decreased revenue was due to a reduction in the retail price to the public.

Whaling.

The position with respect to the International Whaling Convention of 1931, referred to in the last annual report, is that up to the present time no advice has been received that the ratifications deposited are sufficient to bring the Convention into operation.

With respect to the local whaling-stations, that at Whangamumu did not operate at all last season, while the Tory Channel station took only 18 whales, yielding 92 tons of oil. The total catch from the two stations in the previous season was 110 whales—48 from Whangamumu and 62 from Tory Channel, yielding 240 tons and 290 tons respectively. The decreased operations last season were due to inability to dispose of the previous season's production. It is hoped that the current season's operations will, in the interests of the industry, show better results.

L. B. Campbell, Secretary.

REPORT ON FISHERIES.

SIR,—

The information contained in the annual returns from local Inspectors of Fisheries has been summarized in the customary tables (appended) and, as was done for the first time in my report for the preceding year, a more detailed analysis showing the quantities of different kinds of fish landed for certain of the ports is given in Table IIA. While every attempt has been made to obtain data for these summaries as accurate and as comprehensive as is possible with the available facilities, it should be recognized that such data do not represent what fisheries statistics ought to be. Until provision is made for the recording and collation of information, not once a year but at brief intervals, as to the quantities of the more important kinds of fish landed by the principal methods of fishing, so that we have a record of the catching instrument as well as the catching-power employed in respect of the quantities landed, our fisheries statistics cannot provide a rational account of the condition of the fisheries, nor one that will afford as much assistance as is desirable and necessary for the guidance of administration or the development of the industry.

From the returns received from the various ports the quantities and values of the year's production of fish, &c., have been estimated as follows:—

	Quantity.	£
Wet fish	287,979 cwt.	290,016
Whitebait	4,748 cwt.	21,620
Dredge oysters	37,484 sacks	19,679
Rock-oysters	4,414 sacks	5,047
Mussels	3,243 sacks	1,052
Crayfish	4,988 cwt.	3,488
Toheroas (canned products)	Nil	Nil
Whale products—		
Oil	92 tons	1,600
Fertilizer	Nil	Nil
Quinnat salmon (netted fish only)	12,445 lb.	467
Total value		£342,969

The corresponding total value of fishery products for the preceding year was £385,868.

There is, as usual, a certain quantity of fish caught in remote districts that is not accounted for in our returns. Such fish would probably not exceed 1 per cent. of the total.

A year that has seen the prices of foodstuffs—and especially those which come into direct competition with fish as an article of diet—fall to desperately low levels could not be other than a time of great difficulty and little profit to those engaged in any branch of the fishing industry.

Compared with the preceding year, which was also a "depression" year, there is shown a decline of about 10 per cent. in the quantity and about 7 per cent. in the value of the wet fish landed, while the estimated value of all sea-products shows a decline of about 11 per cent. If retail prices and turnover and the losses arising from unsold fish could be taken into account, there is no doubt but that even greater depreciation would be shown.

The fish landings in the Auckland District show a further decline not for want of fish to catch, but for want of buyers. More launches and small boats took part in fishing, especially in Manukau Harbour, their crews entering the industry for want of other occupation, while the established professional fishermen were obliged to limit their operations in the face of the diminished requirements of the dealers, and the Auckland steam-trawlers were even less active than in the previous year. In April, 1932, three trawlers were engaged, but only worked for about half the month: from May to mid-August two were in operation and from September, 1932, to March, 1933, only one of these vessels was operated, as the reduction in the price of fish made it cheaper to purchase supplies from the motor-launches.

For the whole of this year approximately 15½ trawler-months represents the extent of trawling operations, compared with the figure of 27 trawler-months for the previous year, which was itself a year of greatly curtailed activity for these vessels. In other words, the work done by the whole fleet for the 12 months was equivalent to the work done by one trawler in 15½ months and 27 months respectively.

The Danish-seining fleet, favoured by unusually fine weather, had a successful year so far as fishing operations were concerned and supplied the requirements of the trade in both snapper and flounders for the most part without working with anything like maximum intensity. One of these vessels made the biggest catch of snapper yet recorded for one haul of the Danish seine—174 baskets, or about 13,900 lb. weight of fish. This was made in the month of June not far from the Ruakaka Bar. (The average catch of a Danish seiner during the year would probably not exceed three baskets per haul.)

At the beginning of the year vigorous representations were made by yachtsmen and amateur fishermen concerning the impoverished condition of the snapper line-fishing grounds as compared with the abundance of former years. There was a good deal of truth in their contentions. It must

be admitted that in the past there was within easy reach of Auckland what may perhaps be described as a local superfluity of snapper, when an extraordinary number of these fish could be caught in a short time by any one who could put a bait on a hook. But whether the present-day conditions, when snapper-fishing in the neighbourhood of Auckland is much more of a game of chance, as well as of skill, than it used to be, represent a state of snapper depletion in the strict economic sense—whether human exploitation is taking away faster than nature can reproduce—is not a question that can be answered in the affirmative on the basis of the evidence available. However, after discussing the question at a conference of representatives of all classes of professional fishermen and fish-traders at Auckland on the 13th May, 1932, followed by a conference with experienced amateur fishermen on the following day, it was decided to close more of the inshore waters of the Hauraki Gulf to Danish-seining, with the object mainly of protecting known nursery grounds—though big snapper are also to be caught in these inshore waters—and also of conserving the stock of snapper on the small-boat fishermen's grounds. Regulations giving effect to this decision were made on the 14th November, 1932.

Hapuku catches by line-boats showed a falling-off this summer not only in the Hauraki Gulf, but also in Mercury Bay and the Bay of Plenty, but the winter catches by trawling were fairly good.

The flounder and dab supplies (both kinds being generally marketed under the common name of "flounder") have shown a marked increase on the Auckland market during the last three years, this fishing being specialized in by some of the Danish-seiners. The best catches are made in winter and spring. In summer when the flounder leave the Danish-seining grounds they afford a harvest for the set-net fishers in the Firth of Thames. Favourable weather and a (comparatively) better market combined to intensify the exploitation of this fishery during the last year.

By the method of attracting the fish with a bright light, 79 cwt. of sardines, netted at night, were landed by an Auckland boat during the year. These fish are prepared for market by salting down in small barrels in the Mediterranean style. The pioneer of this fishery has in view the prospect of developing a sardine-canning industry. A Thames fisherman also made a catch of sardines off Ponui in July, using what is described as a small surface set (? drift) net operated by daylight.

Captain Daniel carried out his usual observations on the reproduction of snapper in the summer months, obtaining numerous snapper eggs by tow-netting in December and January, by this means getting an indication of the distribution of the spawning schools and observing the temperature of the water at the incidence of spawning. At the same time, he obtained pilchard and anchovy eggs. He also ascertained that this year the flounder in the Hauraki Gulf spawned from about 20th July till about the 15th August, by which date most of the females were spent, and that dabs spawned from about the 15th of August to about the 9th September.

The Napier (Hawke's Bay) fishing, where the trawling method still predominates, was helped by good weather conditions and was prosecuted with more than average success. The Napier fishing fleet has been greatly inconvenienced, not to say endangered, owing to the loss of access to the old inner harbour following the earthquake of February, 1931.

In the absence of anything but the most cursory surveillance, and without comprehensive statistical records, it is not possible to report upon the conditions in the Wellington fishing industry with any confidence. During the past year the collection of returns of fish-landings has been commenced. Our best data are obtained through the co-operation of the New Zealand Fisheries, Ltd. (with regard to trawler operations) and of the Wellington Fishermen's Co-operative Association. From the latter the data collated by the Marine Biologist showed that from 23 long-lining vessels operating in Cook Strait during the year each boat's landing for a single trip averaged 31 groper, 9 hake, and 6 ling. These are but moderate results in view of the expenses incurred in working the launches in Cook Strait, but we have no data for comparison with previous years. The average weights of the principal fish caught by Cook Strait liners at the present time are—groper, 10 lb.; ling, 20 lb.; hake, 6 lb. (all headed and gutted).

The line fishermen of the French Pass, who depend principally on blue cod supplies for the Wellington market, have had their difficulties increased from the invasion of the industry by a number of unemployed or impoverished agriculturists. The result has been that at times the market has been oversupplied with a quantity of fish of poor quality. The majority of the professional fishermen desire the raising of the size limit for blue cod to 13 in. instead of the present 12 in. They maintain that good-sized fish have become progressively scarcer, and that the majority are caught before they have time to grow up. The Department requires to be better acquainted with this fishery than is the case at present in order that any measures for conservation which may be necessary may be rationally applied.

In connection with the fishing in Tasman Bay there has recently been an increase in the numbers of boats operating the Danish seine from the Port of Nelson. Inshore fishermen, principally amateurs, complain of the impoverishment of the local fishing-grounds, which they allege is due to the operations of the Danish seiners (generally termed trawlers in this district). The position appears to be similar to what has taken place in the Hauraki Gulf. With regard to the Tasman Bay fishing, past and present, we have unfortunately only the most exiguous information. It is very desirable that the conditions should be investigated more closely in the near future. Real depletion of a fishery (*i.e.*, taking out more quickly than nature can restore) cannot be allowed for too long, as the damage increases by a sort of compound interest until any remedy becomes impracticable. Under ideal fishery administration an approach to such a state of affairs would never be allowed. It is impossible to say on the basis of present information whether such a state exists in Tasman Bay at the present time or not, or whether the comparative shortage is entirely due to the causes popularly alleged. To apply new restrictions

to commercial fishing at a time when a depressed demand for fish is already putting a limit to the fishing operations, is a matter for very careful consideration, and would require to be based on a very definite understanding of the position.

Except with regard to one branch, which is of first importance however, the fishing from the Canterbury and Otago ports has been up to the average. In good weather supplies have been more than equal to the demand and prices have been very poor. The exception has been with regard to groper (hapuku) fishing. A general scarcity of this fish and of the Southern kingfish has been reported from Cook Strait to South Otago. It is generally alleged that fishing with long lines has been the cause of the decline. This is another problem that calls for closer investigation, and with regard to which a proper comprehension is prevented by the lack of fishery statistics.

The Chatham Islands fishermen had a very poor year owing to the lack of demand for their fish, which was primarily due to the infrequency of transport to the mainland. In 1932 fishing was engaged in for only three months, but the appearance early in 1933 of the newly arrived trawler "South Sea" which operates as a fish carrier (with refrigerated storage facilities) has brought new possibilities of employment to the Chatham Island fishermen. The "South Sea" made her first landing of over 900 cases of blue cod at Wellington on the 23rd February, 1933. The bulk of this fish is exported to Australia.

In previous years a part of the fisheries report has consisted of a section under the general heading of "Scientific Investigations" dealing with the steps taken and the broad results obtained from such researches as we have been able to pursue into biological and other problems affecting fishes and other aquatic organisms of economic importance. Lacking funds, staff, and the requisite facilities for conducting fishery research at the present time, our efforts in this direction have suffered a regrettable setback and, therefore, to label a section of the present report "Scientific Investigations" would appear to be misleading if not unduly pretentious. This does not imply that no progress has been made in our understanding of the biological phenomena relating to fisheries or that the task of collecting data has altogether lapsed. It seems more fitting, however, to refer to scientific aspects of the work under the same heads as the administrative or industrial questions with which they are connected and to which they are actually ancillary.

Rock-oysters.

The retirement of Senior Inspector F. P. Flinn, who had been in general charge of oyster work in the Auckland District for the six preceding years and before that for eleven years local inspector for the Bay of Islands, occurred just before the opening of the 1932 season. The earliest development of oyster cultivation, more especially in the Bay of Islands, was largely inspired and directed by Mr. Flinn, and it is due to him that there should here be placed on record an expression of appreciation for the unflagging interest and extreme energy and devotion with which he served the Department in connection with this work.

Mr. Flinn's retirement necessitated changes of venue for the officers responsible for the supervision of this season's oyster-supplies at Auckland, Russell, and Coromandel. Concentrated hard work was required to enable these Inspectors to get a grip of the conditions with which they had to deal, but they showed themselves most capable, and the supplies came forward without a hitch throughout the season.

Under the existing economic conditions some doubts were felt as to how far the usual demand for rock-oysters would be maintained. Prices were accordingly reduced from last year's figure of £1 4s. per sack (3 bushels) to £1 3s. (in the case of Kaipara oysters, 19s.) per sack for sales at the Auckland Depot. Paper bags containing not less than four-fifths of a gallon were retailed at the Depot at 1s. each.

Picking was begun on the 23rd May, and sales at the depot opened on the 1st June. Picking ceased on the 30th August. Thirty-five men were employed as pickers. The number of sacks of oysters taken from the various beds was as follows: Bay of Islands, 1,515; Whangarei Harbour, 107; Kaipara Harbour, 585; Hauraki Gulf, 1,560 (Takatu to Gull point, 87; Rakino, 153; Motutapu, 98; Waiheke, 1,031; Ponui, 169; Noisies, 22); Coromandel, 257; Great Barrier Island, 390: total, 4,414 sacks; value, £5,047.

It had been estimated that 5,000 sacks would be available for picking, due regard being paid to leaving the beds in the most satisfactory condition for the future multiplication and growth of oysters. The quality this season was exceptionally good, the best being those from the Hauraki Gulf beds. The Kaipara oysters, which in the past have been regarded as of inferior class, were supplied this season in very good condition, well picked, and, thanks to the new mechanical washer, they were quite free from mud, which in the past, even more than their smaller size, detracted from their value. The Kaipara oysters suffered a partial set-back in July when the unusual frost affected the condition and colour of the oysters in the "river" beds. Those beds adjacent to the deeper water were not affected.

Oyster-cultivation.

In accordance with economy measures the expenditure on oyster-cultivation was again reduced. A total of £148 1s. 5d. was expended for the year, but a considerable amount of work was done by the Inspectors.

The following shows the work done in the different areas and cost of same :—

Area, Work done, and Cost :—

I. Bay of Islands : 200 square yards of boulders cleared of weeds, 480 yards of capstones of walls turned, 769,000 borers destroyed. Cost, £49 18s. 4d.

II. Whangarei Harbour : 2,223 square yards of high-water oyster-bearing rock brought down to zone of better growth ; 128 yards of capstones turned ; 11,016 yards of rock cleared of dead shell ; 31,500 borers destroyed. Cost, £9 12s.

III. Kaipara Harbour : 1,760 yards of rock cleared of dead shell ; 644,000 borers destroyed. Cost, £48 10s. 5d.

IV. Takatu to Gull Point : 360 yards of rock cleared of dead shell ; 137 pupu destroyed ; 50 square yards of clean rock-surface exposed by blasting ; 209,250 borers destroyed. Cost, £3 13s. 2d. (for tools and explosives).

VI. Coromandel : 30 yards of clean rock moved down to oyster zone ; 23 sacks of oysters placed on " trays " ; 36 yards of rock cleared of weed ; 532 yards of capstones turned ; 9 sacks stunted oysters transplanted to " drift beds " ; 131 yards of rock walls re-formed ; 381,500 borers destroyed. Cost, £26 10s.

VII. Kawau : 28 pupu and 10,000 borers destroyed. Cost, nil.

VIII. Rakino : 22 pupu and 5,400 borers destroyed. Cost, nil.

X. Motutapu : 15,000 borers destroyed. Cost, nil.

XI. Brown's Island : 3,500 borers destroyed. Cost, nil.

XII. Motuihi : 196 pupu and 11,000 borers destroyed. Cost, nil.

XIII. Waiheke : 1,804 pupu and 392,550 borers destroyed. Cost, nil.

XIV. Ponui : 370 yards of rock cleaned of weed ; 14 square yards of clean rock-surface exposed by blasting ; 60,500 borers destroyed. Cost (of tools and explosives) included in expenditure for Area IV above.

XVI. Great Barrier Island : 201 yards of oyster-bearing and 75 yards of clean rock brought down to lower level ; 433 yards of rock cleared of weed. Cost, £9 17s. 6d.

All areas : 2,424 square yards of high-water oyster-bearing rock brought down ; 105 square yards clean rock placed in zone of best oyster growth ; 23 sacks of small oysters transferred to " trays " ; rock cleared of weeds over a frontage of 1,039 yards ; 1,140 yards of capstones turned ; rock cleared of dead shell over a frontage of 13,136 yards ; 9 sacks of small oysters transplanted to drift beds ; 2,187 pupu destroyed ; 64 square yards of new rock surface exposed by blasting ; 131 yards of rock wall re-formed ; 2,733,200 borers destroyed. Total cost, £148 1s. 5d.

Rock-oyster Investigations.

The task of keeping a systematic record of the conditions and operations connected with the Auckland rock-oyster beds and, within the scope of our powers, of concentrating observations on those aspects of the oyster problems which can only be determined as essential or non-essential in the light of a scientific understanding, has been the principal concern of the Marine Biologist, Mr. M. W. Young, who has inspected all the more important beds during the year. The trend of his work and its bearing on our practical problems may be indicated by the following extract from his report on the year's work :—

> " In connection with cultivation work, I have proposed a radical change of policy for this coming season, at any rate as far as Hauraki Gulf and Coromandel are concerned. It seems to be a fairly safe generalization to make that where the fixation occurs regularly and heavily the growth is poor and *vice versa*. Possibly this may be caused by overpopulation in the former case, thus reducing the amount of food available for each individual. We have, however, the concrete problem that in the Mahurangi and Kawau areas we do get regular and heavy fixation, and these places are very much overstocked with oysters which show little signs of ever reaching marketable size due to the overcrowding, whereas in certain other areas, such as Coromandel, we are definitely understocked, and I am of the opinion that the majority of this latter stock is becoming too old for successful reproduction. Since February, 1930, I have made several small transfers of oysters from Kawau to Coromandel to see if the oysters would survive the transfer. With the exception of some mortality due to known causes, such as being placed too near the mud line and the depredations of borer, there has been no mortality of any consequence. These oysters have been inspected at regular intervals, and have all done well. On one point I now see light where there was darkness before. We have always wondered why the presence of these transferred oysters did not make itself felt by an increase in the spat fixation on the neighbouring natural beds, and I am now convinced that this is because we placed the oysters as low down as possible with the intention of accelerating their growth—in which we succeeded, whereas if we had placed them nearer high-water mark they would not have increased so much in size individually, but the spawning would have been increased. I think that it can now be definitely stated that the high-water oysters spawn earlier each season and more regularly than the low-water ones. I am quite convinced from a long series of observations that the low-water oysters come to sexual ripeness so late in the season that they are checked by early cold snaps before spawning occurs, and the sexual elements are reabsorbed. Also by spawning early the spat from the high-water oysters is liberated under conditions of weather and food-supply, which are more favourable to a relatively high rate of survival, whereas if the low-water oyster does spawn, this act takes place in March, when the weather is definitely colder, and the spat which does fix is more liable to destruction by the cold weather of the early winter, before it becomes hardened.

"In the case of Mahurangi and Kawau, the beds are at present grossly overcrowded and will have to be thinned out, as there is very little chance of the main portion of the oysters there ever becoming marketable if the successive waves of spat are allowed to fix one on top of the other. Therefore, in respect of the Hauraki Gulf cultivation work, I suggested a fundamental change in policy to be carried out in the forthcoming season. This has been approved and is: That in place of trying to improve the stock on individual beds by bringing the high-water oyster down to a lower level, thus lessening our breeding-stock but improving our picking-stock, we should try to stock up the natural beds by means of the transfer of oysters caught where fixation conditions are good. In the past where oysters have been transferred to act as brood stock two great mistakes have been made—(1) The rocks on which the brood oysters were attached were placed too low down, so that the oysters tended to increase in size themselves instead of acting as spawners, and (2) insufficient numbers of brood oysters were transferred to any one place—that is to say, if, for example, fifty capstones were transferred, instead of being placed all together, they were scattered over a fairly wide area, thus reducing the concentration of spawn available for any particular position, and also reducing the sexual stimulation at spawning time, due to the presence of ova or sperms in the water surrounding oysters which were on the point of spawning. This latter factor is very important where the spawning season is delayed and the oysters tend to hold up their sexual elements. These two mistakes taken together must have done much to nullify any experiment. The approved proposals were that this season we should pick all the marketable oysters in Mahurangi and Kawau, then, as a phase of the cultivation work, clean off and bag up the small stunted oysters which remain, and bed them down in selected localities at Coromandel. We are also to transfer all the available capstones from Mahurangi and Kawau, to Rat Island, Coromandel, to be placed among the boulders near high water to act as brood stock."

Mr. Young further reports that the beds are, on the whole, understocked and have to be picked with care, with the exception of Kaipara, Mahurangi, and Kawau. On these areas fixation has been so heavy that they require hard picking to keep them in order. This is difficult as the oysters are not of such good quality as those from the other beds, and it makes their disposal in quantity very difficult.

Cultivation Experiments.

In connection with the experiments in "tray cultivation" (see Appendix II to Report on Fisheries for year ended 31st March, 1929), the trays at Kaipara and Coromandel have been kept under as close observation as possible by the local Inspector and by the Marine Biologist. In both cases the oysters on the trays had increased in size and improved in condition compared with the stock from which they came. Those oysters which were ready for market were removed and sold during the picking season. These amounted in the Kaipara experiment to 28 gallons from an original planting of 36 gallons. Of oysters which died on the trays there were 12 gallons from the low trays, 8 from the middle trays, and 3 gallons from the trays at highest level. From the Coromandel experiment 122 gallons were marketed from an original stock of 96 gallons of poor oysters transferred to the trays the previous year. These tray oysters were specially reported on by the dealers to whom they were sold. They reported that the condition ranged from fair to good and that the size of the shell and of the "fish" was good. They also stated, however, that these oysters did not keep so well as the usual rock-oysters. The tray oysters had been habituated to a longer period of submergence than the natural rock-oysters are subject to, the object having been to increase the time during which they could feed. This experiment will have reached a conclusive stage at the end of the current year when it will be possible to present a comprehensive report giving working details and costs.

The oysters produced from natural "spat" fixed upon stakes have been transferred from Mahurangi and Kawau to Coromandel where increased growth has been the result.

The special concrete slabs set up in 1929 and 1930 for the observation of the natural fixation and growth of rock-oysters, as mentioned in previous reports, have been the subject of periodic observations. Most of them are carrying an interesting population of oysters and associated organisms, the former ranging from 3 in. in length down to the minute dimensions of the last fixed "spat." This experiment will also be at a stage in the coming year when a report may be made.

Mr. Young has made preliminary experiments upon artificial fertilization of oysters, the artificial stimulation of spawning, and on opening oysters by the use of acid solution. Observations of temperature of the surface-water in the rock-oyster regions have been recorded by local Inspectors and collated at headquarters.

DREDGE OYSTERS.

Eight steamers from Bluff were employed in dredging oysters from the Foveaux Strait beds, and provided a supply of oysters quite adequate to meet a diminished demand at a reduced price of 10s. 6d. per sack f.o.b. Bluff. The oysters were of excellent quality. Six of the oyster-dredgers worked throughout the season from February to October inclusive; one made no landings in July, and one worked on the oyster-grounds only for portions of February, April, May, and June, and, having been equipped with a "well," was also engaged in an experiment in transporting live oysters by sea.

The vessels leave and return to port each day, but the maximum number of trips made in any one month was nineteen and the minimum (for the regular dredgers, not the transport vessel) was six. The idle days were partly occasioned by bad weather, but more often by the stocks of oysters in hand being adequate to meet market demands. The fleet made altogether 605 trips throughout the season. The total landings for the season amounted to 37,484 three-bushel sacks.

TOHEROA.

As a result of the economic depression no toheroas were packed at the canneries adjacent to the Ninety-mile Beach and the North Kaipara Beach beds this year.

There has been a certain amount of commercial exploitation by persons holding selling licenses for the two areas on the North Kaipara beach that are available for commercial digging. The quantities thus utilized are not known, but they probably do not amount to very much. There is no doubt but that the greatest abstractions are due to visitors by motor-car and to holiday campers, as evidenced by the depleted condition of the beds in the more accessible parts of the beaches and in the vicinity of holiday camps. The regulations gazetted in September, 1931, have had a good result in checking the taking of excessive quantities, but there is still need for a more effective supervision on most of the toheroa beaches.

It is also desirable that more attention should be paid to the matter of investigating the quantitative distribution of these bivalves, and especially the occurrence of the different year-groups in order that exploitation and conservation may be based on comprehensive knowledge and in accordance with rational considerations. With regard to the present well-stocked beds on the coast in the vicinity of Levin it is disquieting to find that there is an apparent shortage of the younger year groups, and a more thorough knowledge of the constitution of the stock would place us in a better position to shape our present and future policy in connection with measures of conservation. The same general consideration governs all problems of fishery conservation, but while in the cases of most species of fish and shellfish the practical difficulties of obtaining the required statistical and biometrical data are considerable, in the case of toheroas the task, given adequate time, is comparatively easy, since all the beds are accessible for about half a tide and can be sampled by digging and to a certain extent appraised by visual observation.

In connection with the question of the renewal of the cannery lease on the Ninety-mile Beach an effort was made in February, 1933, to carry out a survey of the toheroa-beds between the Waipapakauri Road and the Maungonui Bluff on the Ninety-mile Beach by means of sampling unit areas over several miles of the beach. Thanks to the invaluable assistance of Mr. W. K. McLean, manager of the Northland Canneries, Ltd. factory, it was possible to cover a good deal of ground in a ten days' stay and to get an approximate idea of the toheroa population in terms of real numbers as against the unsatisfactorily vague reference to various degrees of plenitude or such terms as "countless millions" or "inexhaustible abundance," which have for too long been used in connection with natural assets of all kinds. This survey was by no means exhaustive, and it is desirable that more time should be given to extending, amplifying, and confirming the data thus far obtained. The aim of this undertaking was to get information as to (1) the part of the beach occupied by toheroa-beds, and (2) the population of the toheroa-beds expressed in terms of approximate average density per yard of bed or per mile of beach. Since it was obviously impossible in a short time to survey the 50-odd miles of beach over which the beds are distributed, the method adopted was to make a rapid and superficial survey by inspection over the greater part of the beach and to work intensively and by quantitative sampling on limited portions which should be fairly representative of the whole. Actually the stretch of approximately thirty miles between Waipapakauri Road and Maungonui Bluff was the only portion of the beach that came under examination on this visit, though there are about seven miles of toheroa beach to the south and, I understand, a longer stretch of beach northward of the Maungonui Bluff that carry stocks of toheroas which are regularly utilized by local settlers and Maoris.

The conclusions from this survey regarding the present condition of the thirty miles of beach above mentioned may be summarized as follows: The first five miles proceeding northward from Waipapakauri Road contain beds at frequent intervals occupying not less than half the total length of the beach. The part nearest the road appears to be less densely stocked than farther north (probably on account of its being regularly dug by Maoris and settlers), but this portion was not sampled. The best beds are in the neighbourhood of the Karaka Stream, where digging for the cannery has principally taken place. The next five miles contain a series of good beds with only short intervals between, those to the south being practically continuous. The extreme south of this area is worked by the cannery diggers. The part of the beach between the eleventh and fifteenth mile from the road contains the best beds of toheroas of the largest size, more especially at the southern end in the neighbourhood of the Hukatere Stream. Between the sixteenth and twentieth mile from the road fairly good beds occur at the southern end, but the northern part is not so well populated. The ten miles of coast between here and the Maungonui Bluff are at present practically unproductive of toheroas of commerical size. Young stages were found (yearlings and two-year-olds), but it was not possible to ascertain the extent of their distribution or to get an idea of their real abundance. There can be no doubt, however, that at present this particular portion of the coast may be considered as barren compared with any part of the twenty miles to the southward or with its own condition a few years ago. As to the cause of the present condition of toheroa shortage here, one can only speculate. It is not due to human exploitation. Twice in the last four years there have been occasions when mortality on a considerable scale has taken place among the toheroas on this part of the coast—namely, in April, 1930, and in February, 1932. On the first occasion after a visit to the beach soon after the deaths took place I came to the conclusion that the effects of easterly gales in driving considerable quantities of dry sand from the sandhills on to the toheroa-beds had probably been the cause of the mortality.

I was not able to make any direct inquiries regarding the 1932 case. Mr. Powell, conchologist to the Auckland Museum, was reported by the press to ascribe the probable cause to starvation brought about by an absence of plankton in the sea-water at the time. There is one outstanding physical fact that may be correlated with the disappearance of toheroas from this part of the beach and possibly with these two incidences of general mortality—that is, the shrinkage in the volume of fresh water in the lagoons occurring inland immediately behind the toheroa-beds. It seems possible, if not probable, that the diminution in the amount of fresh water that finds its way by seepage through the sandhills

to the beach has brought about conditions unfavourable to the maintenance of the stock of toheroa on the beach. There are several lakes, lagoons, and swamps in this district which are the sources of the fresh water which finds its way to the beach either by way of the numerous small creeks or as a seepage through the back shore. It was brought to my notice by several local informants that these bodies of water had been diminishing in volume steadily during the last two years, and were at that time lower than they had been for many years. It was also apparent during my inspection that the northern area contained a larger proportion of beach that was lacking in fresh-water drainage than was the case in the southern half of the area where the toheroas were abundant. My attention was also drawn to the existence of a recently formed ridge of sandhills which may also have affected the extent to which seepage took place from the land at the back of the beach. It is desirable that more comprehensive observations should be made on these environmental factors and on the condition and occurrence of toheroa. It may be stated, as a general fact, that the occurrence of toheroa-beds is invariably associated with the existence of a supply of fresh water to the beach and it would appear that this factor is essential to the continuous well-being of this species.

As the result of this survey I came to the conclusion that the total stock of toheroas of commercial size (over 3 in.) on this thirty-mile length of beach amounted to not less than eleven million and a half and not very much more than twelve million.

In some parts of the beach sampled toheroa were so crowded that odd individuals could not get down to their usual position of 6 in. to 12 in. below the surface when the sand was left bare by the receding tide, but remained half out of the sand. On one such spot 372 toheroa were dug from one square yard of beach, 224 of these being over 3 in. in length. The precise cause of overcrowding in one portion of the beach while a few hundred yards away the sand is devoid of toheroa is a problem that remains to be elucidated.

With regard to the toheroa-beds on the North Kaipara beach, there is at present a great dearth of toheroas in those parts of the beach adjacent to the roads, but at the southern end where the areas are leased for canning the beds are very densely stocked and appear to carry a younger (though not smaller-sized) population than is the case on the Ninety-mile Beach.

The toheroa-beds between Paraparaumu and the Manawatu Heads are, generally speaking, well stocked, though the beds are neither so numerous nor so densely populated as those of the Auckland beaches. Reference has already been made to the fact that the stock appears to consist almost entirely of full-sized individuals, the younger year groups being very little in evidence. It is possible, therefore, that the future may see a considerable reduction in the toheroa stocks of these beds, a condition which has been known to hold in previous years.

The whole question of the distribution and general biology of this potentially very valuable species of mollusc deserves more attention than has hitherto been given to it.

Whitebait.

The main facts relating to the 1932 whitebait season, collated from the returns made by local inspectors, are shown in the following statement:—

Whitebait Fishery.

Inspector's Centre.	Rivers fished.	Method of Fishing.	Fishing began	Best Month.	Number of Fishermen. (Approximate.)		Total Quantity caught. (Approximate.)
					Whole Time.	Part Time.	
			1932.				Cwt.
Auckland ..	Lower Waikato ..	Hand-net ..	3rd June	September ..	90	50	514
Napier ..	Tukituki, Ngaruroro, Wairoa, Mohaka, Waikare	Hand and set nets	July ..	August, September	40	20	56
New Plymouth	Urenui, Mokau, Waitara, Waiwakaiho, Mimi, and most of the other streams	Hand and set nets	August ..	October ..	(?)	100	100
Foxton ..	Manawatu ..	Set-nets ..	June ..	October ..	4	20	26
Blenheim ..	Wairau, Opawa, Taumarina, Spring Creek	(?)	End August	October ..	(?)	12	12
Karamea ..	Karamea, Little Wanganui	Hand-nets ..	August ..	October ..	(?)	20	25
Westport ..	Buller, Orawaiti ..	Hand-nets ..	August ..	October ..	10	70	862
Greymouth ..	Grey, Teremakau ..	Hand and set nets	August ..	November ..	20	200	555
Hokitika ..	Hokitika, Mahinapua, Totara, Arahura, Waitaha, Mikinui	Hand and set nets (trenches)	August ..	October–November	(?)	172	1,570
Matainui, South Westland	Big Wanganui, Poerua, Wataroa, Okuru, Haast, Maori, Jacobs River	Set and hand nets	End of July	August–September	24	10	483
Christchurch	Ashley, Waimakariri, Styx, Avon, Saltwater Creek, Heathcote	Hand and set nets	August ..	October ..	20	128	48
Dunedin ..	Taieri, Clutha, Shag, Waikouaiti	Hand-nets ..	September	October ..	(?)	..	456
Invercargill ..	Mataura, Oreti, Aparima	Hand-nets ..	15th September	October ..	(?)	100	41
Totals ..	..	..	..	..	208	902	4,748

The total quantity of whitebait caught—4,748 cwt. (which is equivalent to about five hundred million individual fishes)—as estimated from the returns, is short of the actual total yield for the season, owing to the omission of catches made on rivers not subject to inspection and of much whitebait that is caught by amateur fishers.

The quantity of whitebait canned during the season was 117,000 lb.

The total yield is considerably in excess of that shown for the previous season (when, however, there was no return for the Westport district, which this year provided 862 cwt., second only to the Hokitika district in the quantity produced for the 1932 season). The increased total is due practically entirely to the good runs of whitebait which took place throughout the whole of the West Coast (South Island) district. The advantage to the many people who were depending on whitebait-fishing for a living was, however, discounted by a considerable drop in prices. The canneries also limited the quantities which they packed. The Waikato fishing, on which the local Maoris depend for the major part of their income, was not so good as usual, which may have been due to the abnormally low river. The decline in whitebait catches from the Rangitikei River and from the Blenheim district was also ascribed to the low state of the rivers. Such conditions operate to the disadvantage of the net operator by reducing the velocity of the flow, and thus enabling the whitebait shoals to ascend in more extended order. The fishing in Southland is also reported to have been affected by unfavourable weather, but in this case it was probably floods that interfered with the operations. Taranaki fishing was better than average, and was favoured by suitable weather conditions. The season was a very poor one for Hawke's Bay. The local Inspector points out that the raising of the river-beds by the recent earthquake has been detrimental. Foxton (Manawatu River) had "the worst season on record." The known occurrence of conditions inimical to whitebait production—destruction of spawning-grounds and pollution—in this river have been pointed out in previous reports, and it is a matter for regret that the Department has not been able to keep in touch with the conditions and to exercise some control in the direction of bringing about improvements. The whole of the East Coast of the South Island showed poor whitebait fishing this season. How far this was due to climatic conditions and how far it is the result of more intensive settlement and cultivation of the land is an open question. It cannot be doubted that as civilization and cultivation increase whitebait propagation decreases. The history of the settlement of New Zealand shows it, the known facts as to the present distribution of whitebait in the Dominion corroborate it, and the conditioning factors have been elucidated by recent investigations already described in previous reports. It seems very desirable that steps should be taken without delay to deal more especially with the matter of preserving spawning localities from destruction and damage.

Further spawning places of this species have been located during the year as follows: On the right bank of the tidal portion of the Waitangi River (South Westland) observed by Mr. James Donovan, of Okarito, in March, 1932 and 1933; about three-quarters of a mile from the mouth of the Tukituki River, Hawke's Bay, where an area about 150 yards long by 7 yards wide was utilized by inanga for spawning, the eggs being observed among fescue grass, by Mr. A. G. Petersen, Inspector of Fisheries for Napier; from 200 to 500 yards from the mouth of the Turanganui River, which flows into Lake Onoke (lower Wairarapa), by Mrs. McKenzie, of Turanganui, in March, 1933. The interesting point about the last-mentioned occurrence is that the Turanganui River is in no way tidal. The inanga were observed spawning after a rise of 2 in. or 3 in. caused by a slight fresh in the river owing to rain. When the river went down the banks were inspected by Mr. McKenzie and Mr. Warren, and large numbers of eggs were found among the roots of willows and among tall fescue grass and other herbage along the margin of the stream over which the water had risen during the fresh. This is the first definite instance known where this species has not been helped by the rise and fall of the spring tide in finding a location for its ova. A sample of the eggs was brought by Mr. Warren to the Fisheries Office and identified. The larvæ were hatched out and some of them were kept alive for twenty days. A second instance where spawning takes place under similar conditions has subsequently been mentioned to me by Mr. Digby, Curator of the North Canterbury Acclimatization Society's Hatchery, who reported having seen spawning taking place late in February last just inside "No. 1 Creek," Lake Ellesmere.

Quinnat Salmon.

As was foreshadowed by the excellent run of well-grown fish during the angling season, the spawning run in the Waitaki River was very much above average both as to quantity and size. It was said to be the second-best run yet known for the Waitaki. The fish appeared early in the Hakataramea, but a fresh at the beginning of April, 1932, delayed the construction of the rack and the first run was thus allowed to go by without providing any material for the hatchery. It was not possible to get the rack into operation until the 21st April. Further floods in early May continued to give trouble and on the 10th of that month the rack was carried away. Subsequently a pound net was used. The total number of fish taken for stripping was 58 males and 70 females, and the eggs put down in the hatchery numbered 370,000 at the eyed stage. The first salmon was trapped on 22nd April and the last on 11th June. 360,000 ova were sent to Westland and 10,000 kept at Hakataramea and hatched out for the stocking of the parr pond.

Of the parr kept in the pond from the 1931 hatching, 3,915 were marked, by clipping off the two ventral fins, and liberated into the Hakataramea River. Several of the males among these pond-reared quinnat showed signs of sexual ripeness in winter 1932, about the end of their first year. Some of these precociously matured fish were retained in the pond for subsequent observation. Two of them had died by the end of August, 1932.

A visit by the Fish Culturist, Mr. J. S. Main, to Deep Creek, the tributary of the Rangitata which has been regarded for some time as its principal quinnat-spawning water, disclosed the fact that this stream did not receive such a good run of salmon as had usually been the case in previous years, though the general run of quinnat was a good one, and spawning fish were reported in considerable abundance in the main river and in other tributaries. The spawning reaches of Deep Creek appeared

to be accommodating only about half the average quantity of spawners of former years. There will be no possibility of providing an explanation for such occurrences until arrangements can be made for more thorough observation of the migrations of the fish and the varying water conditions which affect them.

There was evidence of quinnat having spawned in the Wairau River (Marlborough) in the winter of 1932 and also in the Rangitikei River, on the West Coast of the Wellington Province, which seems to be the most attractive spawning resort for the more extreme migrants of this species.

The 1933 quinnat angling season was marred by the prevalence of floods and turbid water in the big Canterbury rivers during the period when the principal runs occurred. Consequently there were many blank days for anglers near the river mouths, though some good catches were made later in the higher reaches. A few odd fish were caught in January and February, but for practically the whole of February and the first week of March the nor'westers brought thick water down the Canterbury snow rivers. The best fishing—practically the only fishing—at the mouth of the Rangitata was in the fortnight from the 8th to the 21st March, when 181 quinnat salmon were known to have been caught by anglers. For the rest of the season turbid water dominated the situation and only about twenty fish were reported to have been taken in the four days ended on the 2nd April. The Opihi River again had its run of quinnat and, being less affected by spates than the big snow rivers, yielded fair sport to anglers, 127 fish being caught near the mouth of this river. Sea-run quinnat salmon of large size and in good condition were taken in Lake Wanaka from the middle of March which must have run the Clutha River. From Lake Wakatipu the capture of only lake-fed fish was reported.

From the returns made by rod-fishers holding selling licenses, the tabulated statement of catches for the Waimakariri, Rakaia, and Rangitata Rivers which follows has been collated. For the reasons above mentioned the numbers caught were below the usual average. The lower Waitaki River was unfishable for practically the whole season, though salmon were observed entering the mouth from the end of December onward, the first good run showing on 14th February and others being in evidence from 5th to 7th of March, on 2nd May, and on the 18th May. The average weights of the fish, though, with the exception of the Rangitata catch, below those of the previous season, were higher than the usual average, and it will be seen that in accordance with the general rule the average size is greater for the southern rivers than for those to the north.

Quinnat Salmon: Returns from Rods.

—	Males.	Females.	Sex not given.	Totals.
Waimakariri River, 27/1/33 to 1/4/33 (four rods)—				
Number of fish caught	14	28	2	44
Total weight of fish	193 lb.	374 lb.	28 lb.	595 lb.
Average weight	13·8 lb.	13·4 lb.	14·0 lb.	13·5 lb.
Rakaia River, 8/3/33 to 17/4/33 (five rods)*—				
Number of fish caught	68	49	..	117
Total weight of fish	1,059 lb.	817 lb.	..	1,876 lb.
Average weight	15·6 lb.	16·7 lb.	..	16·0 lb.
Rangitata River, 1/3/33 to 8/4/33 (thirteen rods)*—				
Number of fish caught	53	36	48	137
Total weight of fish	1,126 lb.	726 lb.	885 lb.	2,737 lb.
Average weight	21·2 lb.	20·2 lb.	18·4 lb.	20·0 lb.
Combined rivers, 27/1/33 to 17/4/33 (twenty rods)—				
Number of fish caught	135	113	50	298
Total weight of fish	2,378 lb.	1,917 lb.	913 lb.	5,208 lb.
Average weight	17·6 lb.	17·0 lb.	18·3 lb.	17·4 lb.

* Two rods fished both rivers.

Four netting licenses were issued for the lower portion of the tidal waters of the Waimakariri, the fishing being restricted to five days per week. An additional license was granted late in the season for the Hurunui River. Partly perhaps from the short time available, but principally, it would appear, from the difficulty of working a seine in this water, very little success was achieved, only eleven fish being caught. The results of the net-fishing are shown below.

—	Males.	Females.	Sex not given.	Totals.
Hurunui River, 13/3/33 to 27/3/33 (one net)—				
Number of fish caught	6	5	..	11
Total weight of fish	61 lb.	76 lb.	..	137 lb.
Average weight	10·2 lb.	15·2 lb.	..	12·5 lb.
Waimakariri River, 19/1/33 to 4/4/33 (four nets)—				
Number of fish caught	249	374	305	928
Total weight of fish	3,201 lb.	5,249 lb.	3,868 lb.	12,318 lb.
Average weight	12·8 lb.	14·0 lb.	12·7 lb.	13·3 lb.

Of 928 salmon from Waimakariri nets, the catch for January numbered 27; February, 154; March, 730; April, 172.

Atlantic Salmon.

For the 1932 hatchery operations at Te Anau the usual rack was constructed across the Upukororo River. Its completion was delayed till 1st May by a succession of small freshes, and a pound net was in operation during April. After the beginning of May no floods were experienced and most of the salmon that were taken came up on a slight rise of the river in June. The lake and rivers remained exceptionally low throughout the season, and probably for this reason no really good run occurred. A number of salmon as well as trout entered the river early in August and could be seen in large numbers in the deep holes not far from the river-mouth. A few spawned below the rack. Those taken in the trap in August were above the usual size, averaging about 7 lb. with one 15 lb. fish. They were not very satisfactory for hatchery purposes, however, giving many infertile eggs. It is probable that delayed spawning was the cause of this infertility. The numbers of fish taken for stripping were as follow :—

——	Males.	Females.	Total.
April	4	2	6
May	23	22	45
June	56	44	100
July	9	13	22
August	14	9	23
Whole period ..	106	90	196

The number of ova taken was 325,000, of which 14,000 were infertile. 311,500 fry were hatched out, of which 158,000 were liberated in the Eglinton River and tributaries and 153,500 in the Upukororo River and tributaries.

The condition of the fish appeared to have improved in comparison with previous years. This is reflected in their greater egg-production. The average number of eggs per female in 1930 was 2,791, in 1931 it was 2,295, and in 1932 the average rose to 3,611. Moreover, the fry hatched out were a particularly vigorous lot.

After consultation with the officers of the Southland Acclimatization Society, to which body we are indebted for much of our information about the Atlantic salmon fishing and for the enforcement of regulations, the policy has been adopted of concentrating for the present upon the stocking-up of the Upukororo River (which had undoubtedly suffered depletion during the last five years) and the Eglinton River. This latter has for some time received limited runs of salmon, wanderers from the Upukororo stock, but it has a larger volume than the Upukororo and appears to have the character of a better salmon river. The recently constructed road up the beautiful Eglinton valley has now provided easy access to the river which facilitates stocking operations, and will later, it is hoped, provide the angling tourist with good fishing in a most congenial environment. When these upper waters are adequately stocked it is proposed to concentrate upon the stocking of the tributaries of the Waiau which enter it below the lakes, and so afford an opportunity for the increase of sea-running salmon which at present evidently constitute but a small proportion of the whole stock.

During the 1932 trapping operations three salmon tagged after stripping in 1931 were recaptured. The particulars are as follows :—

	Liberation.			Recapture.		
—	Date.	Length.	Weight.	Date.	Length.	Weight.
		in.	lb.		in.	lb.
L. 94	18/6/31 ..	24	4	-/8/32	25½	5½
L. 160	5/8/31 ..	24½	5	-/8/32	*	*
L. 163	5/8/31 ..	24½	5	-/8/32	25	5

* This fish lost its tag while in the pound and before it had been weighed and measured. It was described as "a long skimpy fish."

The weights in every case are of the fish after stripping. These recaptures show, as in previous cases, that Te Anau salmon make very little additional growth after the attainment of maturity, which, apart from other evidence, is an indication of fresh-water feeding which, while producing quite rapid growth up to first maturity, is inadequate for the building-up of both flesh and sexual products in later life.

Fresh-water Fisheries.

Except in connection with salmon-stocking and with certain aspects of the many-angled problems of the whitebait fishery, the Department has but slight direct contact with the fresh-water fisheries of the Dominion, though responsible, under Part II of the Fisheries Act of 1928, for their

administration. Generally speaking, the initiation and the local enforcement of regulations for the taking of acclimatized fish are in the hands of Acclimatization Societies, whose officers are in the best position to understand the conditions and desiderata in their district which should govern rules of fishing and policies of fish conservation. The enforcement of regulations primarily depends upon the number and efficiency of officers available for these duties; and these depend mainly upon the financial strength of the local Society. In no district can it be said that the ranging staff is adequate to cover the ground that is really desirable, and in some districts effective surveillance over fishing is practically lacking. Poaching and pollution, the two principal enemies of fish conservation, are thus far more frequent than they ought to be. It is not a question of stiffening up the law, but a matter of enforcing it. To further this object there are grounds for the appointment of a departmental fishery officer as a ranger for all parts of the Dominion who could operate at the place where and at the time when his presence was most needed. Financial considerations appear to be the only possible obstacle or objection to this step being taken. Revenue to cover the necessary expenditure could be forthcoming by charging license fees for salmon angling and for whitebait fishing. The justification and even the necessity for such licenses will probably become evident in the near future, not from the aspect of revenue production, but as the only means of providing for the restrictions and the supervision that considerations of conservation of the fishing will require.

Pollution.

There appears to be special need to recognize and to deal with the menace of pollution in our rivers. The law is as definite as legislation on such a subject can be, but the fact remains that in certain places sewage, sawdust, dairy, and works effluents have been and are deteriorating fishing-waters and fouling what were once resorts for pleasant and healthy recreation. The newness and relatively sparse population of the country should not be allowed to encourage an attitude of indifference or a mercenary viewpoint with regard to these dangers when older countries have recognized the error of such policies in the past and are now paying a heavy price to remedy the damage to fisheries and the blight to riparian amenities that have been wrought by pollution. It is desirable that steps should be taken under the powers conferred by the Fisheries Act to prevent the pollution not only of trout and salmon waters, but of all fresh waters containing indigenous fish or acclimatized fish. There is real danger in the tendency to ignore the exiguous beginnings of water-contamination.

Research.

It is gratifying to report that, in spite of financial stringency, the work of fresh-water research carried on under the direction of the committee appointed by the Acclimatization Societies' Association is making substantial progress. The Biologist, Mr. A. W. Parrott, is still largely engaged upon the study of the age and rate of growth of the trout from various rivers and lakes, but considerable attention has also been given to the "reading" of the scales of quinnat and Atlantic salmon and other species of fish. Professor Percival, Honorary Director of Research, is continuing his studies of the invertebrate fauna of rivers and lakes, and is collating data, obtained through the voluntary co-operation of members of Acclimatization Societies, several of which have now organized local research committees for the purpose, with regard to such factors as the physical conditions in rivers and lakes and particulars of hatching and stocking operations, all of which are matters that must be studied and understood before the problems of maintaining and developing our fresh-water fisheries can be handled to the best effect. Mr. Hobbs, the Honorary Research Secretary, has been making a special study of the spawning conditions and results in Winding Creek and Slovens Creek, tributaries of the Waimakariri, that are very suitable for observations on brown and rainbow trout and quinnat salmon. The material for reports on the results of these investigations is being worked out and it is hoped that the Department may be in a position to publish such reports as Fisheries Bulletins. Previous reports on fresh-water research published in Fisheries Bulletins Nos. 2, 3, 4, and 5 have attracted considerable interest among fishery experts and biologists in Britain and in other countries.

I have, &c.,
A. E. Hefford,
Chief Inspector of Fisheries.

MARINE FISHERIES INVESTIGATION STATION.

Sir,—

I have the honour to forward herewith the Report of the Portobello Marine Fisheries Investigation Station for the year ending March, 1933.

Owing to the present unfortunate financial position, the services of both Messrs. Graham, Biologist, and Broadley, Assistant, had to be dispensed with, leaving the Station under the sole charge of Mr. Adams. The time of Mr. Adams has been fully taken up with the detail work of maintaining the Station—a very heavy work for one man single handed. In consequence, very little investigation work could be carried out.

The use of the launch has been restricted so that, except for an odd trip outside the Heads, no collecting of new material by means of launch and trawl has been possible. These trips were made possible by the Honorary Secretary accompanying Mr. Adams while Mrs. Adams looked after the Station, and they were restricted to Cape Saunders and Blueskin Bay, as it was impossible to work at farther distances.

Considerable public interest is shown in the Station, and large numbers of visitors inspected the aquarium. This popularity of the aquarium is due largely to the fact that the tanks have been kept well stocked. In fact, during the past year, the live specimens of all varieties of fish and sea-life have been more numerous and of greater variety than in the past few years.

European Lobsters.

At the date of the last annual report our stock of lobsters amounted to fourteen males and eleven females. This stock is now reduced to twelve males, nine females. One male cast during August when the temperature was at 5° C., and died three days after casting, the others died from injuries received during casting. Egg-bearing females commenced to hatch out their broods early in November, the last batch hatching in December. The estimated number of larvæ liberated is 134,000, as against 105,000 last year. Owing to our straitened circumstances it was decided that this year we would not make any further attempt to rear young lobsters in the hatchery. The larvæ was allowed to escape into the harbour. This yearly release of a large number of fry we hope will eventually lead to some proportion escaping their natural enemies and establishing the lobster in our waters, There are other methods of release of the fry we would like to try which would give a greater chance of success, but this work must await the time when finance will warrant the expense involved. One method within our means it is proposed to start at once. The present stock have all cast their shells and are in a fine healthy condition.

Hydrographic Work.

Temperature records of air, ponds, and harbour have been taken daily by Mr. Adams throughout the year, but it has been impossible to continue outside the harbour these records and the salinity records. This is regrettable, seeing that it makes a break in the continuous series of observations that we have carried out in the past. Weather reports are sent each week to the Meteorological Department.

Wintry conditions set in somewhat earlier than usual. On the 25th May the temperature of the sea-water was down to 7° C.; three days later 5° C. was recorded. It was then necessary to start heating the water, and this was continued until 19th August. Kelpfish in one of the outside ponds died from the low temperature. Red cod and pigfish survived although the pond temperature dropped to 3° C. The highest temperature recorded during the year in the lobster pond was 19·2° C. during January. During the periods when the temperature was low the fish ate very little food, but the lobsters were feeding freely.

General Work of the Station.

The supply of food for the lobsters and fish in the aquarium has been maintained by the use of set nets placed at suitable spots within a short distance of the Station. By this means also a number of attractive specimens were secured for the aquaria. Seine-netting and line-fishing were also carried out for the same purposes when the assistance of Mr. Howes was available. One of the two remaining crayfish-pots was used to secure small fish and other specimens and was specially covered with fine mesh for this purpose. Unfortunately, this was lost in heavy weather owing to the breaking of the float-line which had perished with age.

The launch and dinghy were placed on the slip twice during the year for a complete painting and overhaul, and the launch moorings were brought ashore and strengthened where required before replacement.

The iron frames of the aquaria-tanks were cleaned of rust and painted. A considerable amount of work was done to the jetty, this being necessary to make it safe. We wish specially to thank the Otago Harbour Board for renewing four piles at the end of the wharf and providing a quantity of extra timber for strengthening the jetty. Mr. Adams is carrying out single-handed this repair as opportunity offers.

The paths, including those of both cottages, have been top-dressed with tar and sand. The trees and live fences have been cut back.

Both the seine net and set-net which have been in constant use for twelve years are in bad condition, and will shortly have to be renewed.

The outside ponds have been cleaned and cleared of weed and mud. This was a very heavy job, and approximately 5 tons of material had to be shifted from one pond. A lot of this work would be unnecessary if an extra wall of rock could be placed in this pond to prevent the washing-down of earth from the face of the cliff.

Biological Notes.

During the summer months Otago Harbour was visited by exceptional quantities of whale-feed and shrimps.

Shrimps (Nyctiphanes sp.) made their appearance early in November, swimming on the surface until the end of that month. They were abundant in the harbour for several months, but remained on the bottom. They were so numerous in November that they were thrown up in quantities on the beaches and gulls and fish fed freely on them.

Great shoals of large-sized mullet followed the shrimps into the harbour and also small mullet, red cod, small terakihi and moki, and lesser quantities of warehou and large moki. Towards the end of March pilchards were about in fair quantity. Red cod, during the latter part of the season,

were more plentiful than for some years past. Although these fish were caught in the vicinity of Port Chalmers throughout the year, it was not until March that they were taken in any number in the vicinity of the Station, and they were then in almost every part of the harbour in great numbers. These red cod are in particularly fine condition, mostly free from parasitic worms, and should form an abundant and cheap food-supply.

Whalefeed (Munida gregaria) was on the surface for a longer period and in greater quantities than for some years past. They arrived early in November and disappeared towards the latter part of March, when only a few were seen on the surface. In accordance with instructions received from Mr. G. M. Thomson, a number of whale-feed were collected at intervals of about ten days, some of each batch being preserved and some kept alive, each lot in a separate compartment, with the object of determining whether the surface forms are or are not a stage in the life-history of the bottom-living forms. Those kept under observation alive feed readily on a fish diet. The earliest captured specimens have increased to twice their original size.

Spawning Notes on Fish and Crustacea, originally started by Mr. Young, have been resumed and records have been kept since June. Brittle stars which were placed in a jar under running water produced a quantity of minute young starfish which crawled on the surface of the jar and adhered to it.

A specimen of the common crab (*Cancer novæ zealandiæ*) was secured in the harbour on the 2nd October, carrying a full batch of eggs. At the time of writing this report the crab is still holding these eggs. Several females of this crab have been taken previously, but they always cast their eggs and we hope this lot will be hatched.

The large whelk (*Argobuccinum australasiæ*) spawned on the 1st July and the eggs started to hatch on the 22nd September.

Idotea ungulata, kept in the jars in running water, periodically cast their shells from the latter end of October. Young Idotea hatched out on the 11th February and swam about freely. The young cast on the second day. These specimens were green when taken but, kept with brown seaweed, changed colour to match the weed.

One of the common sea urchins spawned in January and died very shortly afterwards. Chitons spawned on the 23rd March and 27th March.

Mr. G. M. Thomson, Chairman of the Board, despite considerable ill health, has maintained his interest in the Station, making visits there whenever possible. His helpful advice has proved very valuable and is much appreciated. Mr. Thomson reports that he has made a great advance with his "History of the New Zealand Crustacea." He is in correspondence with the Museums of London, Manchester, Copenhagen, Berlin, Munich, and Paris, and is securing valuable information in connection with this work.

The Board wishes also to place on record its appreciation of the service rendered by Mr. G. Howes, Honorary Secretary, who has devoted a large amount of time to work at the Station in addition to the secretarial work.

The aquarium tanks at the Station were kept abundantly supplied with material gathered mainly near the Hatchery as opportunity offered. The buildings, grounds, and boats have been kept in good order, but the small grant allowed us has made it impossible to do more.

Two new members were recommended by the Board to the Minister for appointment to the Board—viz., Messrs. L. D. Coombs and J. McG. Wilkie, its personnel now being: G. M. Thomson (Chairman), Professor Benham (Vice-Chairman), Dr. Church, Professor Malcolm, Messrs. L. D. Coombs, A. E. Hefford, J. McG. Wilkie, C. A. Wilson, and W. George Howes, the last acting as Honorary Secretary and Treasurer.

I am, &c.,
W. B. Benham,
Vice-Chairman of the Board.

TABLE SHOWING THE NUMBER OF SEAMEN ENGAGED AND DISCHARGED IN NEW ZEALAND, AND THE FEES RECEIVED, FOR THE YEAR ENDED 31ST MARCH, 1933.

Port.	Engagements and Discharges, Foreign and Intercolonial Trade.				Engagements and Discharges, Home Trade.				Total Engagements.		Total Discharges.		Grand Totals.	
	Engagements.		Discharges.		Engagements.		Discharges.							
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.
		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.
Auckland	1,508	146 5 0	1,617	154 17 0	1,193	106 12 0	1,196	106 5 0	2,701	252 17 0	2,813	261 2 0	5,514	513 19 0
Dunedin	198	19 12 0	259	25 14 0	154	14 16 0	147	14 2 0	352	34 8 0	406	39 16 0	758	74 4 0
Gisborne	2	0 4 0	3	0 6 0	120	9 7 0	111	9 4 0	122	9 11 0	114	9 10 0	236	19 1 0
Greymouth	26	2 10 0	55	5 9 0	22	1 12 0	29	2 6 0	48	4 2 0	84	7 15 0	132	11 17 0
Hokitika	..	..	..	..	14	0 8 0	14	0 8 0	14	0 8 0	14	0 8 0	28	0 16 0
Invercargill	15	1 8 0	25	1 15 0	..	..	..	..	15	1 8 0	25	1 15 0	40	3 3 0
Kaipara	5	0 10 0	1	0 2 0	..	..	..	..	5	0 10 0	1	0 2 0	6	0 12 0
Lyttelton	124	11 13 0	135	12 3 0	315	25 5 0	298	24 3 0	439	36 18 0	433	36 6 0	872	73 4 0
Napier	10	0 18 0	9	0 16 0	197	15 16 0	210	18 4 0	207	16 14 0	219	19 0 0	426	35 14 0
Nelson	1	0 2 0	..	..	421	30 13 0	439	31 2 0	422	30 15 0	439	31 2 0	861	61 17 0
New Plymouth	8	0 16 0	6	0 12 0	40	2 15 0	38	3 4 0	48	3 11 0	44	3 16 0	92	7 7 0
Oamaru	..	..	..	..	3	0 6 0	1	0 2 0	3	0 6 0	1	0 2 0	4	0 8 0
Onehunga	..	..	..	..	166	13 6 0	164	12 11 0	166	13 6 0	164	12 11 0	330	25 17 0
Patea	..	..	..	..	50	2 14 0	50	3 7 0	50	2 14 0	50	3 7 0	100	6 1 0
Picton	2	0 4 0	..	..	9	0 10 0	10	0 12 0	11	0 14 0	10	0 12 0	21	1 6 0
Tauranga	1	0 2 0	1	0 2 0	..	..	1	0 2 0	1	0 2 0	2	0 4 0	3	0 6 0
Timaru	2	0 4 0	1	0 2 0	37	3 0 0	34	2 14 0	39	3 4 0	35	2 16 0	74	6 0 0
Wairau	..	..	..	..	20	0 16 0	29	1 2 0	20	0 16 0	29	1 2 0	49	1 18 0
Wanganui	1	0 2 0	..	..	90	6 8 0	78	4 16 0	91	6 10 0	78	4 16 0	169	11 6 0
Wellington	2,218	210 18 0	1,868	174 19 0	1,796	148 10 0	1,807	150 18 0	4,014	359 8 0	3,675	325 17 0	7,689	685 5 0
Westport	15	1 10 0	10	1 0 0	45	3 9 0	44	3 7 0	60	4 19 0	54	4 7 0	114	9 6 0
Whangarei	..	..	1	0 2 0	..	..	..	..	..	..	1	0 2 0	1	0 2 0
Foxton P.O.	..	..	..	..	2	0 4 0	3	0 6 0	2	0 4 0	3	0 6 0	5	0 10 0
	4,136	396 18 0	3,991	377 19 0	4,694	386 7 0	4,703	388 15 0	8,830	783 5 0	8,694	766 14 0	17,524	1,549 19 0

TABLE SHOWING COST OF MAINTENANCE (EXCLUDING INTEREST ON CAPITAL AND DEPRECIATION) OF NEW ZEALAND COASTAL LIGHTHOUSES FOR THE YEAR ENDED 31ST MARCH, 1933.

Name of Lighthouse.	Salaries and Wages.	Oil consumed.		Stores and Maintenance	Totals.
		Gallons.	Value.		
	£ s. d.		£ s. d.	£ s. d.	£ s. d.
Akaroa Head	400 17 10	723	48 0 2	255 7 3	704 5 3
Brothers	710 2 4	765	51 10 8	452 11 7	1,214 4 7
Cape Brett	591 15 6	708	47 14 0	201 1 6	840 11 0
Cape Campbell	402 12 8	754	50 15 11	166 0 5	619 9 0
Cape Maria van Diemen	592 8 0	858	57 15 1	470 17 1	1,121 0 2
Cape Palliser	392 0 1	657	44 4 7	110 4 4	546 9 0
Cape Saunders	384 14 8	743	50 2 7	89 11 8	524 8 11
Castlepoint	438 8 9	622	40 10 9	183 15 3	662 14 9
Centre Island	611 18 10	682	45 17 11	152 11 1	810 7 10
Cuvier Island	579 6 4	730	49 3 6	209 11 6	838 1 4
Dog Island	437 9 11	709	47 15 4	146 3 6	631 8 9
East Cape	440 11 0	683	46 0 2	184 2 2	670 13 4
Farewell Spit	568 8 6	853	57 9 10	331 14 5	957 12 9
French Pass	173 1 8	106	7 2 11	31 10 0	211 14 7
Godley Head*	119 19 10	300	22 18 1	80 6 9	223 4 8
Kaipara Heads	600 15 3	783	52 14 1	194 8 0	847 17 4
Moeraki	374 19 7	758	51 1 7	68 5 7	494 6 9
Moko Hinou	615 4 6	600	40 9 2	182 18 7	838 12 3
Nugget Point	370 11 11	955	64 3 1	121 12 8	556 7 8
Pencarrow Head	458 8 6	755	49 13 4	190 10 7	698 12 5
Portland Island	657 2 5	879	59 3 5	348 18 10	1,065 4 8
Puysegur Point	676 13 6	781	52 12 8	340 0 6	1,069 6 8
Stephens Island	620 9 5	802	53 19 7	260 12 0	935 1 0
Waipapapa Point	383 4 5	725	48 16 1	119 16 0	551 16 6
Coastal buoys and beacons	..	..	..	257 18 2	257 18 2
Fog-signals	..	..	..	151 1 5	151 1 5
Automatic lights	799 8 6	..	..	1,303 7 11	2,102 16 5
	12,400 13 11	16,931	1,139 14 6	6,604 18 9	20,145 7 2

* Converted to automatic 16th July, 1932.

RETURN OF ESTATES OF DECEASED SEAMEN RECEIVED AND ADMINISTERED IN PURSUANCE OF THE PROVISIONS OF THE SHIPPING AND SEAMEN ACT, 1908, DURING THE YEAR ENDED 31ST MARCH, 1933.

Name of Seaman.	Balance to Credit of the Estate on 31st March, 1932.	Amount received.	Amount paid.	Balance to Credit of the Estate on 31st March, 1933.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Andrew, W.	..	2 5 4	2 5 4	..
Carle, W. H.	..	6 9 5	3 8 10	3 0 7
Linton, P. A.	..	0 1 0	..	0 1 0
MacTaggart, D.	..	9 2 4	9 2 4	..
McEvoy, J.	..	0 1 3	..	0 1 3
Nichols, G. E.	..	1 13 3	1 13 3	..
Tronson, J. A.	..	0 1 3	..	0 1 3
Walker, W. H.	..	7 0 2	7 0 2	..
Wassel, R.	..	0 1 3	..	0 1 3
Welsh, T. B.	8 7 0	..	8 7 0	..
	8 7 0	26 15 3	31 16 11	3 5 4

RETURN SHOWING AMOUNTS RECEIVED PRIOR TO 1ST APRIL, 1932, STANDING TO CREDIT OF ESTATES OF DECEASED SEAMEN, AND FOR WHICH CLAIMS HAVE NOT BEEN PROVED.

Name of Seaman.	Balance to credit of estate on 31st March, 1933.
	£ s. d.
Evans, W., late cook, m.v. "Opawa"	8 10 4
Lancaster, J. A., late seaman, s.s. "Gale"	53 7 4
McMahon, S. G., late seaman, s.s. "Apanui"	13 2 2
Stevens, F. G., late fireman, s.s. "Kaitangata"	4 5 9
Wareline, F., late seaman, s.s. "Koromiko"	0 1 2
	£79 6 9

Summary of Examinations for Certificates of Competency as Masters and Mates for the Year ended 31st March, 1933.

Class of Certificate.	Auckland.				Wellington.				Lyttelton.				Totals.				Total Examinations.
	Pass.	Partial Pass.	Failed.	Partial Failure.	Pass.	Partial Pass.	Failed.	Partial Failure.	Pass.	Partial Pass.	Failed.	Partial Failure.	Pass.	Partial Pass.	Failed.	Partial Failure.	
Foreign-going, masters and mates	13	12	2	11	3	1	2	..	..	..	1	..	16	13	5	11	45
Home-trade, masters and mates	8	2	..	..	2	1	..	..	..	..	..	..	10	3	..	..	13
Masters of river-steamers ..	2	..	..	..	2	..	..	..	..	..	..	..	4	..	..	..	4
Masters of sailing-vessels plying in harbours and rivers	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1
Yacht-masters in New Zealand waters	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2
Colonial pilots	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Sailing-ship endorsements ..	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2
Voluntary examination in compass deviation	2	..	2	..	..	..	..	..	..	..	..	..	2	..	2	..	4
Signals only	4	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	4
Voluntary examination in signalling	7	..	..	..	..	..	..	..	..	..	..	..	7	..	..	..	7
Fore and aft rigged vessel endorsements	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Totals	41	15	4	11	8	2	2	..	..	..	1	..	49	17	7	11	84

Summary of Examinations for Certificates of Competency as Marine Engineer for the Year ended 31st March, 1933.

Class of Certificate.	Auckland.			Wellington.			Christchurch.			Dunedin.			Other Centres.			Totals.		
	Pass.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.
Higher-grade Certificates.																		
Foreign-going engineer (steam), (first and second class)	5	3	8	8	5	13	3	..	3	1	1	2	..	..	..	17	9	26
Foreign-going engineer (motor)—																		
First and second class	1	..	1	4	1	5	..	..	..	..	..	..	..	..	..	5	1	6
First-class endorsement	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	2	..	2
Foreign-going engineer (third class) ..	15	6	21	21	14	35	7	6	13	2	3	5	..	..	..	45	29	74
Totals	21	9	30	35	20	55	10	6	16	3	4	7	..	..	..	69	39	108
Lower-grade Certificates.																		
Sea-going engineer, P.V.O.S. ..	21	6	27	12	8	20	..	..	..	..	..	..	10	5	15	43	19	62
Restricted-limits engineer, P.V.O.S. ..	9	1	10	1	..	1	2	..	2	1	1	2	14	2	16	27	4	31
River engineer (steam)	..	..	..	1	..	1	..	..	..	..	..	..	2	..	2	3	..	3
Totals	30	7	37	14	8	22	2	..	2	1	1	2	26	7	33	73	23	96
Grand totals	51	16	67	49	28	77	12	6	18	4	5	9	26	7	33	142	62	204

Summary of Casualties to Shipping reported to the Marine Department during the Financial Year ended 31st March, 1933.

Nature of Casualty.	On or near the Coasts of the Dominion.			Outside the Dominion.			Total Number of Casualties reported.		
	Number of Vessels.	Tonnage.	Number of Lives lost.	Number of Vessels.	Tonnage.	Number of Lives lost.	Number of Vessels.	Tonnage.	Number of Lives lost.
Strandings—									
Total loss	1	1,167	..	..	..	..	1	1,167	..
Slight damage	11	6,857	..	..	..	..	11	6,857	..
No damage	6	11,503	..	..	..	..	6	11,503	..
Total strandings	18	19,527	..	..	..	..	18	19,527	..
Fires—									
Total loss	2	11	..	..	..	..	2	11	..
Slight damage	2	11,854	..	..	..	..	2	11,854	..
No damage	1	2,629	..	..	..	..	1	2,629	..
Total fires	5	14,494	..	..	..	..	5	14,494	..
Collisions—									
Total loss	..	..	..	..	..	..	..	..	..
Slight damage	13	3,534	10	..	..	..	13	3,534	10
No damage	2	362	..	..	..	..	2	362	..
Total collisions	15	3,896	10	..	..	..	15	3,896	10
Miscellaneous, including damage by heavy seas to hull and cargo, breakdown of machinery, &c.	13	11,301	..	10	50,173	..	23	61,474	..
Total number of casualties reported	51	49,218	10	10	50,173	..	61	99,391	10

Return of Land Boilers and Machinery inspected during the Year ended 31st March, 1933.

Class.	Not exceeding 5 Horse-power.	Exceeding 5 but not exceeding 10 Horse-power.	Exceeding 10 Horse-power.	Total.
Boilers—				
Stationary, portable, and traction	1,058	1,207	2,236	4,501
Digester, jacketed pans, sterilizers, vulcanizers, and other steam-receivers	..	..	..	2,522
Air-receivers	..	..	..	635
Total boilers	..	..	..	7,658
Machinery—				
Electric-motors	10,097	3,344	3,776	17,217
Internal-combustion engines	973	488	1,062	2,523
Water-power engines	47	68	155	270
Lifts	..	..	..	2,940
Cranes	..	..	..	303
Hoists	..	..	..	1,306
Total machinery	..	..	..	24,559
Grand total	..	..	..	32,217

Return of New Boilers inspected during the Year ended 31st March, 1933.

Class.	Made in Dominion.		Imported.		Total.	
	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.
Stationary, portable, and traction	34	634	24	225	58	859
Digesters, jacketed pans, sterilizers, vulcanizers, and other steam-receivers	69	..	40	..	109	..
Air-receivers	12	..	63	..	75	..
Total	115	634	127	225	242	859

Return of the Number of Certificates issued to Land Engine-drivers and Electric-tram Drivers during the Year ended 31st March, 1933.

Class.	Number.	Class.	Number.
Service—		Competency—*continued.*	
Electric-tram driver	18	Electric-winding-engine driver	4
Second-class engine-driver	1	Locomotive and traction-engine driver ..	28
Competency—		Locomotive-engine driver	5
Extra first-class stationary engineer ..	1	Traction-engine driver	21
First-class engine-driver	19	Electric-tram driver	20
Second-class engine-driver	191	Electric-tram driver (one-man car) ..	2
Steam-winding-engine driver	3	Total	313

Return of Land Engineers', Engine-drivers', and Electric-tram Drivers' Examinations held throughout New Zealand during the Year ended 31st March, 1933, showing the Number of Successful and Unsuccessful Candidates.

Place.	Extra First Class.		First Class.		Second Class.		Locomotive and Traction.		Locomotive.		Traction.		Winding.				Electric-tram Driver.		Total.		Grand Total.
													Steam.		Electric.						
	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F	
Auckland ..	..	..	4	3	16	1	2	..	..	..	1	..	..	..	1	..	..	..	24	4	28
Blenheim ..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
Christchurch ..	..	..	3	..	6	3	1	..	..	..	4	..	..	..	..	..	21	13	35	16	51
Dunedin ..	..	..	1	..	11	5	1	..	1	..	3	..	..	..	..	..	..	..	17	5	22
Gisborne ..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3
Greymouth ..	..	..	..	1	1	1	..	1	3	2	..	..	1	1	..	..	..	..	5	6	11
Hamilton ..	..	..	3	2	19	10	..	..	..	..	..	..	1	..	1	..	..	..	24	12	36
Invercargill ..	..	..	1	..	17	19	..	1	..	..	8	3	..	..	..	..	..	..	26	23	49
Napier ..	..	..	1	..	4	..	..	..	1	1	..	..	..	..	..	..	..	..	6	1	7
Nelson ..	..	..	..	..	5	2	..	..	..	..	1	..	..	..	1	..	..	..	7	2	9
New Plymouth ..	..	..	1	3	68	31	..	2	..	..	..	1	..	..	..	..	..	..	69	37	106
Palmerston N. ..	..	..	1	1	11	2	1	..	..	..	1	1	..	..	..	..	..	..	14	4	18
Timaru ..	..	..	..	..	2	..	..	..	..	..	1	1	..	..	..	..	..	..	3	1	4
Wanganui ..	..	..	..	..	3	..	..	..	..	..	1	..	..	..	..	..	4	..	8	..	8
Wellington ..	1	1	1	1	10	2	..	..	..	1	..	..	..	..	..	..	14	..	26	5	31
Whangarei ..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
Totals ..	1	1	18	11	175	77	5	4	5	4	21	6	2	1	3	..	39	13	269	117	386

TABLE I.—SHOWING THE NUMBER OF FISHING-VESSELS AND THE NUMBER OF FISHERMEN AND OTHER PERSONS ENGAGED IN THE FISHING INDUSTRY AT EACH PORT FOR THE YEAR ENDED 31ST MARCH, 1933.

Name of Port.	Vessels engaged in Fishing for Wet Fish.														Vessels engaged in Shell-fishery.						Number of Persons employed.					
	Steamers Trawling.		Motor Trawlers.		Steamers Danish-seining.		Motor-vessels Danish-seining.		Motor-vessels, Set-net and Line Fishing.		Sailing-boats.		Rowing-boats.		Oyster-dredging Vessels.		Mussel-dredging Vessels.		Crayfishing Vessels.		Fishermen.		Others.		Total.	
	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.
Russell	..	..	..	..	..	..	..	1	14	4	..	..	..	7	..	..	..	..	..	4	28	24	..	2	28	26
Kaipara	..	..	..	..	..	..	..	..	17	..	..	..	..	..	..	..	..	..	..	..	25	..	4	..	29	..
Whangarei	..	..	..	..	..	..	..	..	10	..	..	..	1	..	..	..	..	..	..	..	22	..	7	..	29	..
Auckland	1	3	..	..	..	..	24	10	72	45	1	2	50	80	..	..	1	2*	..	30	320	160	80	..	400	160
Thames	..	..	..	..	..	..	6	4	22	4	..	..	2	..	..	..	3	..	..	..	85	18	25	..	110	18
Mercury Bay	..	..	..	..	..	..	..	..	12	..	..	..	..	..	..	..	..	..	..	4	24	4	4	..	28	4
Tauranga	..	..	..	..	..	..	4	..	15	..	..	..	..	..	..	..	..	..	..	..	42	..	4	..	46	..
Opotiki	..	..	..	..	..	..	..	..	1	1	..	..	..	5	..	..	..	1	..	2	2	7	..	..	2	7
Gisborne	1	..	..	..	..	..	..	..	15	..	..	..	5	10	..	..	..	..	..	30	45	10	3	..	48	10
Napier	5	5	2	..	..	..	..	..	6	4	..	..	10	59	..	..	..	4	..	10	45	145	10	4	55	149
New Plymouth	..	..	..	..	..	..	..	..	13	4	..	..	1	5	..	..	..	..	..	9	27	13	..	6	27	19
Wanganui	..	..	..	..	..	..	..	..	2	9	..	..	..	20	..	..	..	..	..	..	5	38	..	..	5	38
Wellington	1	..	..	..	..	..	..	..	73	20	..	..	22	41	..	..	..	..	3	57	250	134	42	..	292	134
Picton	..	1	..	..	..	..	..	..	18	23	..	..	..	10	..	..	..	..	..	..	37	48	..	..	37	48
Blenheim (Wairau)	..	..	4	4	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	3	8	11	..	..	8	11
Nelson	..	..	..	..	2	..	10	..	8	7	..	..	..	2	..	..	..	..	..	..	42	17	8	..	50	17
Westport	..	1	..	10	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	2	..	11	2	..	2	11
Greymouth	..	..	1	4	1	..	..	..	..	7	..	..	..	4	..	..	..	..	..	..	8	15	..	..	8	15
Kaikoura	..	..	2	..	..	..	..	..	15	..	..	..	4	..	..	..	..	..	4	..	38	..	1	..	39	..
Akaroa	..	..	1	3	..	..	..	2	12	16	..	..	6	2	..	..	..	..	3	4	25	40	2	..	27	40
Lyttelton	..	2	11	..	..	..	..	2	52	4	..	1	40	70	..	..	..	..	..	8	200	74	40	10	240	84
Timaru	..	..	..	27	..	..	..	5	..	..	..	..	..	1	..	..	..	..	..	..	..	38	3	..	3	38
Oamaru and Moeraki	..	..	..	..	..	..	..	..	38	1	..	..	..	2	..	..	..	..	..	2	56	4	4	4	60	8
Dunedin and Otago district	2	..	6	18	..	..	..	..	45	18	..	..	16	12	..	..	..	..	..	8	159	34	13	..	172	34
Invercargill	..	..	..	..	..	..	..	..	..	48	..	..	..	8	..	..	..	..	..	..	..	104	..	..	..	104
Bluff	..	..	..	..	..	..	..	..	43	..	..	..	..	..	7	1	..	..	..	..	153	..	25	..	178	..
Stewart Island (Half-moon Bay)	..	..	..	..	..	..	..	..	32	..	..	..	..	..	..	..	..	..	..	..	80	..	7	..	87	..
Chatham Islands	..	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	16	..	8	..	24	..
	10	12	27	66	3	..	44	24	541	217	1	3	157	344	7	1	4	7	10	173	1,742	949	292	26	2,034	975

* Includes one vessel engaged in scallop-dredging.

Table II.—Showing the various Kinds of Fish caught and approximately the Total Quantities of Fish* and Shell-fish landed at the Chief Fishing-ports for the Year ended 31st March, 1933.

Name of Port.	Principal Kinds of Fish caught.	Quantity landed.	Total Value (Fish).	Shell Fishery (excluding Toheroa).							Grand Total Value.
				Oysters.	Value.	Mussels.	Value.	Crayfish.	Value.	Total Value (Shell-fish)	
		Cwt.	£	Sacks.	£	Sacks.	£	Cwt.	£	£	£
Russell	Snapper, mullet, flounder, hapuku, crayfish, piper, kingfish, tarakihi, gurnard, kahawai	1,020	952	..	..	..	..	60	56	56	1,008
Kaipara	Flounder, snapper, mullet	2,802	3,004	..	..	..	..	..	..	..	3,004
Whangarei	Snapper, flounder hapuku, mullet, blue-cod	3,320	5,222	..	..	..	..	..	..	..	5,222
Auckland (including Manakau and Coromandel)	Snapper, flounder, tarakihi, hapuku, gurnard, dogfish, dory, mullet, crayfish, blue cod, kingfish, trevally, frost-fish, barracouta, piper, herring, oysters (rock), mussels, sardines	82,758	59,617	4,414	5,047	2,000	600	1,051	1,033	6,734†	66,351
Thames	Snapper, flounder, dab, mullet, gurnard, dory, herring, pioke	18,078	14,029	..	..	1,093	340	..	..	340	14,369
Mercury Bay	Snapper, tarakihi, groper, gurnard, blue cod, flounder, kingfish	4,191	3,392	..	..	..	..	148	147	147	3,539
Tauranga	Snapper, hapuku, tarakihi, gurnard, trevally, dogfish, mullet, blue cod	6,743	5,302	..	..	..	..	..	..	..	5,302
Opotiki	Snapper, flounder, groper, gurnard, tarakihi	129	508	..	..	..	..	..	..	..	508
Gisborne	Tarakihi, snapper, hapuku, gurnard, sole, flounder, kahawai, crayfish	2,876	3,854	..	..	..	..	..	..	..	3,854
Napier	Tarakihi, gurnard, sole, flounder, snapper, hapuku, barracouta, john-dory, moki, trevally, kingfish, kahawai, brill, mullet, warehou	10,670	14,405	..	..	150	112	400	400	512	14,917
New Plymouth	Snapper, hapuku, cod, crayfish, tarakihi, gurnard, herring, kingfish, kahawai	3,062	3,531	..	..	..	..	200	280	280	3,811
Wanganui	Snapper, hapuku, blue cod, flounder	51	149	..	..	..	..	..	..	..	149
Wellington	Tarakihi, hapuku, hake, ling, bass, crayfish, warehou, moki, flounder, sole, butterfish, kahawai, blue cod, trevally, snapper, gurnard, bream, kingfish, skate, garfish, red cod, conger, kelpfish	56,328	93,110	..	..	..	..	2,650	1,250	1,250	94,360
Picton	Flounder, butterfish, garfish, moki, blue cod, herring (bait), hapuku, crayfish	2,940	2,822	..	..	..	..	..	..	..	2,822
Blenheim (Wairau)	Sole, flounder, tarakihi, gurnard, butterfish, snapper, moki, red cod, hapuku, crayfish	3,235	2,565	..	..	..	..	350	250	250	2,815
Nelson	Snapper, flat fish, gurnard, blue cod, bream, hapuku, crayfish	4,274	4,045	..	..	..	..	..	..	..	4,045
Westport	Soles, flounder, turbot, groper, snapper, red cod	530	829	..	..	..	..	29	27	27	856
Greymouth	Sole, groper, snapper, turbot, flounder, herring, red cod, ling	3,193	2,994	..	..	..	..	..	..	..	2,994
Kaikoura	Groper, trumpeter, hake, ling, tarakihi, bass, blue cod, and crayfish	4,513	4,730	..	..	..	..	..	..	..	4,730
Akaroa	Groper, flounder, sole, brill, blue cod, red cod, barracouta, moki, butterfish, kingfish, conger-eel	2,842	4,176	..	..	..	..	50	25	25	4,201
Lyttelton	Flat fish, groper, tarakihi, ling, elephant-fish	8,444	5,910	..	..	..	..	..	..	..	5,910
Timaru	Flounder, sole, groper, red cod, ling, kingfish, elephant-fish, barracouta, brill, and gurnard	7,550	8,400	..	..	..	..	..	..	..	8,400
Oamaru and Moeraki	Groper, blue cod, red cod, ling, barracouta, moki, warehou, sole, crayfish	5,375	5,020	..	..	..	..	50	20	20	5,040
Dunedin and Otago districts	Groper, kingfish, blue cod, flounder, sole, brill, bream, trevally, garfish, red cod, tarakihi, barracouta, moki, trumpeter, ling, mullet, red perch, kelpfish, elephant-fish, kahawai, skate	34,725	20,665	..	..	..	..	..	..	..	20,665
Invercargill and district	Blue cod, groper, flounder, green-bone, trevally, ling, kingfish, crayfish	1,441	1,966	..	..	..	..	..	..	..	1,966
Bluff	Blue cod, groper, flounder, green-bone, trevally, ling, kingfish, crayfish	7,802	9,953	37,484	19,676	..	..	..	..	..	29,633
Stewart Island	Blue cod, groper, trumpeter, green-bone, moki	6,910	7,850	..	..	..	..	..	..	..	7,850
Chatham Islands	Blue cod, hapuku	2,177	1,016	..	..	..	..	..	..	..	1,016
	Totals	287,979	290,016	41,898	24,723	3,243	1,052	4,988	3,488	9,641	319,337

* Not including whitebait. † Includes £54 value of 75 sacks of scallops landed.

TABLE IIA.—SHOWING APPROXIMATELY THE QUANTITIES OF DIFFERENT KINDS OF FISH AND THE TOTAL VALUE OF FISH LANDED AT EACH OF THE MORE IMPORTANT PORTS DURING THE YEAR ENDED 31ST MARCH, 1933.

—	Russell.	Kaipara.	Whangarei.	Auckland, with Coromandel and Manukau.	Thames.	Mercury Bay.	Tauranga.	Opotiki.	Gisborne.	Napier.	New Plymouth.	Wanganui.	Wellington and District.	Picton.	Blenheim.	Nelson.	Westport.	Greymouth.	Kaikoura.	Akaroa.	Lyttelton.	Timaru.	Oamaru and Moeraki District.	Dunedin and Otago District.	Invercargill and District.	Bluff.	Stewart Island.	Chatham Islands.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Barracouta	..	..	..	..	..	1	5	..	..	..	..	..	2,500	..	..	..	5	..	..	..	..	..	90	..	..	..	..	..
Blue cod	..	..	..	104	1	81	54	..	..	..	100	4	..	..	..	20	..	..	..	..	..	..	1,300	..	851	7,312	6,000	2,177
Butterfish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..	..	..	..	..	..	46	..	..
Flounders, dabs, and soles	320	1,232	285	10,452	6,516	44	..	20	..	4,300	..	12	..	..	2,600	..	345	2,495	..	1,004	..	..	..	..	125	62	..	..
Groper (hapuku) ..	..	..	280	2,274	5	319	886	20	..	..	420	8	7,759	..	10	40	76	254	..	1,838	..	..	3,250	..	433	382	655	..
Gurnard	..	..	..	..	659	146	..	..	..	..	60	..	..	..	200	40	26	..	..	..	..	..	..	..	..	..	..	..
John-dory	..	..	..	979	168	..	..	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kahawai	..	..	..	..	27	..	..	..	..	..	..	8	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..
Kingfish (northern) ..	..	..	..	21	6	7	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ling	..	..	..	..	..	..	..	..	..	..	..	..	1,768	..	..	..	36	126	..	..	..	..	300	..	..	..	..	..
Moki	..	..	..	1	..	1	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	75	..	..	..	..	..
Mullet	200	800	210	1,327	40	10	134	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pioke	..	..	..	..	599	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Red cod	..	..	..	..	..	..	..	..	..	..	..	6	2,497	..	120	..	..	196	..	..	..	..	300	..	..	..	..	..
Sardines	..	..	..	79	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Snapper	420	700	2,430	49,657	9,750	3,318	4,075	60	..	..	2,420	10	..	..	65	560	21	53	..	..	..	..	..	..	..	..	..	..
Tarakihi	..	..	..	11,933	14	262	585	4	..	..	60	..	16,429	..	80	..	..	48	..	..	..	..	..	..	..	..	..	..
Trevally	..	..	..	..	..	..	117	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Warehou	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	..	..	..	..
Mixed or kind not specified	80	70	115	5,931	291	2	822	..	2,876	6,370	..	3	25,375	2,940	..	3,614	16	21	4,513	..	8,444	7,550	..	34,725	32	..	255	..
Totals ..	1,020	2,802	3,320	82,758	18,080	4,191	6,743	129	2,876	10,670	3,060	51	56,328	2,940	3,235	4,274	530	3,193	4,513	2,842	8,444	7,550	5,375	34,725	1,441	7,802	6,910	2,177
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Total value	952	3,004	5,222	59,617	14,029	3,392	5,302	508	3,854	14,405	3,531	149	93,110	2,822	2,565	4,045	829	2,994	4,730	4,176	5,910	8,400	5,020	20,665	1,966	9,953	7,850	1,016

TABLE III.—SHOWING THE NUMBER OF SACKS AND VALUE OF THE OYSTERS OBTAINED IN THE DOMINION DURING THE YEAR ENDED 31ST DECEMBER, 1932.

Locality.	Quantity.	Value (Wholesale).
DREDGE OYSTERS.		
	Sacks.	£
Foveaux Strait	37,484	19,679
ROCK OYSTERS.		
Bay of Islands	1,515	5,047
Whangarei	107	
Kaipara Harbour	585	
Hauraki Gulf*	1,560	
Coromandel	257	
Great Barrier Island	390	
Total	4,414	
Grand total	41,898	24,726

* Takatu to Gull Point, 87; Rakino, 153; Motutapu, 98; Waiheke, 1,031; Ponui, 169; Noises, 22.

TABLE IV.—SHOWING THE NUMBER AND SPECIES OF WHALES TAKEN OFF THE NEW ZEALAND COAST, WITH QUANTITY OF PRODUCTS FOR THE YEAR ENDED 31ST MARCH, 1933.

Whaling-station.	Number of Whales taken.	Species.	Yield of Oil.	Quantity of Bonedust and Fertilizer.
			Tons.	
Whangamumu (Russell)	Nil	Nil	Nil	Nil
Marlborough Sounds (Picton)	18	Humpback	92	Nil
Totals	18	..	92	Nil

TABLE V.—SHOWING THE TOTAL QUANTITY AND VALUE OF FISH AND SHELL-FISH IMPORTED INTO AND EXPORTED FROM NEW ZEALAND DURING THE YEAR ENDED 31ST MARCH, 1933.

Fish and Shell-fish imported.

Description of Fish.	Quantity.	Value.
		£
Oysters	Nil	..
Anchovies, salted, in containers of 28 lb. or over	24 cwt.	50
Other fish—		
Frozen, smoked, pickled, dried, or salted	496 cwt.	1,680
Potted and preserved in tins	2,101,852 lb.	74,995
Total value of imports	..	76,725

Fish and Shell-fish exported.

Description of Fish.	Exporting Ports.	Quantity.	Value.
Produce of New Zealand.			£
Oysters, fresh	Auckland	433 doz.	7
	Wellington	3,608 doz.	100
	Lyttelton	1,500 doz.	42
	Invercargill	22,560 doz.	200
	Total	28,101 doz.	349
Blue cod, frozen	Auckland	1 cwt.	8
	Wellington	688 cwt.	1,436
	Lyttelton	127 cwt.	263
	Dunedin	1 cwt.	2
	Invercargill	9,429 cwt.	19,454
	Total	10,246 cwt.	21,163
Snapper, frozen	Auckland	1,735 cwt.	2,344
	Wellington	61 cwt.	63
	Total	1,796 cwt.	2,407
Flounder, frozen	Auckland	2,125 cwt.	4,776
	Wellington	85 cwt.	243
	Lyttelton	404 cwt.	723
	Dunedin	37 cwt.	63
	Timaru	17 cwt.	33
	Invercargill	183 cwt.	433
	Total	2,851 cwt.	6,271
Other kinds, frozen	Auckland	2,023 cwt.	3,435
	Wellington	757 cwt.	1,392
	Lyttelton	1,308 cwt.	1,823
	Dunedin	647 cwt.	2,505
	Invercargill	226 cwt.	317
	Total	4,961 cwt.	9,472
Total exports of frozen fish from Dominion	,,	19,854 cwt.	39,662
Smoked, dried, pickled, or salted	,,	521 cwt.	1,216
Preserved in tins—			
Blue cod	,,	5,434 lb.	124
Crayfish	,,	40,793 lb.	2,613
Oysters	,,	51,620 lb.	2,428
*Toheroas	,,	13,340 lb.	1,209
*Whitebait	,,	41,723 lb.	3,954
Other kinds	,,	1,896 lb.	115
Value of total exports of New Zealand fish and shellfish	,,	..	51,321
Re-exports.			
Potted and preserved in tins	..	14,501 lb.	501

* Exporting Ports.	Toheroas.		Whitebait.	
	Quantity.	Value.	Quantity.	Value.
	lb.	£	lb.	£
Auckland	12,600	1,136	15,635	1,418
Wellington	31	4	598	54
Westport	..	..	2,880	180
Lyttelton	..	..	558	21
Dunedin	709	69	22,052	2,281
Totals	13,340	1,209	41,723	3,954

APPENDICES.

APPENDIX I.

ORDERS IN COUNCIL UNDER PARTS I AND II OF FISHERIES ACT, 1908.

PART I.

29th June,	1932.	Revoking Regulations under Fisheries Act, 1908.
29th ,,	,,	Consolidating Regulations under Fisheries Act, 1908.
7th September,	,,	Amending Regulations for netting in the Tokomairiro, Waihemo, and Pleasant Rivers.
26th ,,	,,	Making General Regulations for Whitebait Fishing.
17th October,	,,	Temporarily amending Regulations regarding the Size of Nets in the Southland District.
31st ,,	,,	Prohibiting Danish-seining in Whangarei Harbour.
14th November,	,,	Restricting Use of Seine Nets in Hauraki Gulf and Bay of Plenty.
16th January,	1933.	Prohibiting Use of Nets in Oriental Bay, Wellington.

PART II.

4th April,	1932.	Amending Regulations for Trout, &c., Fishing in Waitaki and Waimate Acclimatization Districts.
11th April,	,,	Amending Form of License to fish for Trout, &c.
17th June,	,,	Amending Regulations for Trout, &c., Fishing in Ashburton Acclimatization District.
29th ,,	,,	Amending Regulations for Trout, &c., Fishing in East Coast Acclimatization District.
7th September,	,,	Amending Regulations for Trout, &c., Fishing in South Canterbury Acclimatization District.
7th ,,	,,	Amending Regulations for Trout and Perch Fishing in Wellington Acclimatization District.
7th ,,	,,	Amending Regulations for Trout and Perch Fishing in Auckland Acclimatization District.
7th ,,	,,	Amending Regulations for Trout and Perch Fishing in Feilding Acclimatization District.
19th ,,	,,	Prohibiting taking of Trout, &c., in Portion of Mataura River.
19th ,,	,,	Revoking existing Regulations for Trout, &c., Fishing in the Otago Acclimatization District and making others in lieu thereof.
15th December,	,,	Amending Regulations for Trout, &c., Fishing in Waimate Acclimatization District.
28th February,	1933.	Imposing Restrictions on taking of Quinnat Salmon for Sale (Hurunui River).

APPENDIX II.

AVERAGE TEMPERATURE OF SEA-WATER (AT THE SURFACE) FOR EACH MONTH OF THE YEAR AT FOUR DIFFERENT STATIONS.

	Auckland Harbour (Off Nelson Street Wharf).			Tamaki Estuary (Off Panmure).			Bay of Islands (Off Russell).			Kaipara Harbour (Whakapirau Estuary).		
	1930-31.	1931-32	1932-33.	1930-31.	1931-32.	1932-33.	1930-31.	1931-32.	1932-33.	1930-31.	1931-32.	1932-33.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
May	16·2	14·7	15·4	14·2	14·1	14·9	16·7	15·4	16·1	14·5	15·1	15·7
June	13·0	12·8	12·9	11·9	11·9	12·8	14·4	14·1	15·0	13·2	12·4	12·6
July	11·1	12·5	11·6	10·3	11·3	10·9	14·5	13·2	13·3	12·4	11·2	11·6
August	11·7	11·8	11·6	11·2	11·4	11·3	14·3	12·2	13·4	12·3	12·2	11·3
September ..	12·9	13·0	14·2	13·2	13·2	13·4	14·4	13·1	15·2	14·2	13·6	15·0
October	14·1	15·6	17·1	14·8	15·9	16·7	15·5	14·7	17·0	15·6	13·8	17·1
November ..	15·5	19·4	18·3	16·8	20·8	19·3	16·2	17·1	17·9	15·7	19·5	19·2
December ..	18·4	19·5	19·2	20·1	19·6	19·1	17·7	18·2	18·3	20·4	21·6	21·1
January	20·4	20·9	22·2	21·0	21·2	23·1	20·8	20·7	20·8	23·4	23·6	22·2
February ..	20·2	21·5	22·0	20·1	20·8	22·8	19·7	19·8	21·3	21·2	23·7	23·0
March	19·5	20·7	20·9	19·3	20·4	20·1	19·1	19·6	20·2	19·2	20·2	22·0
April	17·6	19·2	18·9	17·1	19·1	18·9	17·6	18·7	19·2	19·0	18·5	20·2

Approximate Cost of Paper.—Preparation, not given; printing (660 copies), £47.

By Authority: G. H. LONEY, Government Printer, Wellington.

Price 1s.]