1938.

NEW ZEALAND.

MARINE DEPARTMENT.

ANNUAL REPORT FOR THE YEAR 1937–38.

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

Marine Department, Wellington, 1st August, 1938.

YOUR EXCELLENCY,—

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.,
P. FRASER,
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, 7th July, 1938.

I have the honour to submit the annual report of the Marine Department for the financial year ended 31st March, 1938.

The year has been one of sustained briskness in shipping and in trade, reflected in an increase both in departmental revenue and in expenditure.

The notable event of the year has been the flight of the Imperial Airways flying-boat "Centaurus" from England via Australia and the trans-Pacific trial flights of the Pan-American Clipper from the United States of America to Auckland. These pioneer flights point to an extension of the existing activities of Harbour Boards in the direction of providing suitable water areas with mooring and landing facilities for the use of such craft when engaged in regular services.

His Majesty's Surveying Ship "Endeavour," working under the direction of the Hydrographer and the Admiralty, arrived in New Zealand on the 15th June to survey the coast, starting work on the 15th July in Tamaki Strait, in the vicinity of Auckland. Since then the vessel has completed the survey of Tamaki Strait, Firth of Thames, and Hauraki Gulf, and commenced on the general coastal survey near Mercury Bay, working northward from where the H.M.S. "Penguin" ceased work many years ago. At the end of the year the vessel was working round Mercury Islands and Cuvier Island towards Great Barrier Island.

The Royal Research Ship "Discovery II," engaged in deep-sea biological and hydrological work and in the study of whales, called at New Zealand during the year. At the generous invitation of the London Committee, under whose direction the ship is operated, a biologist of this Department joined the scientific staff for a three months' cruise in the Antarctic, calling at the Falkland Islands, South Georgia, and South Africa. The opportunity given this officer to take part in the work of this up-to-date ship in association with her highly competent and scientific staff is much appreciated.

The programme of electrification of selected lights, commenced with the construction of radio beacons, has been continued, but delivery of the special plant from overseas is still very slow. The radio beacon at Baring Head was officially opened on the 14th October, 1937. The plant has operated smoothly, and the service has given entire satisfaction to shipping. At Cape Campbell the buildings have been erected. The whole of the plant is on the ground and in process of assembling. At Stephens

Island the buildings are in course of erection, and the larger part of the equipment is in Wellington awaiting shipment when the buildings are ready. Surveys have been carried out at Cuvier Island, Moko Hinou Island, and Cape Maria van Diemen. Plans and specifications for the work at the two first-mentioned islands have been prepared and the whole of the material is on order. At Cape Maria van Diemen the small island on which the existing light is situated is so difficult of access that it is inadvisable to perpetuate this station in its present position if accessible location, which will give equally good service to shipping, can be found. The coast in the vicinity has been closely studied, and the scheme is under consideration for the removal of the light to Cape Reinga on the mainland, where the electrical plant and radio beacon could be located within reach of immediate attention if such were necessary. This scheme may involve the provision of an auxiliary automatic light on the mainland immediately south of the existing light. This work is being carried out with the collaboration of the Marine Department, the Engineers of the Public Works Department, and the Radio Engineers of the Post and Telegraph Department.

The development and strengthening of the Fisheries Branch has proceeded satisfactorily. The research laboratory in Wellington, partly financed by contributions from acclimatization societies under the Fisheries Amendment Act, 1936, is in operation. The Sea Fisheries Investigation Committee has completed its report, and this is now being considered by Government. The voluminous evidence collected from end to end of New Zealand is a most valuable and useful record of the study of the industry, both on the production and marketing side.

The question of providing a more frequent steamer service from Bluff to Stewart Island was dealt with by Government during the year. Up to that time the island had been provided with a bi-weekly service from the 15th December to the 28th February each year and a weekly service for the remainder of the year, subsidized by Government and an annual grant from the Bluff Harbour Board. It was realized that this service was insufficient to meet the needs of the island residents, the position being rendered more acute by delays in the service time-table due to bad weather and other emergent conditions. As a result traffic by fishing-launches and other uncertificated vessels commenced and, being difficult to check, developed to the extent that positive danger to life was created. After a full investigation it was decided to increase the subsidy to enable a thrice-weekly service throughout the year to be instituted, and this has been regularly maintained since 1st January last. The new service has been fully justified, firstly, by increased traffic in both passengers and freights, with resultant benefit to the island, and, secondly, by the disappearance of the trade by uncertificated vessels, and the service fully meets the residents' requirements.

Whaling.

The intensive hunting of whales, particularly in the Antarctic, which has been carried out for some years by means of floating factories, supplied by the efforts of fast catchers using harpoon-guns, has resulted in such a depletion in stocks of the various species as to warrant a more severe restriction than has previously been imposed. In fact, the work carried out by the staff of the "Discovery II," also the statistics collected from the factory ships and worked out by the International Bureau of Whaling Statistics at Oslo, indicate clearly that if the rate of destruction is maintained the Antarctic whaling industry will soon cease to be a profitable commercial venture, with the probable extermination of the blue whale, the finest and richest in oil of all species. The position was rendered more acute by the fact that certain factory ships, owned in countries which were not parties to the original Whaling Convention in 1931, extended their operations to the Antarctic and carried on without being subject to the restrictions and regulations imposed on the others. In June, 1937, an international conference was called to further examine the position in an endeavour to reach an agreement for further restrictions, and it is pleasing to note that considerable success was achieved. A further gratifying feature was the attendance of a representative of Germany, one of the countries which had not, up to then, seen fit to participate in any previous discussions. Japan, which has for the past few years, and more particularly last season, operated very extensively in the Antarctic, did not accept the invitation to attend. The following restrictions were agreed to and embodied in the new agreement drawn up:—

(*a*) The season for pelagic whaling—that is, whaling prosecuted by whale-catching ships attached to floating factories—is restricted to three months in each year;
(*b*) Pelagic whaling for baleen—whale-bone whales—in certain areas north of the equator is absolutely prohibited;
(*c*) The taking of right whales and grey whales is prohibited absolutely, as also is the taking of whale calves and female whales attended by calves;
(*d*) Size limits are prescribed varying for the different species;
(*e*) Whaling at land stations is restricted to a period of six months continuous in any year, the dates varying according to the latitude of the station.

A further conference was called in May, 1938, to again examine the position, and has just concluded. The report of this conference has not yet been received, although advice has come to hand from the New Zealand representative who attended that one important measure of protection decided upon is a close season for the humpback whale, so far as factory ships and their catchers are concerned, for one year from the 1st October next in all waters south of latitude 40° S. New Zealand's interests in the whaling industry are confined to the Ross Sea and to the waters around the coast of New Zealand. Annual licenses issued are (1) a factory-ship license in respect of the "Southern Princess," registered in New Zealand, but owned in the United Kingdom, and (2) a land-station license in respect of the small station at Tory Channel. The figures in respect of the "Southern Princess" for last season have not yet come to hand. The Tory Channel station took fifty-six whales with a yield of 280 tons.

Financial.

The following statement summarizes the revenue and expenditure of the Department for the past four years, and gives in comparison the comparative figures for the year 1922–23. These figures exclude Westport Harbour, which is summarized separately:—

Branch.	1922–23.	1934–35.	1935–36.	1936–37.	1937–38.
		Revenue.			
Shipping Branch—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Light dues	39,688 16 8	91,108 3 3	94,020 10 10	98,717 2 4	107,072 7 7
Engagement and discharge fees	3,179 11 0	1,711 13 6	1,793 8 6	2,140 13 0	1,976 8 8
Survey fees	3,095 9 0	3,500 12 0	3,625 5 10	3,731 0 5	3,874 3 0
Examination fees, &c.	395 12 6	194 14 10	202 3 0	235 2 6	253 0 0
Lighthouse tender—					
Freight, passage-money, &c.	1,785 0 7	4,464 17 0	642 3 8	1,105 1 6	1,232 7 3
Miscellaneous	1,289 0 4	1,305 7 9	1,416 6 10	1,806 3 10	2,170 7 0
Harbours—					
Pilotage, port charges, &c.	764 14 6	1,711 15 1	2,044 0 11	1,855 13 10	1,866 10 3
Foreshore revenue	1,126 14 1	1,963 13 11	2,203 17 10	2,474 2 6	2,580 4 6
Inspection of Machinery—					
Inspection fees, &c.	17,126 19 6	19,731 14 10	19,566 5 8	20,082 15 6	20,872 3 2
Examination fees, &c.	667 0 0	359 4 6	422 14 6	592 10 0	603 15 0
Fisheries—					
Sale of oysters	7,702 9 6	5,[illegible]5 8 4	3,765 6 8	4,984 13 11	5,251 4 0
Fishing-boat license-fees, &c.	324 9 6	613 17 1	555 8 9	612 15 11	765 16 9
Rental of toheroa-beds	10 0 0	316 0 0	313 0 0	376 0 0	357 0 0
Fresh-water Fisheries: Fees, &c.	..	..	..	1,066 15 9	1,247 1 2
Ross Sea revenue	..	600 0 0	500 0 0	100 0 0	..
Miscellaneous revenue	2,800 11 4	525 11 8	516 19 1	528 17 11	610 11 2
Totals	79,956 8 6	133,532 13 9	131,587 12 1	140,409 6 11	150,732 19 6
		Expenditure.			
Head Office	9,612 2 8	8,612 5 5	9,193 9 7	10,067 13 2	11,170 7 4
Harbours	4,826 13 2	2,071 3 7	2,333 3 11	2,668 5 0	2,902 2 6
Lighthouses	49,532 14 2	40,190 0 8	43,928 18 8	48,849 4 11	51,252 6 4
Mercantile marine	15,150 17 11	19,629 5 3	20,256 11 9	23,129 2 0	28,552 9 3
Inspection of Machinery	27,015 0 0	15,130 5 5	15,863 12 0	18,191 10 1	19,255 0 11
Fisheries	9,580 7 1	10,191 16 10	9,785 3 4	12,319 8 5	16,664 3 9
Miscellaneous services	2,655 3 8	..	5 0 0	..	4 7 6
Grants and subsidies	1,510 0 0	550 0 0	250 0 0	250 0 0	1,010 0 0
Depreciation	8,156 0 10	13,140 4 9	12,961 3 2	12,960 7 5	12,595 11 6
	128,038 19 6	109,515 1 11	114,577 2 5	128,435 11 0	143,403 9 1
Interest on capital	15,716 7 3	14,331 17 2	13,917 8 0	13,483 19 9	12,610 0 2
Totals	143,755 6 9	123,846 19 1	128,494 10 5	141,919 10 9	156,013 9 3
	Deficit.	Surplus.	Surplus.	Deficit.	Deficit.
Financial result	63,798 18 3	9,685 14 8	3,093 1 8	1,510 3 10	5,280 9 9

It was mentioned last year that the annual accounts of this Department for the next few years would reflect abnormal maintenance expenditure which had been postponed during the depression years. Some leeway has been made up during the past year and is reflected in the additional expenditure. Buoyancy of trade generally, but particularly in the shipping and industrial world, has led to increased revenue from mercantile sources, and fees for inspection of machinery have also shown an increase. The fisheries section shows added expenditure, due to the fitting-up of the fisheries laboratory in Wellington, the appointment and travelling-expenses of District Inspectors of Fisheries, and also additional planting work in connection with oyster propagation in the Kaipara Harbour, where an additional amount of £1,400 was expended. The restricted oyster season at Auckland was similar to last year in all respects. For the current season oyster pickers' conditions and rates of pay have been placed on a better footing, necessitating a slight rise in prices for sack and sugar-bag lots of oysters at the depot, but no increase has been deemed necessary in the prices to the general public for paper bag lots.

Harbour Loans.

The Marine Department has continued to function in conjunction with Treasury in dealing with all applications for loans by Harbour Boards or harbour authorities under the Local Bodies' Loans Act. The most important items under this heading during the past year were the loans recently approved for the Auckland Harbour Board and the Timaru Harbour Board for improvement schemes.

Harbours.

This portion of the report concerns harbours which are administered directly by Government without the intervention of a Board set up under the Harbours Act or a local authority. Except in the cases of Westport and Picton, these harbours are of minor importance.

Westport Harbour.—Very satisfactory depths were maintained on the bar throughout the year; the average depth at high-water being 22 ft. 2 in. as against 22 ft. 8 in. last year. However, duringthe last few days in March a flood in the river meeting a calm sea caused considerable siltation on the bar 1,500 ft. beyond the moles, reducing the least depth to 10 ft. 6 in. at L.W.O.S.T. While this condition is maintained, the larger coal-carrying coastal vessels will be restricted in loading by the depths available, but not to the extent of limiting coal export. Overseas tramp steamers calling for bunkers will not be affected.

Dredging operations were again confined to the suction dredger "Eileen Ward," and though, due to overhaul and repairs, the vessel worked during seven months of the year only, her dredging performance was relatively good. The total excavated was 384,320 cubic yards, of which 240,000 cubic yards were removed from the bar. In the previous year comparable figures were 535,000 cubic yards and 267,000 cubic yards. Following a survey of the "Eileen Ward" in January to ascertain the cause of cracking in boiler-rivets, a close examination revealed hair-cracks radiating from a rivet-hole in the heavy strap. The dredger was immediately towed to Wellington for a more complete examination, and prices were obtained for repairs. These prices were so high in comparison with prices obtained from Great Britain for new boilers that it was clearly advisable to instal new boilers in the vessel. These boilers have now been ordered. The dredger "Rubi Seddon" has been recommissioned to take up work.

It has been decided to recommend the Government to put in hand the scheme for harbour improvement at Westport aimed at securing improved and steadier depths on the bar. The proposal formulated by the Marine Engineer is to remove by dredging two to three million cubic yards of material from low-lying backwaters adjacent to the entrance, and so increase the tidal capacity and, in consequence, the scouring velocity of the tidal movements. The material excavated would be largely used in the formation of an aerodrome-site.

During the year ended 31st March, 1938, 375 steamers and 51 auxiliary sailing-vessels, aggregating 288,621 tons net register, entered the port, as against 338 steamers and 46 auxiliary sailing-vessels, 257,506 tons register, last year, an increase of 42 vessels and 31,115 tons.

Coal shipped: 425,779 tons, as against 345,509 tons last year, an increase of 80,270 tons.

Twenty-two large overseas vessels called for bunker coal during the year, as against twenty-two last year.

Rainfall was 68·35 in. for 168 days' rain, 56 of which were overnight.

Sunshine recorded: 1,906 hours 54 minutes.

Installation of electric light at the main beacons, signal-station, and the two signalmen's cottages, reticulation for which was in hand at the close of the previous year, was completed early in the year. The work involved erection of 3½ miles of transmission-line, nearly three miles of which is high-tension line. Later in the year the gas-flashing port light at the signal-station was replaced with an electric flashing-light. Also an electric Morse signalling-lamp was installed, which is usable during the day for signalling to ships off the port in lieu of the old system of flag-signalling.

In readiness for conveyance of stone from the Cape Foulwind quarry to the west breakwater and Organ's Island protective work the railway-line to the Cape was thoroughly overhauled, and the same action is being taken in respect to the branch line from the Te Kuha main line into Organ's Island. Nine men were employed on this work, and some 1,823 old sleepers had to be replaced in the line.

The reconstruction of the bridge across to Organ's Island was almost complete at the close of the period. In this work the existing piers of nine old spans were strengthened with two extra piles per pier and old hardwood stringers placed. Fifteen new 22 ft. spans, of which nine were with pile piers and six trestles, were erected.

At the quarry twenty side-tipping, and ten end-tipping trucks were reconditioned, whilst several defective rails and points and crossings were replaced. Considerable barring-down of stone was done, whilst the 25-ton and 5-ton cranes were overhauled and boiler transferred from the old 10-ton crane and fitted to the 7-ton crane, also new rope with shackles, &c. At the close of the period all was in readiness for the loading of stone.

During last year the average working-depth on the bar at high water was 22 ft. 3 in., which is not as good as the 22 ft. 8 in. for the preceding year, but is much better than the 20 ft. 10 in. and 20 ft. recorded for the respective years previous to 1936–37.

From the following table, which shows the number of days in each year during the past ten years on which the respective depths were maintained by high water, it will be seen that, despite the foregoing, the improvement in bar conditions, taken over the year, was fairly well maintained during the period under review:—

Depth.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	1935–36.	1936–37.	1937–38.
Over 14 ft. ..	..	..	..	..	..	365	365	366	365	365
„ 16 ft. ..	365	365	365	..	365	360	357	361	365	365
„ 18 ft. ..	350	363	340	366	350	279	353	355	356	361
„ 20 ft. ..	249	345	208	360	287	152	263	263	328	338
„ 22 ft. ..	168	276	43	252	144	42	81	90	257	222
„ 24 ft. ..	107	99	..	53	14	..	15	6	86	31
„ 26 ft. ..	26	11	..	10	..	..	..	..	7	..
„ 28 ft. ..	3	..	..	..	..	..	..	..	..	..

The following statement shows the coal trade, shipping, and financial statistics of Westport Harbour for each year since the Department has had control of the port :—

Year.	Net Tonnage of Shipping entered.	Tonnage of Coal shipped.	Expenditure.	Revenue.	Financial Result.
			£ s. d.	£ s. d.	£ s. d.
1921–22 ..	273,706	480,873	63,950 1 10	25,836 19 3	Deficit 38,113 2 7
1922–23 ..	332,401	573,487	50,738 17 5	38,700 8 1	,, 12,038 9 4
1923–24 ..	275,762	442,070	46,619 1 11	42,285 7 4	,, 4,333 14 7
1924–25 ..	334,827	556,669	44,666 14 0	50,378 11 0	Surplus 5,711 17 0
1925–26 ..	386,669	552,949	51,909 4 11	57,539 12 11	,, 5,630 8 0
1926–27 ..	459,670	637,165	52,769 12 6	62,976 13 10	,, 10,207 1 4
1927–28 ..	466,021	623,256	65,828 1 7	65,909 8 1	,, 81 6 6
1928–29 ..	458,712	604,778	68,871 13 0	64,214 5 6	Deficit 4,657 7 6
1929–30 ..	479,623	625,835	64,877 10 5	66,274 17 3	Surplus 1,397 6 10
1930–31 ..	352,228	513,503	53,436 16 9	53,013 2 11	Deficit 423 13 10
1931–32 ..	234,936	336,873	46,803 2 4	34,602 12 9	,, 12,200 9 7
1932–33 ..	223,936	282,163	40,974 8 9	30,516 6 1	,, 10,458 2 8
1933–34 ..	240,132	280,080	39,783 7 4	30,886 13 9	,, 8,896 13 7
1934–35 ..	253,041	291,449	39,011 8 8	30,773 2 5	,, 8,238 6 3
1935–36 ..	260,111	295,067	41,480 16 9	30,891 0 7	,, 10,589 16 2
1936–37 ..	257,506	345,507	41,785 2 7	34,300 11 1	,, 7,484 11 6
1937–38 ..	288,621	425,779	48,263 2 11	41,206 17 3	,, 7,056 5 8

It will be seen that the finances show a satisfactory year under the circumstances, and it is clear that the coal-export trade is the predominating factor in the financial success, or otherwise, of this harbour from year to year. With a still further expansion of the coal exports all charges—including working-expenses, interest on loans, interest on advances from the Consolidated Fund, and sinking-fund payments—should be met.

The Department still encourages the bunkering of vessels at Westport by reduced port dues on vessels calling for bunkering purposes only. The following summary shows the number of vessels which called at Westport for bunkering purposes only since 1927–28, with the quantity of bunker coal taken :—

Year.	Number of Vessels.	Quantity of Bunker Coal taken.
		Tons.
1925–26	20	..
1926–27	44	..
1927–28	51	54,993
1928–29	54	54,083
1929–30	57	61,546
1930–31	24	25,969
1931–32	10	7,637
1932–33	7	6,872
1933–34	14	12,703
1934–35	21	16,376
1935–36	34	20,647
1936–37	23	22,039
1937–38	31	24,824

Kaipara Harbour.—A full-time Harbourmaster is in charge of this port, which is controlled by the Marine Department. This vast harbour requires a great deal of attention to lights, buoys, &c., and during the year a new and up-to-date launch for this purpose has been built in Auckland to the specifications prepared by technical officers of the Department. The Harbourmaster also acts in the capacity of Customs officer.

Picton Harbour.—At Picton the Harbourmaster controls the harbour and foreshores and acts as Customs officer, and his services are required for the pilotage of the intercolonial vessels which frequent this port from time to time. Repairs to the Harbourmaster's residence and general maintenance of the harbour facilities have been carried out during the year.

Harbour-works.

The following work in connection with minor harbours has been carried out during the year :—

Awanui Harbour.—Siltation of the upper tidal reaches of the Awanui River was seriously interfering with navigation, and to enable shallow-draught vessels to regularly work the tides dredging work was carried out with a Sauermann slack-line cableway excavator. Altogether some 13,500 cubic yards of silt was removed, and this improvement enables vessels to maintain regular sailings without difficulty.

Mangonui Wharf.—The contract for this reinforced-concrete structure was almost completed during the year, the principal unfinished item being the wharf shed. The wharf is L-shaped, the approach being 100 ft. long, and the wharf 45 ft. wide by 100 ft. long. The wharf shed is approximately 60 ft. by 30 ft., with cool store 20 ft. by 10 ft. in one corner and small office in the other corner.

Whangaparapara Wharf.—This wharf, consisting of a jetty 80 ft. long, and a tee 15 ft. by 53 ft., with a shed 12 ft. by 18 ft., crane, and landing steps, has been completed. The depth of water at face of tee at low water is 8 ft.

Waikokopu Harbour.—The operations at this harbour have been carried out by the Wairoa Harbour Board on behalf of the Public Works Department.

During the year 102 vessels worked the port and handled 5,376 tons of general cargo, 91,749 square feet of timber, 9,142 sleepers, and 124 hardwood poles. In addition, eleven overseas vessels worked the port and lifted 4,481 quarters of beef, 134,040 carcasses of mutton and lamb, 4,369 carcasses of pork, 6,972 packages of sundries, 886 bales of wool, 199 bags hides, 20 casks pelts, 3,161 carcasses boneless beef, and 187 tons of general cargo.

Ordinary maintenance has been carried out to wharf and buildings. An examination of the wharf-piles has been carried out, and several piles were found due for replacement. New piles are to be driven as soon as the necessary equipment is available.

Waitaria Bay Wharf.—General repairs were carried out to this wharf during the year.

Portage Wharf.—General repairs were carried out during the period.

Hicks Bay.—A report has been prepared on a proposal to extend this wharf.

Little Wanganui Harbour.—The decking of the wharf was entirely renewed, and, in addition, some snagging was done on the river fairway. Plans have also been prepared for wharf-extension.

Karamea Harbour.—Renovations and repairs were carried out to the Harbourmaster's cottage. The river-control works are well in hand and are likely to ultimately reopen the harbour.

Hokitika Harbour.—A scheme was prepared after survey for renewal of portion of the south training-wall using concrete blocks, but no work was carried out.

Okarito Harbour.—The lagoon mouth has been diverted to the designed position south of the newly-constructed training-wall, but the channel has not been workable to the wharf owing to shoaling. Repairs have been carried out to the wharf, and skidways to hold 220,000 super feet of timber have been constructed.

Jackson's Bay.—During the year a survey and preparations for a wharf and access thereto were carried out.

Bruce Bay Landing.—The enlargement of the goods-shed at the Flower Pot Landing is in hand.

Lighthouses.

All the lighthouses, both watched and unwatched, have been satisfactorily tendered by the Government steamer "Matai." In addition, more satisfactory and frequent mail services have been provided in respect to some of the outlying stations. The following work has been carried out at the various stations during the year:—

Cape Maria van Diemen.—The reconditioning and improving of the tram-line access, together with the installation of two power-operated winches, has been completed. Timber and ironwork for a new landing-crane has been delivered and is being fabricated in Auckland, and this will be erected shortly. Material is also being delivered in connection with the reconditioning of the aerial tramway connecting the island with the mainland.

Investigations were carried out in connection with the removal of the lighthouse to an alternative site. This was considered in conjunction with a proposal to provide for a radio-beacon station, and preliminary surveys for this purpose were carried out on the mainland at Cape Reinga. The proposals provide for the complete reconstruction of the watched light at Reinga, together with the provision of an automatic light on the mainland adjacent to Cape Maria. The provision of a new station would involve the construction of a new tower, power-house accommodation, water-supply, together with approximately ten miles of access road from Te Paki.

North Cape.—A platform was constructed at the top of the cableway for the purpose of improving the operation of the cableway equipment.

Cuvier Island.—The tram-lines were reconditioned during the year and a power-operated winch was installed. Investigations were carried out in connection with the proposal to electrify the light and provide a radio beacon. Plans are in hand in connection with the power-house, and the electrical equipment is on order.

Ponui.—Plans for the renewal of the lighthouse have been finalized. The new tower has been fabricated, and the erection of the structure will be undertaken as soon as the remainder of the material is delivered.

Moko Hinou.—During the year repairs were carried out to the tram-line and a power-winch was installed. Investigations were carried out in connection with the proposal to electrify the light and install a radio beacon. Plans of the power-station are in hand, and electrical equipment is on order.

Tiri Tiri.—Investigations have been carried out in connection with the proposal to connect the electrical apparatus with the system on the mainland.

Flat Rock.—Handrail guards were erected during the year.

Chicken Island.—The installation of the cable-way, together with the installation of a power-winch, was completed during the year.

Baring Head.—The radio-beacon towers have been erected. The radio equipment has been installed by the Post and Telegraph Department, and the beacon put into operation.

Alterations to the keepers' cottages are in hand.

Stephens Island.—An engineering survey has been made for the purpose of installing a new power-house and radio beacon. The power-house has been designed, and the necessary building will proceed immediately.

Cape Campbell.—The erection of a building, 24 ft. by 25 ft., comprising power-house, fuel-store, and battery-room, has been completed. The building is a wooden-frame structure with corrugated-iron roof and exterior walls, and is located close to the Cape Campbell Lighthouse.

Arrangements are well forward for the installation of the machinery.

Separation Point.—A survey in connection with the installation of a light at Separation Point and access from the foreshore has been carried out. Action to purchase the light equipment is in hand.

Cape Saunders.—The painting of the lighthouse was completed during the year.

Moeraki.—Renovations and repairs were carried out during the period.

Centre Island.—Plans and specifications for the erection of three new dwellings have been completed.

Akaroa.—A new steel staircase for the landing-stage was erected during the year.

General.

A number of applications were received from local bodies and private people for approval of works involving marine interests. Among the various applications were the following:—

Foreshore Licenses.—Clevedon, Wairoa River; Pakatoa Island; Mangawhare, Northern Wairoa River; Dargaville; Kaihu Creek; Coromandel Harbour; Whangaroa Harbour; Waikawa Harbour; Bon Accord Harbour, Kawau Island; Oparau; Awanui River; Kohukohu, Hokianga Harbour; Motukaraka, Hokianga Harbour; Motuparapara Island; Auckland Harbour; Duddings Creek, Kaipara Harbour; Matiatia Bay, Waiheke Island; Mangawhare, Kaipara Harbour; Matakatia Bay, Whangaparaoa; Te Kopuru, Kaipara Harbour; Day's Bay, Waiheke Island; Rawene, Hokianga Harbour; Manaroa, Pelorus Sound; Terakohe, Golden Bay; Tory Channel; Rotoroa Island; Golden Bay.

Wharves and Jetties.—Pakatoa Island; Whangaparapara, Great Barrier; Calliope Dock Wharf, Auckland; Onerahi, Whangarei Harbour; Opua, Bay of Islands; Opotiki Wharf; Port Charles, Coromandel; Albany, Auckland Harbour; Coromandel Harbour; Waikawa Harbour; Whareroa, Tauranga Harbour; Te Kopuru, Northern Wairoa River; Jacksons Bay; Port Fitzroy; Lyttelton Harbour.

Boatsheds, Skids, Slipways, &c.—Otago Harbour; Broad Bay, Otago Harbour; Carey's Bay, Otago Harbour; Auckland Harbour; Edwards Bay, Otago Harbour; Whakatakataka Bay, Auckland Harbour; Titirangi Bay, Manukau Harbour; Karitane; Lowry Bay; Waverley Bay, Otago Harbour; Duddings Creek, Port Albert; Picton.

Breastworks and Retaining-walls.—Wellington Harbour; Evans Bay, Wellington Harbour; New Plymouth; Rotoroa Island.

Reclamation.—Freemans Bay; Greymouth Harbour.

General.—Water-supply intakes, Whakatane River; boat-pound, Auckland Harbour; widening Leith Canal and lengthening railway bridge over canal; bridge, Taipa River, Doubtless Bay; sewerage-outfall, Motutapu Island; bathing-sheds, Evans Bay; club-house, Tauranga Yacht and Power Boat Club; bridge, Pourakino River, Longwood; shop, Mangawhare, Kaipara Harbour; culvert and bridge, McCormack's Bay, Sumner Estuary.

Harbour Board Legislation.

The Acts enumerated below affecting Harbour Board legislation were passed during the year, and the various Bills were investigated by the Marine Department before presentation to Parliament.

The *Auckland Harbour Board Loan and Empowering Act, 1937*, authorized the Board to borrow £1,000,000 for the purpose of erecting (1) an export wharf, (2) special wharfage accommodation for passenger and tourist vessels, and (3) constructing the eastern waterfront reclamation breastwork.

The *Greymouth Harbour Board Reconstitution Act, 1937*, provided that this Board should again be an elective one.

The *Napier Harbour Board Loan Amendment Act, 1937*, granted the Board power to divert the sum of £70,000, formerly allocated to "the construction of one thousand eight hundred feet of western mole with breastwork" to the special purposes set out in Schedule to the Act.

The *Thames Borough Commissioner Amendment Act, 1937*, section 5, extended the period for payment of the reduced interest on Thames Harbour Board Loans until the 1st April, 1939.

The *Timaru Harbour Board Loan Amendment Act, 1937*, granted further borrowing-powers to the Board for extensions, rebuilding, and dredging-work as set out in the Schedule to the Act.

The *Wanganui Harbour District and Empowering Amendment Act, 1937*, authorized the Board to borrow £15,000 for raising the moles at the mouth of the Wanganui River.

The *Whangarei Airport Act, 1937*, preserved, by section 43 (*t*), the provisions of the Harbours Act, 1923, in regard to any operations dealing with the sea-coast.

In addition to the above legislation, sections dealing with harbour legislation appeared in the Acts mentioned below:—

The *Finance Act, 1937, section 42*, provided for the Government guarantee of the Oamaru Harbour Board conversion loan.

The Local Legislation Act, 1937, dealt with the following items:—

Section 33 authorized the Auckland Harbour Board to donate £50 to the Auckland Y.M.C. Association.

Section 34 validated the expenditure incurred by the Auckland Harbour Board for (1) the reception accorded to the pilots and crew of the Pan-American Airways Clipper, (2) the entertainment of delegates to the Chamber of Commerce Conference in January, 1937, and (3) the payment of compassionate allowances to certain persons. *Section 35* validated the remission of harbour dues payable to the Auckland Harbour Board by the United States training ship "California State."

Section 36 validated the expenditure incurred by the Auckland Harbour Board for the entertainment of the South African and New Zealand Rugby Football Teams.

Section 47, inter alia, authorized the Wellington Harbour Board to contribute up to £300 to the Wellington Branch of the New Zealand Free Ambulance Transport Service Incorporated.

Section 48 made provision for the construction of railway-lines and sidings on certain *de facto* streets in the Borough of Lyttelton and land reclaimed by the Lyttelton Harbour Board.

The *Reserves and other Lands Disposal Act, 1937, section 6,* provided for the reclamation of portion of the bed of the Greymouth Harbour.

The *Ngaruawahia Borough Council Empowering Act, 1937, sections 6 and 7,* provided an example where for exceptional circumstances the ordinary public rights of navigation are curtailed and Governmental jurisdiction is conferred temporarily on a local body.

Inspection of Machinery Act.

The Mining Amendment Act, 1937, section 32, provided that an Inspector of Machinery may examine the record-book kept by the dredgemaster in order to ascertain if the gear, belting, and machinery are in good order.

Shipping Legislation.

Section 12 of the Finance Act (No. 2), 1937, although not strictly affecting this Department, does, nevertheless, affect indirectly the provisions of the Shipping and Seamen Act, 1908, in that the seamen engaged on intercolonial vessels are, for the purposes of taxation under the Employment Promotion Act, 1936, deemed to be resident in New Zealand.

Control of Foreshores and Wharves.

All plans for proposed wharves, structures, or any works contemplated by harbour and other local authorities are required to have the approval of the Marine Department before operations are commenced. Applications for foreshore licenses and renewals from time to time are submitted to this Department and, when approved, are the subject of Orders in Council.

The following return shows the Orders in Council which have been issued during the year ended 31st March, 1938.

Date of Order.	Purpose of Order.
1937.	
9th April	Approving plan (M.D. 7558)—Boatslip, Lowry Bay, Wellington; G. H. Scott and W. Gray Young.
9th ,, ...	Setting apart for disposal 145 acres of tidal land—Whangaroa Harbour.
9th ,, ...	Amending regulations for salt-water fisheries.
23rd ,, ...	Approving plan (M.D. 7559)—Continuation of Thorndon Breastwork and dredging in Wellington Harbour.
23rd ,, ...	Approving plan (M.D. 7553)—Boatshed, North Spit, Otago Harbour; R. B. Rennie.
23rd ,, ...	Licensing Manukau County Council to use foreshore at Clevedon, Wairoa River (wharf-site).
23rd ,, ...	Licensing the Salvation Army to occupy foreshore at Pakatoa Island, Firth of Thames (wharf).
23rd ,, ...	Approving plan (M.D. 7572)—Wharf, Pakatoa Island, Firth of Thames; Salvation Army.
23rd ,, ...	Approving plan (M.D. 7571)—Retaining-wall, Rotoroa Island.
7th May	Approving plan (M.D. 7564) and construction of Boatshed and skidway—Broad Bay, Otago Harbour; A. Walmsley.
7th ,, ...	Approving plan (M.D. 7575) and construction of wharf—Whangaparapara, Great Barrier Island, Great Barrier Island County Council.
7th ,, ...	Approving plan (M.D. 7555) and construction of boatshed—Carey's Bay, Otago Harbour; P. J. Anderson.
7th ,, ...	Approving plan (M.D. 7565) and construction of additions to Calliope Dock Wharf, Auckland; Auckland Harbour Board.
7th ,, ...	Approving plan (M.D. 7570) and construction of Jetty—Onerahi, Whangarei Harbour; Whangarei Harbour Board.
18th ,, ...	Revoking License of J. Stopher and Sons to occupy foreshore at Jock's Point, Wairoa River, Kaipara Harbour (wharf-site).

CONTROL OF FORESHORES AND WHARVES—*continued.*

Date of Order.	Purpose of Order.
1937.	
18th May	Appointing F. J. Carter, M.M., as trustee for management of the boat-slip at Port Moeraki, Waitaki County.
18th ,, ...	Approving plan (M.D. 7576)—Extension to wharf, Opua, Bay of Islands; Bay of Islands Harbour Board.
28th ,, ...	Appointing Charles Norman Harvey as trustee for management Manaroa Wharf, Clova Bay, Pelorus Sound.
28th ,, ...	Licensing Wairoa Co-operative Dairy Co., Ltd., to occupy foreshore at Mangawhare, Northern Wairoa River (slipway).
10th June	Authorizing Reclamation—Freeman's Bay; Auckland Harbour Board.
10th ,, ...	Approving plan (M.D. 7589)—Breastwork and reclamation, Freeman's Bay, Auckland Harbour; Auckland Harbour Board.
10th ,, ...	Approving plan (M.D. 7585)—Water-supply intakes, Whakatane River; Whakatane Paper Mills, Ltd.
10th ,, ...	Revoking license of Henry Herbert Kelsey to occupy foreshore, Motukaraka, Hokianga Harbour (wharf and boatshed sites).
23rd ,, ...	Amending Fresh-water Fisheries Regulations 1936.
6th July	Revoking regulations made on 16th May, 1862, regarding the carriage of passengers from New Zealand to Australia.
7th ,, ...	Approving plan (M.D. 7574)—Extension to Opotiki Wharf; Opotiki Borough Council.
7th ,, ...	Renewing license of Kaipara Steamship Co. to occupy foreshore at Dargaville, Kaihu Creek, Northern Wairoa River (wharf-site).
15th ,, ...	Revoking license of E. A. Loisel to occupy foreshore at Porewa Island, Tolaga Bay (jetty).
27th ,, ...	Amending regulations for salt-water fisheries.
27th ,, ...	Approving plan (M.D. 7566)—Wharf, Port Charles, Coromandel Peninsula; Coromandel County Council.
4th August	Approving plan (M.D. 7595)—Boatshed and slipway, New Kitchener Street Wharf, Otago Harbour; R. W. Corbishley.
18th ,, ...	Approving plan (M.D. 7615)—Skidway, platform, and shed, St. Mary's Bay, Auckland Harbour; G. H. Mason.
18th ,, ...	Approving plan (M.D. 7617)—Jetty, Lucas's Creek, Albany, Auckland Harbour; Public Works Department.
18th ,, ...	Approving plan (M.D. 7593)—Wharf, Coromandel Harbour; Coromandel Timber Co., Ltd.
18th ,, ...	Licensing Coromandel Timber Co., Ltd., to occupy foreshore, Coromandel Harbour (wharf-site).
25th ,, ...	Licensing Florence Bowyer to occupy foreshore, Whangaroa Harbour (boatsheds).
8th September	Licensing National Mortgage and Agency Co. of New Zealand, Ltd., to occupy foreshore, Waikawa Harbour (jetty).
8th ,, ...	Making regulation for taking trout and other acclimatized fish (Whangarei Acclimatization District).
8th ,, ...	Making Fresh-water Fisheries Regulations for the Southland Acclimatization District.
8th ,, ...	Making regulations for taking trout and other acclimatized fish (Wellington Acclimatization District).
8th ,, ...	Vesting management of Collingwood Wharf in Collingwood County Council.
8th ,, ...	Approving plan (M.D. 7601)—Jetty, Waikawa Harbour; National Mortgage and Agency Co. (N.Z.), Ltd.
8th ,, ...	Making regulations for taking trout and other acclimatized fish (South Canterbury Acclimatization District).
22nd ,, ...	Approving plan (M.D. 7621)—Wharf, Whareroa, Tauranga Harbour; Public Works Department.
22nd ,, ...	Approving plan (M.D. 7626)—Roadway and retaining-wall, Evan's Bay, Wellington Harbour; Wellington City Council.
29th ,, ...	Making regulations for trout-fishing (Waimate Acclimatization District).
29th ,, ...	Making regulations for trout-fishing (Ashburton Acclimatization District).
29th ,, ...	Licensing L. G. Reeves to occupy foreshore at Bon Accord Harbour, Kawau Island (wharf).
29th ,, ...	Approving plan (M.D. 7620)—Boat-pound, Calliope Dock, Auckland Harbour; Auckland Harbour Board.

CONTROL OF FORESHORES AND WHARVES—*continued.*

Date of Order.	Purpose of Order.
1937.	
29th September	Licensing Kawhia County Council to occupy foreshore at Oparau (landing-stage and goods-shed).
29th ,, ...	Vesting control of foreshore at Karoro Creek, Kaka Point, Otago, in Willsher Domain Board.
29th ,, ...	Making regulations for trout fishing (Waitaki Acclimatization District).
29th ,, ...	Making regulations for trout-fishing (Auckland Acclimatization District).
13th October	Approving plans (M.D. 7628)—Sea-wall and road-widening, Evan's Bay, Wellington Harbour; Wellington City Council.
13th ,, ...	Approving plan (M.D. 7619)—Widening of Leith Canal and lengthening of railway bridge over canal; Otago Harbour Board.
13th ,, ...	Amending regulations for salt-water fisheries.
13th ,, ...	Making trout-fishing regulations (North Canterbury Acclimatization District).
13th ,, ...	Making regulations for trout-fishing (Nelson Acclimatization District).
13th ,, ...	Making regulations for trout-fishing (East Coast Acclimatization District).
20th ,, ...	Approving plan (M.D. 7633)—Bridge, Taipa River, Doubtless Bay; Public Works Department.
20th ,, ...	Licensing trustees of estate of J. A. Subritzky to occupy foreshore, Awanui River (wharf and shed).
20th ,, ...	Making trout-fishing regulations (Waimarino Acclimatization District).
20th ,, ...	Approving plan (M.D. 7632)—Sewerage outfall, Motutapu Island; Defence Department.
20th ,, ...	Approving plan (M.D. 7610)—Slipway, Waverley Bay, Otago Harbour; H. E. Bond.
20th ,, ...	Approving plan (M.D. 7650)—Bathing-shed—Evan's Bay, Wellington Harbour; Wellington City Corporation.
3rd November	Making regulations for the loading and stowage of ships' ballast.
3rd ,, ...	Licensing A. G. Frankham, Ltd., to occupy foreshore at Kohukohu, Hokianga River (boat-shed and slip).
3rd ,, ...	Approving plan (M.D. 7654)—Dredging and reclamation, Karoro Lagoon, Greymouth Harbour (aerodrome).
3rd ,, ...	Making regulations for trout-fishing (Otago Acclimatization District).
10th ,, ...	Approving plan (M.D. 7624)—Boatshed and slipway, Edwards Bay, Portobello, Otago Harbour; W. R. Godfrey.
10th ,, ...	Approving plan (M.D. 7657)—Clubhouse, Tauranga; Tauranga Yacht and Power Boat Club (Inc.).
10th ,, ...	Licensing Hokianga Co-operative Dairy Co., Ltd., to occupy foreshore, Motukaraka, Hokianga Harbour (benzine-store).
10th ,, ...	Licensing James Henry Newton and John Newton to occupy foreshore, Motuparapara Island, Northern Wairoa River (wharf).
10th ,, ...	Approving plan (M.D. 7629) Bridge, Pourakino River, Longwood; Wallace County Council.
24th November	Approving lease of foreshore, Auckland Harbour, to Auckland Aero Club by Auckland Harbour Board.
1st December	Approving plan (M.D. 7659)—Logslip, Dudding's Creek, Port Albert, Kaipara Harbour; M. G. Dudding.
1st ,, ...	Approving plan (M.D. 7668)—Boatshed, Karitane; Trustees of estate of Peter Walker.
1st ,, ...	Licensing M. G. Dudding to occupy foreshore at Dudding's Creek, Port Albert, Kaipara Harbour (logslip).
1st ,, ...	Licensing Matiatia Oneroa Syndicate to occupy foreshore at Matiatia Bay, Waiheke Island (wharf).
8th ,, ...	Approving plan (M.D. 7669)—Shop, Mangawhare, Northern Wairoa River, Kaipara Harbour; R. G. Cochrane.
8th ,, ...	Licensing R. G. Cochrane to occupy foreshore, Mangawhare, Northern Wairoa River, Kaipara Harbour (shop).
8th ,, ...	Licensing G. L. Taylor and E. B. Brown to occupy foreshore at Matakatia Bay, Whangaparaoa (wharf).
8th ,, ...	Amending regulations for salt-water fisheries.
8th ,, ...	Licensing M. Sunde to occupy foreshore at Te Kopuru, Northern Wairoa River, Kaipara Harbour (wharf and barge-landing).
8th ,, ...	Approving plan (M.D. 7670)—Wharf and barge-landing, Te Kopuru, Northern Wairoa River; M. Sunde.

CONTROL OF FORESHORES AND WHARVES—*continued.*

Date of Order.	Purpose of Order.
1938.	
11th January	Approving plan (M.D. 7679)—Boatshed, Whakatakataka Bay, Auckland Harbour; H. J. Mills.
11th ,, ...	Licensing F. W. Wilson to occupy foreshore, Day's Bay, Waiheke Island (wharf).
11th ,, ...	Licensing Rawene Motors, Ltd., to occupy foreshore at Rawene, Hokianga Harbour (motor-garage and firewood-yard).
11th ,, ...	Approving plan (M.D. 7678)—Wharf, Jackson's Bay; Public Works Department.
11th ,, ...	Licensing G. L. Rogers, J. P. Climo, N. Harvey, H. Harvey, and C. N. Harvey to occupy foreshore at Manaroa, Clova Bay, Pelorus Sound (wharf).
11th ,, ...	Amending by-laws (Little Wanganui Harbour).
11th ,, ...	Revoking license of E. G. Eliott and Mrs. I. Waller to occupy foreshore, Tamaki Strait, Auckland Harbour (wharf).
11th ,, ...	Revoking license of E. G. Eliott and F. Waller to occupy foreshore, Tamaki River (wharf).
11th ,, ...	Approving plan (M.D. 7681)—Bathing-shed, Evan's Bay, Wellington Harbour; Wellington City Corporation.
2nd February	Approving plan (M.D. 7689)—Boatshed, Titirangi Bay, Manukau Harbour; J. Belcher.
9th ,, ...	Licensing Golden Bay Cement Co., Ltd., to occupy foreshore, Terakohe, Golden Bay, (wharf).
9th ,, ...	Approving plan (M.D. 7683)—Breakwater Extension, New Plymouth; New Plymouth Harbour Board.
9th ,, ...	Approving plan (M.D. 7694)—Boat-ramp, Otago Harbour; Otago University Students' Association.
23rd ,, ...	Approving plan (M.D. 7693)—Slipway, Picton; D. C. and H. J. Stace.
23rd ,, ...	Licensing J. A. Perano, to occupy foreshore, Tory Channel (reclamation).
23rd ,, ...	Altering representation of Whangarei Harbour Board Districts and appointing principal authority.
23rd ,, ...	Amending regulations for salt-water fisheries.
23rd ,, ...	Approving plan (M.D. 7698)—Culvert and bridge, McCormack's Bay, Sumner Estuary; Christchurch City Council.
2nd March	Altering representations in certain districts of Tolaga Bay Harbour Board and appointing principal authority.
2nd ,, ...	Approving plan (M.D. 7618) of an extension by the Great Barrier County Council to wharf at Port Fitzroy, provided each pile in extension tee will consist of two rails bolted together.
8th ,, ...	Licensing Salvation Army to use and occupy part of the foreshore and land below low-water mark of Rotoroa Island, Firth of Thames, as a site for wharf for further period of fourteen years as from 1st February, 1938.
8th ,, ...	Licensing Puponga Coal Mine, Ltd., to use and occupy part of the foreshore and land below low-water mark at Golden Bay as a site for a wharf.
10th ,, ...	Fixing harbour-light dues for Nelson and Mapua.
31st ,, ...	Approving plan (M.D. 7708)—Wharf, Lyttelton Harbour; Lyttelton Harbour Board.

ADJUSTMENT AND INSPECTION OF 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 Inspectors and adjusters has been carefully performed. Extra supervision has been necessary in a few cases on account of the changes in the magnetic forces in the vessels. New regulations for the adjustment of compasses have been drafted and will be brought into force in the near future.

ADMIRALTY CHARTS.

The Department, acting as sub-agent for J. D. Potter, maintains a stock of Admiralty charts at Head Office and at the Mercantile Marine Offices at Auckland, Wellington, Lyttelton, and Dunedin. The stock includes all charts of the Dominion, and also a considerable portion of the world, which practically includes the passages to all places where non-regular traders are likely to go after discharging in the Dominion.

The charts, after their receipt, are periodically corrected to date, and, to ensure that purchasers receive any information subsequent to the date of correction, a list of Notices to Mariners affecting the charts is maintained at each office for inspection. The procedure was adopted some years ago by the Department and is now a condition in sub-agents' agreements. The stock now amounts to 1,740 copies of 350 different charts, and is being enlarged continually as the demand increases.

It may be mentioned, to give some idea of the work involved in maintaining the stock up to date, that approximately 5,300 corrections were made during the last six months of the year. The sales are increasing progressively at an average rate of about 19 per cent., and this year reached a total of 1,168, of which about 32 per cent. were for charts outside the Dominion.

Examination of Masters and Mates.

During the year examinations were held in Auckland and Wellington and were conducted in a satisfactory manner, those for foreign-going certificates being in accordance with the Imperial Board of Trade requirements.

Ninety examinations were held during the year, the percentages for foreign-going and home-trade certificates being as follows—Foreign-going: Full pass, 56·3; partial pass, 25; failure, 18·7. Home trade: Full pass, 55·2; partial pass, 31·0; failure, 13·8. Three candidates passed for square-rigged sailing-ship endorsement and one for fore and aft sailing-ship endorsement.

Examination in Form and Colour Vision.

These examinations are held at Auckland, Wellington, Lyttelton, and Dunedin. During the year sixty-two candidates were examined, all of whom passed.

Casualties.

The number of casualties on or near our coast is shown in the table at the end of the report and, as will be seen from their description, varied considerably in their nature and were of comparatively slight importance in the majority of cases and, fortunately, unaccompanied by loss of life.

Formal investigations were held into the loss of the oyster-dredger "Black Cat," which foundered in Foveaux Strait after collision with the oyster-dredger "Rita," and into the stranding and loss of the steam-trawler "Muriel" at Sumner. The findings of the Courts of inquiry are given in the above-mentioned table.

"New Zealand Nautical Almanac and Tide-tables."

This publication for 1938 (36th edition) was issued about a month later than the usual time owing to the pressure of work at the Government Printing Office, and caused considerable inconvenience to purchasers in the Dominion and abroad. The publication provides mariners and others with much necessary and useful information, in addition to sailing directions and information concerning the various ports of the Dominion. The port information is corrected each year by the various Harbour Boards, and at the time of going to press, about the middle of October, is the latest available. Subsequent alterations are made by Notices to Mariners.

Notices to Mariners.

Information relative to changes in navigational aids and to the discovery of rocks, shoals, or other dangers to navigation and other general information necessary for the use of mariners is published weekly in the form of Notices to Mariners, forty-six of which were issued during the year.

When the information is of urgent character it is sent out in the form of a wireless warning by the Post and Telegraph shore stations to ships carrying an operator, and to other ships by the National and Commercial Broadcasting Stations. The latter stations now play an important part in the safety of life at sea, and always render willing assistance when required.

In conformity with a scheme developed by the International Hydrographic Bureau, Monaco, the Mercantile Marine Offices at Auckland, Wellington, Lyttelton, and Dunedin have been established as centralization offices for Notices to Mariners. Notices are now received from Great Britain, Norway, Sweden, Germany, France, India, Ceylon, Singapore, Philippine Islands, Netherlands, East Indies, Australia, Japan, Canada, and United States of America, and are available for inspection at these offices. At all other ports visited by foreign-going shipping notices from Great Britain, Australia, and Fiji are available for inspection.

The before-mentioned Bureau has suggested a further development of the scheme which will eliminate the long interval which elapses in New Zealand between the receipt of eastern notices in national language and the English translation in the notices from Great Britain.

Registration of Shipping.

On the 31st December, 1937, there were on the Register of Vessels in the Dominion 51 sailing-vessels of 4,587 tons register; 158 steamers of 77,746 tons register; and 273 motor-vessels of 17,209 tons register, as compared with 53 sailing-vessels of 4,701 tons register, 166 steamers of 82,136 tons register, and 264 motor-vessels of 14,269 tons register at the end of the previous year.

The number of seamen employed on board was 3,043, as compared with 3,071 for the year 1936.

Lifeboatmen Certificates.

Examination for these certificates are held in Auckland, Wellington, Lyttelton, and Dunedin, and the certificates issued by the Superintendents of Mercantile Marine.

The shipping companies provide the necessary lifeboat and gear and are responsible for getting the men together for the examination.

During the year 292 certificates were issued, making a total of 1,324 since the examination was introduced.

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 £17,674 6s. 4d., as against £20,208 8s. for the previous year, a decrease of £2,534 1s. 8d.

Survey of Ships.

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

Sea-going steam and motor ships	160	(155)
Sea-going sailing-ships	..	(2)
Restricted-limits steam and motor ships	373	(367)
	533	(524)

The number of surveys shows a slight increase over that of the previous year. It will be observed, however, that no sailing-vessels were surveyed during the year. This is the first time in the history of the Department that a whole year has elapsed without a single sailing-vessel being presented for survey, and clearly indicates that the days of the commercial sailing-vessel on the New Zealand coast have passed. Twenty-five years ago 119 sailing-vessels were surveyed and certificated for coastal and foreign service. From then the numbers have declined gradually, as indicated by the following return taken at intervals of five years from the year 1913. The return also shows that the total numbers of annual surveys have decreased considerably since 1913. This, no doubt, is due to the development of rail and road transport and the severe competition which shipping has met in recent years from these services.

The most marked reduction has taken place in the mosquito fleet. Generally the present-day ship is larger, more powerful, better appointed, and better equipped than its predecessor of earlier years :—

	1913.	1918.	1923.	1928.	1933.	1938.
Sailing-vessels surveyed and certificated ..	119	66	31	17	5	Nil.
Total number of vessels surveyed and certificated	993	716	828	757	561	533

Five new sea-going motor-ships, "Waiana," "Port Tauranga," "Ranginui," "Ranui," and "Lady Jocelyn," and one new sea-going steamer, "Kakapo," were surveyed for the first time during the year for the issue of certificates.

The largest of these vessels, the "Waiana," of 3,363 tons gross and 1,910 tons register, was built in Glasgow in March, 1937. She is propelled by a single set of two-cycle single-acting Diesel engines of 2,000 b.h.p., made by the hull builders, Messrs. Alex. Stephen and Sons, Ltd., Glasgow, and is employed in the New Zealand coastal and inter-colonial cargo trade.

The steamship "Kakapo" was also built and engined by Messrs. Alex. Stephen and Sons, Ltd., Glasgow. She was launched late in 1937, and is now engaged in the inter-colonial cargo service. The "Kakapo" has a gross tonnage of 2,498 and a register tonnage of 1,279, and is propelled by a single set of triple-expansion steam-engines which receive steam at a working-pressure of 200 lb. per square inch from two single-ended cylindrical multitubular boilers.

The motor-ship "Port Tauranga," of 1,525 tons gross and 738 tons register, was built at Leith, Scotland, in 1937 for the coastal and inter-colonial cargo trade. Her propelling machinery consists of two sets of two-cycle single-acting oil-engines with a total horse-power of 1,200. The hull was built by Messrs. Henry Robb and Co., and the machinery was supplied by the Aktiebolaget Atlas Diesel Co. The motor-ship "Ranginui" is a small coastal cargo-vessel 106 ft. long, 158 tons gross, and 52 tons register. She was built at Bowling, Scotland, in 1936, and is propelled by two sets of Fairbanks-Morse two-cycle single-acting oil-engines, each of 125 h.p.

The remaining new sea-going vessels, the motor-ships "Ranui" and "Lady Jocelyn," were built in the Dominion. The "Ranui" is a wooden vessel of 56 tons gross and 20 tons register, built for fishing and for passenger and cargo trade out of Bluff to Stewart Island and the West Coast Sounds. The hull was built at Port Pegasus and the machinery and equipment installed at Port

Chalmers in 1937. The propelling machinery consists of two sets of four-cycle Diesel oil-engines made by the National Gas and Oil Engine Co., Ltd., England, the total horse-power being 120. The "Lady Jocelyn" is a small wooden vessel built at Auckland in 1937 to replace a vessel of the same name which, after thirty-three years service, got beyond profitable repair. She has a gross tonnage of 49 tons and a register tonnage of 23 tons, and is propelled by a single set of four-cycle Diesel engines of 60 b.h.p., built by Messrs. Bergius and Co., Ltd., Glasgow. The "Lady Jocelyn" is engaged in restricted home-trade service out of Auckland.

Fourteen restricted-limits motor-ships, thirteen of which are new vessels, were surveyed for the first time during the year for the issue of certificates. The largest of these vessels is a composite vehicular ferry of 279 tons gross, and 190 tons register built in 1937 for service in Auckland Harbour. The vessel is named the "Korea" and is the first motor-ship in the owner's fleet of ferry steamers. The propelling machinery consists of a single set of 400 b.h.p., two-cycle Diesel engines made by Gardners Ltd., England, coupled to propellers at the forward and after ends. The installation of oil-engines of this power in a composite hull presented some difficulties, and the builders arranged the steel engine-seating structure from recommended designs prepared by the Marine Department.

The vessel has proved very satisfactory in service and is no doubt the forerunner of the heavy-duty oil-engined ferry in New Zealand harbours.

Six registered vessels were deleted from the Department's current records during the year. Of these, the s.s. "Marama," built in 1907 and engaged in the San Francisco mail and inter-colonial passenger service for many years, and as a hospital ship during the Great War, was sold to Eastern buyers. The motor-tug "Southland," of 525 tons gross and built in 1927 for the Bluff Harbour Board, was also sold to Eastern buyers. Her name was changed to the "Frosty Moller." The vessel proceeded abroad under her own power, but as she was not a passenger-vessel under the provisions of the International Convention for the Safety of Life at Sea the Department's Certificate of Survey was not required. However, as she had been laid up for some years a complete survey of the hull, machinery, and equipment was carried out, and the vessel put in good condition before she was allowed to clear at a New Zealand port.

The s.s. "Rarawa," a popular vessel in the New Zealand passenger trade between Onehunga and New Plymouth for many years, was broken up. She was built in 1903 and had a gross tonnage of 1,077 tons. Another vessel broken up during the year was the steel cargo steamship "John," of 339 tons gross, built in 1899. The wooden steam-trawler "Muriel," of 59 tons gross, built in 1907, was wrecked on the Sumner beach. The wooden motor-ship "Lady Jocelyn," of 22 tons gross, built in 1910, was scrapped.

Plans and specifications of seven new wooden vessels built or building for service in New Zealand waters were examined and approved by the Department during the year. Three of these are sea-going fishing-vessels, each of approximately 25 tons gross, and one a sea-going passenger and cargo-trading vessel of approximately 25 tons gross. The remaining three are vessels constructed for service within restricted waters and consist of a cargo-vessel, a tug, and a passenger-vessel. All these ships are fitted with internal-combustion engines.

Two vessels required for the use of the Department were designed during the year, and the necessary plans and specifications prepared by the Head Office staff to enable tenders to be called. A contract for one of the vessels was satisfactorily completed at the close of the year under review. This was a launch for the use of the Harbourmaster, Kaipara. The leading dimensions of the vessel are: Length overall, 35 ft.; breadth, 9 ft.; and moulded depth, 5 ft. The hull is built on the bent-frame principle, carvel planked, with an open cockpit aft, engine-room amidships, and sleeping-cabin forward. The scantlings are heavy to suit the work in which she will be engaged, which includes attending lights and buoys and occasional towing in the harbour. The propelling-engine installed is a 33 b.h.p. solid-injection compression-ignition cold-starting Kelvin Diesel engine supplied by Messrs. Bergius and Co., Ltd., Glasgow. This is the first Diesel-engine-equipped launch owned by the Department, and it is considered that the experience to be obtained from its performance will be of value when those of the Department's fishing and harbour launches, which are now very old, require to be renewed.

The other vessel designed during the year is a wooden motor-ship for fisheries research and patrol duties. The leading dimensions are: Length overall, 62 ft. 9 in.; breadth outside planking, 14 ft. 6 in.; moulded depth, 8 ft.; and mean draft, 5 ft. 10 in. The hull is divided into five separate watertight compartments consisting of a fore peak and store, crew's space, insulated fish-hold, machinery space, and after compartments. The fore peak bulkhead and the machinery space bulkheads are of welded steel. Ample accommodation is provided forward for a crew of four, and a cabin aft accommodates two scientists. The main propelling machinery consists of a single set of full Diesel engines developing not less than 150 b.h.p., giving an estimated speed of eleven knots. An auxiliary Diesel engine drives an electric generator, air-compressor, and a pump for fire and deck service. A combined trawl and seine winch, driven from the main engine, will be provided on deck. Tenders have been called for the construction of the hull and supply and installation of the machinery, but at the moment contracts have not been let.

In addition to the usual annual surveys, 271 seaworthiness, efficiency, and tonnage surveys were made during the year. Thirty-two seaworthiness and efficiency surveys were made to overseas vessels not registered or normally surveyed in the Dominion. Five of these surveys were connected with repairs to hulls, three with machinery, and four with winches and cargo gear. In three instances surveys were made in connection with the extension of Imperial Board of Trade certificates which

had expired when the vessels were in New Zealand waters. In each case the extension was granted under Article 52 of the International Convention for the Safety of Life at Sea, which states that if a ship at the time when its certificate expires is not in a port of the country in which it is registered the certificate may be extended by a duly authorized officer of the country to which the ship belongs, but such extension shall be granted only for the purpose of allowing the ship to complete its return voyage to its own country, and then only in cases in which it appears proper and reasonable to do so. Arrangements have been made by the Board of Trade for the Marine Department to extend United Kingdom certificates as required.

Crew Spaces.—The Shipping and Seamen Act requires that every space in a ship occupied by seamen or apprentices and appropriated for their use must have a prescribed amount of superficial and cubic space for each seaman and apprentice, and shall be securely constructed, properly lighted and ventilated, properly protected from weather and sea, and properly protected from effluvium. It is further required that sanitary, hospital, and lavatory accommodation, including bathrooms, shall be provided.

The Imperial Board of Trade issue from time to time Instructions as to the Survey of Master's and Crew Spaces, and these instructions are issued to the Marine Department's Surveyors for their guidance in surveying crew space. The Board of Trade issued new instructions during the year 1937. The previous instructions, issued in 1923, were out of date in many important respects when judged by modern standards, although it was recognized that for several years the old instructions have represented the basic minimum requirements, and that the majority of shipowners and ship-builders have provided accommodation in excess of the standards laid down. Examples of improvements made in the new instructions are mentioned below :—

The whole of the crew's accommodation is to be situated above the load-line and amidships or aft, but the controlling authority may sanction a departure from these requirements in any case where, by reason of the size, type, or intended service of a ship, they consider compliance to be unreasonable and impracticable. This means that, except in very small ships in which no other suitable space is available, a forcastle is no longer accepted as a suitable space for the accommodation of the crew, and they must be berthed amidships or aft. This requirement is the outcome of experience of recent years when head-on collisions have resulted in the death and injury of members of the crews berthed in forecastles. Further, the instructions require that the accommodation must be accessible at all times, and in heavy weather a forecastle with entry from the deck is not accepted as an accessible place.

The minimum height of the accommodation, hitherto 6 ft. from floor to under side of deck beams, is now to be not less than 7 ft. 6 in. from floor to top of beams in ships of 1,600 tons gross and over, and not less than 7 ft. in smaller ships. This means a general increase in headroom of about 9 in.

Separate sleeping accommodation is to be provided for each category of the ship's personnel—that is, officers, petty officers, apprentices, seamen, firemen, and stewards, and separate messroom accommodation is to be provided for officers, petty officers, apprentices, and ratings. It is further provided that each watch of seamen, firemen, or similar ratings on duty in watches shall be provided with a separate sleeping room or rooms. These requirements separate the crew in several rooms and provide that watches resuming or leaving duty will not disturb the remainder of the crew.

Crews' accommodation generally is to be improved. Internal bulkheads are to be of steel or plywood or other approved material, the use of tongue-and-grooved boarding and similar materials which may tend to harbour vermin being prohibited. There must be no direct communication between crews' living-quarters and chain-lockers, cargo or machinery spaces, nor access to coffer-dams or oil-fuel spaces. Each member of the crew is to be provided with a clothes-locker placed in the sleeping-room. Food-lockers must not be placed in sleeping-rooms. A drying-room suitable to the needs of the crew is to be provided, and compartments are to be available for hanging oil-skins and dirty clothes. Washplaces, bathrooms with baths or showers, and privy accommodation is much improved. Every foreign-going ship over 2,500 tons gross must be fitted with a properly constructed hospital, and in smaller foreign-going ships a space must be available for use as a temporary hospital when necessary.

Lighting, ventilation, heating, and access to accommodation has received particular attention in the new instructions. The interior, sides, and crowns of accommodation are to be covered with a good-quality enamel or other approved material white in colour or of a tint which, like white paint, will not materially absorb light. A space or spaces of adequate size must be available on an open deck to which the crew have access when off duty.

The question of the type and efficiency of hull fastenings of wooden square bilge scows received close attention during the year. The last new scow of this type was built in 1925, and the age of the majority of the vessels is about thirty years. In view of their advancing age it was considered advisable to require that compensation should be provided for hidden and non-withdrawable vertical fastenings in side planking of all square-bilge scows and that a number of withdrawable and inspectable fastenings should be fitted in the bottom planking. These matters were fully discussed with the Scow-owners' Association, Auckland, and, in agreement with them, it was decided that the required alterations and additions to side and bottom fastenings should be carried out at the next annual surveys, and requirements relating to the type and application of the fastenings were embodied in a set of instructions which were circulated among the Department's Surveyors and the shipowners concerned.

The instructions have now been in force some months, and a considerable amount of refastening has been done to scows as they have been presented for survey.

General Harbour Regulations.

The total number of accidents reported during the year under Regulation 103 of the General Harbour Regulations was 826. Last year 529 accidents were reported. It was found necessary during the year to draw the attention of interested persons at some of the smaller ports in the Dominion to the necessity for reporting accidents, and the increase in the number of accidents can be partly accounted for by the number of reports now received from these districts.

Seven of these accidents had fatal results. Three were caused by goods slipping out of slings, two by goods swinging whilst being hoisted, one through a sling of cargo dislodging a gangway not secured, and one was the result of a vessel moving suddenly when it was being slipped for repairs.

The accidents may be classified as follows:—

Handling goods and other articles, including the use of hand-tools, and accidents due to lifting heavy goods and cases with sharp or rough edges, &c., 368 accidents.

Persons falling or slipping off gangways, shafts, down hatchways, off ladders, or slipping or stumbling on the level when not handling goods, 97 accidents.

Persons struck by falling or swinging loads not being handled by injured persons, 278 accidents.

Persons stepping on or striking against fixed objects not included in other classification, 37 accidents.

Due to failure of gear (chains, ropes, slings, derricks, &c.), 17 accidents.

Not otherwise classified (miscellaneous), 29 accidents.

Most of these accidents were not serious, yet any steps that could be taken to safeguard them would be worth while.

Any improvements that could be made in mechanical safeguards would probably not affect the accident rate very much. The nature of the accidents occurring to those engaged in loading and unloading ships seems to call for more attention and care in the man-handling, slinging, and stacking of goods.

Inspection of Machinery.

Boilers.

The following statement shows the number of inspections of fired boilers, unfired steam-pressure vessels, and air-receivers made during the year, the corresponding figures for the previous year being shown in parentheses:—

Fired boilers	4,880	(4,834)
Unfired steam-pressure vessels	3,732	(3,370)
Air-receivers	815	(775)
Total inspections	9,427	(8,979)

The increase in inspections for the year is a little over 5 per cent., and the aggregate for the year 9,427, is the highest annual return of inspections of boilers, steam-pressure vessels, and air-receivers yet recorded. The inspections include 77 new power-boilers, aggregating 2,091 horse-power, manufactured in the Dominion, and 43 new power-boilers, aggregating 2,345 horse-power, imported from abroad. They also include 142 new steam-pressure vessels and 85 new air-receivers manufactured in the Dominion and 242 new pressure-vessels and 58 new air-receivers imported from abroad. The total number of new boilers, pressure-vessels, and air-receivers for the year was 647, against 560 for the previous year. Plans showing the design and scantlings of all new boilers, pressure-vessels, and receivers were first submitted to the Department for approval of design and method of construction, and for computation of the allowable safe working pressure. After examination in Head Office the plans were forwarded to the field inspecting staff for the purpose of checking with the actual jobs, and final approval and certification of any unit was conditional on the materials of construction, workmanship, safety connections, and tests being in accordance with the Department's requirements.

Close attention is given to the quality of the materials used in the fabrication of boilers and pressure-vessels, and it is a rigid requirement that every plate used for parts subject to pressure shall be of boiler quality. Boiler steel is of known quality, and a certificate must be produced for every plate showing that, from the results of tests, the chemical and physical properties are in accordance with requirements laid down by the Department. Naturally, the Dominion's stocks of this special steel are not as extensive as those of ordinary mild steel, and manufacturers are dependent on comparatively small and frequent importations to supply their wants. A short supply of boiler-quality steel plates has been apparent during the year through the inability of English and Australian steelworks to deliver plates of certain sizes within a reasonable period, and there has been, on many occasions, considerable delay in boiler-manufacture. The position, however, became easier towards the end of the year, and there is now a fair supply of boiler-plates available, with prospects of earlier deliveries from abroad.

No explosions from boilers or pressure-vessels were reported during the year.

At the end of the year 1937 the erection of two Velox steam-generators, described in last year's report, was completed and the boilers were subjected to hydraulic and steam tests under the Department's supervision. These tests and the subsequent operation of the units in regular service gave complete satisfaction and aroused technical interest throughout New Zealand and beyond.

As the water content of each unit—only 4 tons—is relatively very small for an evaporation rating of 90,000 lb. per hour, manual control of the feed-water supply as understood in orthodox boiler practice is not practicable in this instance, and consequently the Velox units are equipped with a complex system of electro-mechanical control which performs the dual duty of regulating the combustion of fuel and the supply of feed water during normal operation, and in the event of an emergency arising from a failure of the feed-water supply the fuel is cut off before any damage to the boiler can ensue.

The revival of interest in petroleum deposits in New Zealand and their commercial exploitation has resulted in plans of boilers of special design being submitted for approval by an oil-development company. They are of a locomotive self-contained type, especially suited to transportation through difficult, undeveloped country. The working steam-pressure, however, is 300 lb. per square inch, which is higher than that of any other locomotive-boiler in service in this country.

Of the unfired steam-pressure vessels for which plans have been submitted to the Department during the last year, the largest is an all-welded calandria of 10 ft. $11\frac{3}{4}$ in. diameter, intended for a sugar-refinery. This vessel, which is designed for a steam-pressure of 50 lb. per square inch, is to be constructed in Australia, under independent supervision, to the Department's requirements.

Another large-pressure vessel made in Australia to the Department's requirements under proper supervision is a hydrogen receiver working at a pressure of 130 lb. per square inch. The diameter is 4 ft. $1\frac{1}{4}$ in., and the length is 12 ft. All joints are welded by the electric welding-process, and on completion of the welding the receiver was stress-relieved by heating it to a uniform temperature of 750° Centigrade and holding it at that temperature for a period of one hour. Previous receivers of this type manufactured with riveted joints had proved unsatisfactory owing to the penetrative nature of hydrogen gas under high pressure. The all-welded receiver is absolutely gastight and has proved very satisfactory in service.

The art of fusion welding, by both electric arc and gas, has made progress in the Dominion during the year. The quality of electrodes and welding-rods and the technique of welding operators has now arrived at a standard which permits approval of the manufacture of all-welded steam-pressure vessels for working-pressures not exceeding 15 lb. per square inch, small air-receivers not exceeding 5-cubic-feet capacity, and ammonia-pressure vessels. All of these vessels are designed for a very high factor of safey. The Department, however, cannot yet approve the construction by welding of medium- or high-pressure steam-pressure vessels or of air-receivers of medium or large size, as the welding industry in New Zealand has not yet reached the stage of development where it can economically equip itself with the specially-designed furnaces which are necessary to relieve welded joints of the internal stresses. When stress-relieving furnaces are established in New Zealand the Department will review the present limited approval of the construction of pressure-vessels by fusion welding.

Machinery.

The following statement shows the number of inspections of machines, machinery plants, lifts, cranes, hoists, and tractors, the corresponding figures for the previous year being shown in parentheses: —

Machines not driven by steam power; plants 9,897 (9,188) ..	68,583	(64,214)
Machines driven by steam power; plants 2,491 (2,514) ..	11,763	(13,316)
Electric-power supply stations	137	(154)
Lifts	3,146	(3,328)
Cranes	466	(336)
Hoists	1,461	(1,329)
Tractors (not included last year)	287	(311)
Total inspections	85,843	(82,988)

The number of inspections show an increase of 2,855 over the previous year. The number of machines driven by steam-power is 1,553 less, whereas the number driven by power other than steam is 4,369 greater, indicating that the motive power used for driving modern machinery is moving away from steam.

Included in the inspections are sixty-six lifts and twenty-seven cranes inspected for the first time. The plans of these machines were examined in Head Office, and the safe working loads computed before they were certificated.

In August, 1937, instructions were issued to Inspectors of Machinery dealing comprehensively with the design, construction, erection, testing, and the general inspection of power-operated cranes and their attachments and accessories. When formulating the rules it was considered desirable to base them on best British practice, as represented by standard specifications for cranes and other lifting-gear published by the British Standards Institution. As the majority of power-cranes in use in the Dominion are of British origin, no difficulty is experienced in certifying a new crane for its required load when it has been constructed in accordance with the requirements of the appropriate specification. The consolidation of the Department's requirements in respect to cranes in a complete set of instructions has filled a long-felt want and will be of great convenience to manufacturers, importers, and users. The instructions came into force on 10th January, 1938, and copies have been distributed free of charge amongst crane-owners, local manufacturers, manufacturers in the United Kingdom and Australia, importers, and amongst Government Departments, and other interested organizations abroad whose activities include the prevention of accidents with lifting-appliances. It may be noted that any crane driven by manual or animal power or by motive power which does not exceed 1 h.p. is exempt from the provisions of the Inspection of Machinery Act.

Three transporters were designed and constructed in New Zealand during the year for the rapid transportation of coal from railway sidings to the bunkers of large industrial plants. The plans of these transporters, in common with the plans of all other cranes, were examined in Head Office and the construction and tests supervised by an Inspector of Machinery. Two of the transporters are of particular interest in that they are the first of all-welded construction to be used in the Dominion. Details of all-welded joints were embodied in the plans submitted for examination, and loads were checked before the designs were accepted. Special tests were arranged to prove the competency of the welding-operators to produce high-quality welds in these structures, and under the supervision of an Inspector of Machinery the welding of the joints was satisfactorily completed. A gradual extension of the application of welding to crane-construction and a corresponding decline of riveting may be expected in future.

Improvements in new lifts installed during the year relate mainly to operating-devices. A full automatic passenger-lift recently erected in an office building in Wellington is provided with mechanism for the automatic opening and closing of car and landing doors. The pressing of a hall button will open the landing-door provided the lift car is at that landing. If not at the landing the doors will open simultaneously with the arrival and stopping of the car at the landing. On entering the car the passenger presses the button corresponding with his intended destination and both car and landing doors close automatically before the car leaves the landing. Exhaustive tests were carried out by the Department's staff to prove the safety of these devices before the lift was certificated.

The modern lift is a highly developed machine, both mechanically and electrically, but, as a rule, new lifts are sound in construction and well appointed with safety-devices, and no great difficulty is experienced in obtaining full compliance with the Department's requirements relating to new lifts. However, in the case of existing lifts, the matter of the application of modern standards of safety is a little more difficult.

Many lifts are very old, and the safety equipment, considered adequate at the time of installation, now falls short of present-day requirements. A great amount of work has been carried out during the past two years in improving the standard of safety of the existing lift. Attention has been given to the construction of doors guarding openings to lift-wells, to door-locks, and to interlocking devices, both mechanical and electrical, which ensure that a well-door will remain locked and cannot be opened when the lift car is away from the landing. In all cases of goods-attendant lifts where the attendant must travel with the load, gates interlocked with the controls have been fitted to the cars.

Accidents reported in connection with machinery inspected by the Department numbered 129, of which 3 were fatal accidents and 126 non-fatal. The corresponding figures for the previous year were 8 fatal and 129 non-fatal accidents. The total number of boilers and machines of all classes inspected during the year is 93,697 and the ratio of the number of accidents to the number of boilers and machines is 1 to 726. The ratio for the previous year ended 31st March, 1937, was 1 to 659. In each case the circumstances of the accidents, including all contributing factors and the safeguards and the condition of the machine, were fully investigated, and, where practicable, improvements to the machine or to the safeguards were effected to prevent a repetition of similar accidents.

The fatalities were connected with a circular saw, a scutching-machine, and a log-hauling winch. The following gives a brief account of each fatal accident compiled from the reports, and also briefly describes the cause and the steps taken to ensure that the worker is protected from a similar occurrence :—

(1) Severe injuries to one side and one arm were the cause of death of a workman employed in a sawmill near Christchurch.

On 13th July, 1937, the deceased was sitting on the breast bench of a circular saw engaged in sharpening the saw in place.

Due to a misunderstanding, the driving-motor for the machine was started by a fellow-employee, with the result that the saw inflicted severe injuries, from which he subsequently died.

The saw is independently driven by an electric motor, which was controlled by a starter located approximately 30 ft. from the saw-bench. An efficient stopping and starting device has since been installed in such a position that the driving-motor can be readily and conveniently started and stopped by the person operating the saw.

(2) On the 18th October, 1937, during the trial under working-conditions, and before inspection by the Department, of a scutching-machine installed in a flaxmill in Canterbury, the owner, who was observing the performance of the machine, received fatal injuries consequent upon the bursting of a part of the machinery.

Upon examination of the machine subsequent to the accident it was found that the cast-iron disc which carries the beater-arms had fractured, allowing the beater-frame to come into violent contact with the outer wood casing of the machine.

The deceased, who was standing in close proximity to the machine, was injured by the flying timbers.

There was evidence that the fracture of the boss was due to the key having been driven in too tightly during the course of the re-erection of the scutching-machine. The position of the fracture was such that it could only be observed during the assembly, which, it was stated, was carried out by the deceased.

In view of the high speed at which the machine is operated, 300 revolutions per minute being the speed when the accident occurred, every care should have been taken to closely inspect each part of the machine during erection and better judgment and skill employed when fitting the key.

In order to prevent a recurrence of this accident the discs have been replaced with others of stronger design.

(3) The third fatal accident of the year occurred at a sawmill located in the Greymouth District. On 14th October, 1937, a workman whose duty it was to operate a winch used for log-hauling was drawn into the winch-hauling drum. There were no witnesses to the accident, but the deceased apparently kicked the wire rope, which was probably riding, and was caught between the rope and the drum. The injuries sustained were such that death occurred almost instantaneously.

The winch, which is driven by an oil-engine through clutch gears, is of the usual design used for such purposes. It is guarded as far as it is possible to do so, and the clutch-control placed in a convenient position to the operator. The wire hauling-rope was carefully examined after the accident, and it was found to be unsplintered and sound in all respects. An accident of this type resulting from dangerous practices is very difficult to prevent.

One hundred and twenty-six non-fatal accidents connected with inspected machinery were reported during the year, and of these, 26 were considered major accidents and 103 minor accidents. In 110 cases the accidents occurred with machines considered to be adequately equipped with safeguards. The majority of these accidents were due to failure of the human element, and may be attributed to mental lapses, sickness, fatigue, age, inexperience, inattention, carelessness, and unsafe practices. The latter may be instanced by untidiness about machines, bad lay-out of the work in hand, unsuitable clothing, adjusting running machinery, putting belts on running shafting, and such dangerous practices as cleaning or dusting machines in motion and painting in the immediate neighbourhood of moving machinery. No less than ten accidents were due to cleaning machinery in motion, one being of a very serious nature, when the unfortunate victim lost his right hand at the wrist.

A decrease in the number of accidents with well-appointed and well-guarded power-driven machinery can only be effected by encouragement of safe practices among machine-workers, and there is urgent need for organized safety work in industry. It is apparent that managements and workers generally are willing to co-operate in the promotion of safety, but they are often not well informed on accident causes. In every workroom or shop it should be the particular duty of the foreman or other responsible person in immediate charge to see that all machine-guards are kept in position, in good order, and properly adjusted, that the workroom is kept clean and tidy, and that workers are instructed in the use of safe methods when working at or near moving machinery. It is considered that Inspectors of Machinery, with their full knowledge of accident problems, should be able to foster an interest in educative measures as successfully as they have done in mechanical measures, and during the year the staff was informed by circular instructions as to the position with regard to machinery accidents in the Dominion and to the prevalence of unsafe practices, and to the need for education in the matter of safe practices among the workers.

The number of young persons injured by machinery was again high, no less than 36, or 28 per cent. of the total number of victims, being young persons of eighteen years of age and under. Many of these had very little experience with machinery and had been operating the machines with which they were injured for very short periods. Wood-working machinery was responsible for 42 accidents out of the total of 129, and of these, 25 accidents were due to saws, 5 to planers, and 8 to shapers and moulders. There were also 7 saw accidents in industries other than wood-working, making the total saw accidents 24 and establishing the fact that the power-driven saw is responsible for more accidents than any other type of machine used in industry in the Dominion. The whole of a circular saw cannot be guarded, as a portion of the teeth suitable for the work in hand must always be more or less exposed and is a hazard to the worker. It is a compulsory requirement that the back of every circular saw shall be fitted with a riving-knife, which serves the dual purpose of protecting the back edge of the saw and preventing sawn timber closing in and being thrown forward over the saw in the direction of the operator. The riving-knife is adjustable to suit the diameter of the saw, and the knife must vary as the thickness of the saw. The circular saw is further protected where practicable by an adjustable hood which fits over the top of the saw. This class of machine should only be used by the skilled and experienced worker who is fully aware of the danger of the machine and competent to carry out safe practices when using it. He should always use a push-stud to prevent his hand coming in contact with the saw.

Nine accidents with wood-planing machines were reported during the year. Overhand planing-machines known as "surfacers," "jointers," or "buzz planers" are very dangerous owing to the necessity of handling the material quite close to the cutters. The earliest types of this machine were fitted with square-cutter blocks, which, owing to the large gap between the knives, caused very severe injuries when an accident occurred.

Some years ago the use of the square-cutter block was prohibited by the Department, and it was required that circular-cutter blocks should be used in this type of machine. Although the circular-cutter block does not cause so many accidents or such severe ones as the square block, the risk is by no means negligible, and it is still necessary to use a guard with it. The guard should bridge the gap on the table through which the cutter block works and should be such that it will cover the gap during the whole operation of the work in hand. Swing-guards designed to keep covered the part of the cutters which is not actually cutting are not satisfactory. The commonest accident occurs when the back end of the work is just passing beyond the cutter and a spring or weight-operated swing-guard fails to come into action in time to prevent an accident. The problem of providing a reliable guard for overhand planers is not an easy one, and a perfect guard which will provide complete safety and not unduly slow down production is not yet available.

Recently Mr. J. D. Filarski, a member of the Factory Inspectorate, Amsterdam, experimented with a safeguard for buzz or overhand planers, and after the third attempt devised a guard which it is claimed is the best of its kind available in Europe. It has proved so satisfactory in service that Amsterdam district factory inspection authorities have prescribed it as the safety device to be used for planing-machines, and recently it has been required in a number of other districts.

The device provides, among other advantages, that during ordinary smoothing the used part of the cutters is covered permanently and securely and the dangerous places in front of, under, and behind the work are also covered. The guard is not higher above the bench than the thickness of the work requires, and it falls back on the bench directly the work passes over the cutters. It is therefore impossible to bring the hand inadvertently in contact with the cutters.

The Department has imported a Filarski guard from Amsterdam, and it is now being tried out under practical conditions in a Wellington factory. It is not protected by patents, but is at the disposal of any one who desires to prevent accidents on planing-machines, and if it proves satisfactory there is no reason why it should not be made in New Zealand.

There were five accidents with power-presses, three with guillotines and two with mincers. These figures are a little less than last year. The following table shows the number of accidents which occurred during the year. The various machines with which the accidents occurred are mentioned, together with several of the leading industries in which they are engaged :—

Machine.	Sawmilling and Wood Working.	Textile.	Refrigerating.	Printing.	Metal Working and Engineering.	Laundry.	Butchery.	Confectionery and Bakery.	Other Industries.	Total (Machines).
Circular saws	17	..	..	..	1	..	..	1	5	24
Gang saws	1	..	..	..	..	..	..	..	..	1
Other circular saws ..	7	..	..	..	..	..	..	..	..	7
Wood-planers	5	..	..	..	1	..	..	..	3	9
Wood shapers and moulders	8	..	..	..	1	..	..	..	..	9
Power-presses	..	..	..	..	5	..	..	1	..	6
Guillotines	..	..	..	..	2	..	..	1	..	3
Power-hammers	..	..	..	..	2	..	..	..	1	3
Mangles	..	..	..	..	..	2	..	..	..	2
Mincers	..	..	..	..	..	..	2	..	..	2
Cranes and hoists	..	..	..	..	1	..	..	..	..	1
Lifts	..	..	..	1	..	..	..	..	8	9
Belting	..	2	..	1	1	..	..	..	..	4
Shafting	..	..	..	..	..	..	1	..	1	2
Miscellaneous machines ..	4	5	1	5	11	1	1	10	9	47
Totals (Industries) ..	42	7	1	7	25	3	4	13	27	129

Amendments to Inspection of Machinery Act.

Consideration has been given to the safeguarding of accidents caused by milking-machinery. The Act places the responsibility for the guarding and fencing of this class of machinery solely on the owner and gives no power for inspection.

Several serious accidents have occurred, and a regrettable feature is that the greater proportion of those injured have been women and children. Amendments to the Act restoring some of the measures taken away in the 1931 Amendment Act are being submitted for consideration with a view to making it possible for farmers and their families to be instructed as to the mechanical safeguards and educative means that should be applied for the prevention of milking-machinery accidents. At the same time the opportunity has been taken to suggest other amendments to the Act intended to improve it in its application to other classes of power-driven machinery.

It is suggested that the Department should use its influence with machinery-owners to encourage the adoption of safe practices in their works, and an appropriate amendment to the Act is being submitted for approval. The Department could co-operate by supplying suitable technical literature and safety posters. The margin between costs of inspection and revenue is not sufficient at present to enable these services to be given free, and some consideration should be given to a slight increase in fees which will provide a service universally recognized as valuable in the prevention of accidents.

New Zealand Standards.

The Department was again represented on the Mechanical Engineering Divisional Committee and on the Technical Advisory Committee of the New Zealand Standards Institute.

Reports were made on many standard specifications of particular interest to the Department, such as steel for marine boilers, steel forgings and castings for marine purposes, structural steel for ship-building, steam-pipes and piping installations, calorifiers, steam jacketed pans, acceptance tests for steam-boilers, fusion-welded air-receivers, electrodes, fire-extinguishers, hydro extractors, cranes, crane-chain hooks, shackles, &c.

Staff.

During the year Mr. T. A. Cooper, Senior Surveyor of Ships and Inspector of Machinery at Wellington, and Mr. W. Bell, Inspector of Machinery and Surveyor of Ships at Dunedin, retired on reaching the age-limit. These officers had a long and creditable record with the Department.

Two experienced officers—Mr. H. Baldwin, of Auckland, and Mr. G. W. Martin, of Hamilton—retired during the year to enter private business.

Consequential on so many retirements occurring in the one year an unusual number of transfers and four new appointments were necessary. Mr. J. D. Forster was transferred from Wellington to Christchurch, Mr. J. M. Gillanders from Dunedin to Invercargill, Mr. J. G. Lockie from Greymouth to Napier, Mr. H. E. McClelland from Christchurch to Greymouth, Mr. A. MacKenzie from Auckland to Hamilton, Mr. W. Mowatt from Invercargill to Auckland, and Mr. W. J. White from Napier to Dunedin.

The following new appointments were made : Mr. A. M. Anstiss to Auckland, and Messrs. W. P. Dowling, L. J. Holman, and W. B. Niven to Wellington.

The general efficiency of the staff has been good.

There is no indication that the working of a five-day week has impaired efficiency ; on the contrary, so far as Inspection of Machinery is concerned, the number of inspections made by Inspectors has increased, without a disproportionate increase in expenditure.

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

These examinations were held during the year at the various offices of the Inspectors of Machinery throughout the Dominion at the regular intervals provided for in the regulations. 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—

Steam-winding-engine Driver.
Extra First-class Stationary Engineer.
First-class Engine-driver.
Second-class Engine-driver.
Locomotive-engine Driver.
Traction-engine Driver.
Locomotive and Traction Engine Driver.
Electric-tram Driver.
Electric-tram Driver (One-man Car).

The total number of candidates examined was 570. Of this number, 418 were successful and 152 failed in their examinations. Four hundred and seventy-seven certificates were issued, which includes 418 to successful candidates, the remainder being replacements and issues under the provisions of sections 53, 59, and 62 of the Inspection of Machinery Act, 1928, and certificates of service under the provisions of section 2 of the Tramways Amendment Act, 1910, as amended by section 6 of the Tramways Amendment Act, 1913.

Examination of Marine Engineers.

During the year 237 candidates were examined for Marine Engineers' Certificates of Competency at the various centres throughout the Dominion.

Of these, thirty-seven candidates were examined for third-class; thirty-four for Second- and First-class Steam and Motor Certificates of Imperial validity; and one candidate for First-class Coastal Motor Certificate.

Of the thirty-seven third-class who presented themselves for examination, nineteen were successful and eighteen unsuccessful; of the fifteen second-class steam, motor, and motor endorsement candidates examined, nine were successful and six unsuccessful; of the nineteen candidates examined for first-class steam, motor, and motor endorsement, ten were successful and nine unsuccessful in the examination. The candidate for first-class coastal motor was successful.

In the case of first-class candidates the above particulars are comprised of one candidate for steam certificate, who failed; four candidates for motor certificates, of whom two were successful; and fourteen candidates for motor endorsement, of whom eight were successful.

In the case of second-class candidates the foregoing return comprised eight candidates for steam certificates, of whom four were successful; six candidates for motor certificates, of whom four were successful; and one candidate for motor endorsement, who was successful.

Of the ten successful candidates for first-class examination nine passed at the first attempt and one passed at the second attempt. Of the nine successful candidates for second-class examination, six passed at the first attempt and three at the second attempt.

Of the nineteen successful candidates for third-class examination, seventeen passed at the first attempt and two at the second attempt.

The only candidate examined for First-class Coastal Motor Certificate was successful at the first attempt.

The summary for third, second, and first class examination is 55 per cent. passed and 45 per cent. failed, which represents the same percentage passed as last year.

The remaining 165 candidates were examined for P.V.O.S. and River Engineer Certificates of Competency. Of these, 107, 83 of whom were successful, were examined for sea-going vessels propelled by some motive power other than steam; 51, 42 of whom were successful, for service in vessels plying within restricted limits propelled by some motive power other than steam; 7, 5 of whom were successful, for steam-driven vessels plying within restricted limits.

The reduction of candidates presenting themselves for third-class examination during the year is 20 per cent., and covering the last two years the reduction has been 37 per cent. Yet previous to this the number of candidates presenting themselves yearly had been comparatively steady. The reduction over this period has perhaps been caused by the increased demand for junior sea-going engineers, who have accepted such positions on completing their apprenticeship, before obtaining the Third-class Marine Certificate. Also another factor contributing to the decrease is that another year or so must elapse before the apprentices who commenced their time during the trade recovery period have completed their apprenticeship and become eligible to sit.

On the other hand, the improved shipping conditions have steadily increased the number of candidates sitting for the higher-grade certificates, which shows an increase of 88 per cent. since 1935.

During the year new rules relating to the examination of marine engineers have been made in accordance with the Shipping and Seamen Amendment Act, 1936, which introduced First- and Second-class Coastal Motor Examinations, and discontinued the First- and Second-class P.V.O.S. Examinations as from the 28th February, 1938. The draft rules and the syllabus for the new examinations were submitted to the Chief Surveyor of Ships, the New Zealand Shipowners' Federation, and the New Zealand Institute of Marine Engineers, who gave valuable assistance, either written or oral, before the rules were printed.

The rules contain full information as to the qualifications required of candidates (workshop and sea service), the syllabus, specimen papers, dates and places of examination, and the procedure for a candidate who wishes to make application to sit for the various marine examinations.

With the introduction of the Coastal Motor Examinations, an Assistant Examiner was appointed to assist in compiling papers and in conducting marine examinations at the main centres, which will, it is considered, ensure uniformity in the examination results. The examinations for First-, Second-, and Third-class Certificates will be held at the four main centres only. Examinations for Certificates of Competency, Restricted Limits P.V.O.S., River Engineer, and Marine-engine Driver will be held at the fifteen centres throughout the Dominion and be conducted by the District Examiner of Engineers, other than the four main centres.

Prosecutions.

Under the various statutes administered by this Department 32 prosecutions were instituted during the year. Proceedings under Fisheries Act comprise 18, Inspection of Machinery Act, 5; Harbours Act, 4; and Shipping and Seamen Act, 5.

Fisheries.

The activities of this branch of the Department during the past year are covered by the appended report of the Chief Inspector of Fisheries and Director of Fisheries Research.

The rock-oyster season in Auckland was again satisfactory, but supplies had to be rationed at the depot owing to the demand exceeding the supply. The number of sacks marketed was 4,203, an increase of 170 sacks on the previous season's sales. The quality of the oysters was maintained and sales were brisk at the depot. There was an increase in the amount expended on oyster cultivation for the year, which was £2,444, as against £1,162 for the previous season, but all the increased expenditure took place on the Kaipara Beds, where the work carried out should prove a valuable asset for future seasons.

Staff.

The conduct, co-operation, and efficiency of the whole staff have been maintained during the year at an excellent standard.

I have the honour to be,
Sir,
Your obedient servant,
L. B. Campbell, Secretary.

REPORT ON FISHERIES FOR THE YEAR ENDED 31ST MARCH, 1938.

SIR,—

In presenting a report that, among other things, shall place on record the principal events and developments in connection with the fisheries of the Dominion in the year under review, it is necessary to make some reference to the work done by the Sea Fisheries Investigation Committee, appointed by His Excellency the Governor-General on the 25th February, 1937, to the three members of which the Hon. the Minister of Industries and Commerce delegated the powers of judicial inquiry and investigation conferred upon him by the Board of Trade Amendment Act, 1923.

After visiting and investigating the conditions at all the major fishing-ports, as well as some of the smaller centres, and collecting evidence and opinions from any representative of the industry who desired to give them, the Committee has presented its findings and made its recommendations in a substantial report that has been printed and published, after being laid on the table of the House of Representatives on 15th March, 1938. This report, covering both production and distribution aspects, gives the only comprehensive review of the sea-fishing industry of the Dominion that has ever been made. It does not present a particularly gratifying picture of our fishery resources, nor of our exploitation of the same, nor of our administration of fishery affairs. And if it did it would not be a true account nor a useful review of the prevailing conditions. But there is probably not a country in the world to-day that can get any more satisfaction than we can, if as much, from the contemplation of its general sea-fishery conditions. The main reason for this is that the age of virgin fishing-grounds is gone. That is the hard fact now being faced from Vancouver to Vladivostock, from Aberdeen to Auckland—that it is not easy as it used to be to bring in large quantities of fish, and the expenses involved in gathering and bringing to market the harvests of the sea are much higher than they were formerly. Consequently the catchers, the distributors, and the consumers of fish are all in difficulties. The difficulties are being coped with in various ways. The catchers are making their fishing-gear still more efficient and extending the range of their operations by building bigger and more powerful fishing-vessels. By adopting improved methods for the preservation of fresh fish they are endeavouring to get better prices by bringing their produce to market in better condition—and this is perhaps the most rational remedy of all. Parts of the fish that were formerly waste products are now being utilized in various ways, also a very desirable development. Modern methods of publicity and advertisement to attract more consumers are being widely adopted. None of these things is bringing about, or in my opinion is likely to bring about, a return to the low retail prices of former years.

In many cases it is not a question of providing for supplies of fish at prices which the consumer can be prevailed upon to pay, though this is a fundamental factor in the problem; it is a matter of enabling those in the fishing industry to keep going. Britain, still the supreme fishing nation in Europe, whose deep-sea fisheries were earliest, most rapidly, and most extensively developed, is, mainly for those very reasons, in the greatest difficulties at the present time. The British Government is now engaged in promoting legislation in the form of a Sea Fish Industry Bill, which, though by no means an uncontroversial measure, is generally regarded as promising to afford welcome relief to a distressful situation. "Based on the recommendations of the second report of the Sea Fish Commission, this Bill proposes to bring into existence two new bodies—one, a White Fish Commission, to consist of five members paid out of public funds; the other a White Fish Industry Joint Council appointed by Ministers and consisting of representatives of all branches of the producing and distributing sides of the industry. The Commission, it is proposed, shall keep the Minister advised on all problems and submit marketing schemes, and its wide powers will extend to safeguarding and developing fisheries of the future."* It may be mentioned that the British herring industry, the post-war vicissitudes of which preceded and exceeded those of the white fish (or, mainly, trawling) industry, has been controlled by a Herring Industry Board for the last three years. Now all this involves quite an appreciable amount of Government control over an industry that had progressed and developed till it attained enormous proportions and importance by the unaided exercise of individual enterprise in exploiting the natural resources of the seas. It progressed and succeeded because the individual enterprisers followed the simple rule of pushing on to another more distant El Dorado when they had despoiled the virgin riches of the nearer grounds, till only the barrier of the Arctic ice barred further extension. But, even as applied to the productive and extensive fishing-grounds of the Northern Hemisphere, there is a limit to this sort of thing, and that limit has been reached in the definite depletion of the nearer fishing-grounds of their most valuable kinds of marketable species and in the greater difficulty and higher costs of harvesting the less-depleted resources of the distant fishing-regions. The inevitable consequences of unrestricted individual enterprise at the start are constraint and control applied under duress at the finish. When the urgent necessity for remedial measures is at last recognized it is not merely a matter of Government restrictions which are irksome to the individuals in the industry; it is also a matter of the provision of financial help to sustain the industry over its difficulties, which is irksome to the taxpayers in general. And that is how things stand in Britain. So when one studies the report of the Sea Fisheries Investigation Committee one should remember that history and experience have taught that State control in regard to the conservation and rational utilization of natural resources cannot begin too soon. If its restraints are not brought into effect early enough to prevent undesirable and detrimental developments it only means that at a later date much more onerous measures of control and restriction will have to be applied to attempt to remedy evils or restore losses that should never have been allowed to come about. The evidence presented by the Committee shows that New Zealand Governments have been too complacently allowing individualism to compete with individualism in the exploitation of its fisheries and have been unmindful or unaware of the tasks imposed by the responsibility for conserving such resources for the general good and for the benefit of posterity.

* Quoted from an article by G. T. Atkinson in the *Lowestoft Mercury* for 8th January, 1938.

The fundamental requirement for the exercise of a wise and just control of fishery exploitation is an adequate acquaintance with and a proper practical understanding of the conditions with reference to the fishery resources themselves and to the agencies concerned in getting and disposing of their products. It is, unfortunately, a fact that a substantial amount of State intervention for the regulation of the operations of the fishery industry has been called for before that adequate acquaintance with and proper understanding of the conditions have been acquired; and this Department is called upon to make special efforts in order to catch up in the race in which exploitation has so far out-paced and out-distanced conservation.

The application of the Industrial Efficiency Act, 1936, to the taking as well as the export of fish was forced upon the Government by the unsatisfactory position, which was tending to become disastrous, that had arisen more especially in connection with the industry in Auckland, to which I drew attention in my last annual report and on which more light is thrown in the report of the Committee above mentioned. There were some cases of profound importance which in the general interest necessitated the administrative control which only the Bureau of Industry had statutory authority to apply. Up to 31st March, 1937, the total number of applications dealt with by the Department was 407. It was a somewhat illuminating revelation to find that such a large number of units, which were not in operation on 15th April, 1937, the date when the Industrial Efficiency Regulation came into force, should be seeking to enter the fishing industry. It demonstrates what a large proportion of fishing-boats are occasional, casual, or, at best, seasonal participants in the industry. It is very doubtful whether such a state of affairs is a good thing for the fishing industry or for the general economy of this branch of primary production. The casual, semi-professional, or semi-recreational sea-fisherman has been tolerated or even encouraged in the past, perhaps on the ground that food-production is a good thing under any circumstances. For reasons that are obvious, however, this class of fisherman, often a well-to-do member of some other calling, is an undesirable competitor with the professional fisherman who is struggling to make a livelihood. And the administrative attention and labour that these occasional and elusive participants in the industry involve is out of all proportion to their contributions by way of license fees to the cost of administration or to their services to the fish-consuming public.

The value of the Department's co-operation with the Bureau of Industry was largely dependent on the work of our newly established section for fishery statistics. In so far as our services in this respect have been satisfactory, the full credit must be given to Mr. Martin, the statistical clerk, who put in a great deal of special work in connection with applications for licenses. At the same time he and his two assistants, Miss Benton and Mr. Christian (cadet), have made notable progress in the collation of data obtained from the fishery returns sent in by the owner or skipper of every licensed fishing-vessel. The statistical information in this report, the value of which will be appreciated better if comparison is made with the data that we were able to publish up to a year or two ago, is the production of this section of the Fisheries Branch. Acknowledgment should also be made of the help afforded by the Inspectors of Fisheries and by the members of the fishing industry, most of whom have taken pains in forwarding to the Department the data required. It should be pointed out, however, that the presentation of fishery statistics in the form given in this present report is not regarded as the last word on this aspect of the subject, and it is hoped that by next year it will be possible to give statements that will represent with more significance the conditions and trends of the different branches of the industry by showing the production in relation to time duration and other factors affecting the intensity of fishing effort.

The following is a summarized statement of the estimated total quantity and value of the principal classes of fishery products for the year :—

	Quantity.	Value. £
Wet fish	355,687 cwt.	413,516
Whitebait	3,111 cwt.	34,843
Oysters (dredged)	66,387 sacks	48,125
Oysters (rock)	4,203 sacks	5,043
Mussels	7,411 sacks	1,869
Crayfish	12,212 cwt.	11,960
Toheroa (canned products)	48,558 lb.	4,863
Whale-oil	280 tons	4,260
Whale fertilizer	16 tons	30
Quinnat salmon (netted fish only)	6,236 lb.	311
Total value		£524,820

In comparison with the figures for the previous year each class shows an increase, so far as total value is concerned, with the exception of mussels, toheroa products, and whale products. Wet fish—*i.e.* the ordinary kinds that are caught in the sea by nets and lines—show a decline in total quantity, having fallen from 363,128 cwt. in 1936–37 to 355,687 cwt. in 1937–38, a decline of 7,441 cwt., or about 2 per cent. Their total value, however, has risen by 14·7 per cent. above the 1936–37 figure of £360,466 and is the highest recorded since the year 1929–30. Crayfish landings have increased in total quantity by 37·8 per cent. and in value by 52·4 per cent. Whitebait catches are up by about 60 per cent. in quantity and over 90 per cent. in value. The total landings of oysters dredged in Foveaux Strait increased by 5 per cent. over last year's record figure of 63,412 sacks, with a rise of

21 per cent. in total value. Rock oysters show an increase of 4·2 per cent. in quantity and 4·2 per cent. in value. Quinnat-salmon catches from the three nets fishing in the Waimakariri Estuary for the 1938 season have increased by 484 per cent. of the previous year's total weight (which was the lowest on record) for two nets, with a corresponding rise in value. The commercial landings of mussels dropped from 10,415 sacks to 7,411 sacks (a decline of 28·8 per cent.), their total value being 33 per cent. below that for the previous year, which was £2,809. The total pack of toheroa products declined from 104,936 lb. for the 1936 season to 48,558 lb. for the 1937, but these figures reflect industrial or commercial rather than natural conditions of production. The quantity of whale-oil produced by the Queen Charlotte Sounds Station remains the same as for the 1936 season, but the figure representing the value is 10 per cent. lower than last year.

Examination of the more local aspects of the fishing industry during the year shows that the diminution by 7,441 cwt. in the total catch of wet fish for the Dominion is exceeded by the decline in the year's landings for Auckland, which fell from 159,371 cwt. in 1936–37 to 140,234 cwt. in 1937–38, a difference of 19,137 cwt. The supplies of fish to this port, however, still exceed those at any other fishing-centre, and this year constitute 39 per cent. of the total landings for the Dominion.

The following shows the annual landings of fish together with the totals for the three most important commercial categories at this port for the last six years :—

	1932–33.	1933–34.	1934–35.	1935–36.	1936–37.	1937–38.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed ..	82,758	91,512	102,313	129,209	159,371	140,234
Snapper	49,657	60,540	68,432	88,374	112,656	97,296
Flounder (including dabs) ..	10,452	6,607	6,550	7,560	3,743	4,447
Tarakihi	11,933	10,766	14,293	18,100	24,966	24,240

It is significant that while the year of maximum landings for snapper and tarakihi was 1936–37, with a 13-per-cent. decline for snapper and a 3-per-cent. decline for tarakihi for the year 1937–38, the maximum year for flounder was 1932–33. The flounder landings for 1937–38 show a 19-per-cent. increase over the total for 1936–37, but they are only 42 per cent. of the total quantity landed in 1932–33.

The three Auckland steam-trawlers each operated for part of the year, and there was a decline in the total number of trawler landings (or voyages) made during the twelve-month period—from 117 to 68. These trawlers were responsible for the landing of 22·8 per cent. of the total fish-supplies brought into Auckland. Danish-seining vessels, of which forty-two worked fairly regularly through the year and three for part of the year, brought in 72·4 per cent. of the total, while line-fishing and set-net operations provided the remaining 4·8 per cent. The Manukau Harbour fisheries provided 2,898 cwt., or 2 per cent., of the total landings for the year.

The fish-supplies at Thames show an all-round increase on the previous year, and the total value reaches the highest figure that has yet been returned. As will be seen from the following comparative statement for the last six years, the flounder landings, though better than last year, represent about half the annual production for the year 1932–33, which was itself smaller than that for 1931–32 :—

Fish landed at Thames.	1932–33.	1933–34.	1934–35.	1935–36.	1936–37.	1937–38.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total wet fish	18,078	17,412	17,614	19,134	15,447	18,692
Snapper	9,750	10,429	11,163	14,053	11,356	13,400
Flounder (including dabs)	6,516	4,869	4,769	3,305	2,165	3,044
Total value	£14,029	£13,595	£13,957	£14,593	£16,690	£23,174

Of the fish brought into Thames 72·8 per cent. was taken by set-nets, 11·4 per cent. by Danish seine, and 15·8 per cent. by lines.

The landings in the Bay of Plenty ports—Mercury Bay, Tauranga, Whakatane, and Opotiki—are all below what they were last year, the decline for the combined totals being 13 per cent. below the figure for last year.

Mainly through augumented trawler catches, Gisborne landings have continued to increase—this year 5,789 cwt., as compared with 4,219 cwt. last year—but Napier's fish-supply shows a decline from 15,585 cwt. to 13,539 cwt., though the total value is higher, £17,639, as against £15,522 for the previous year.

The landings of trawl-caught fish declined by 30·5 per cent., while those from Danish-seiners showed a rise of 7·3 per cent. and the total quantity of line-caught fish increased by 73·3 per cent. This last increase was mainly brought about by the incursion of three vessels from Wellington, one of which, however, was lost in February, 1938.

The total quantity of fish landed in Wellington was 47,284 cwt., valued at £55,649, which represents an increase of 25 per cent. in weight and 1·4 per cent. in value compared with the previous year. Of this, 64 per cent. was provided by the two steam-trawlers, operating on the Cape Campbell, Kaikoura, and Palliser Bay grounds principally. Their total landings for the year remained much the same as for 1936–37. Increases were recorded in hake, groper, and red-cod landings, but the catches of barracouta, gurnard, and tarakihi showed a diminution. Tarakihi constituted 66·4 per cent. of the total landings.

The fish-carrier "South Sea" visited Wellington on six occasions during the year and landed a total of 9,458 cwt. of blue cod, valued at £5,441, from the Chatham Islands.

An increase of 992 cwt. is recorded in the quantity of fish shipped at the French Pass, which represents an increase of 39 per cent. of the total for the preceding year. While the groper landings have fallen off slightly in this district, blue-cod and snapper catches have shown a fairly substantial increase.

The main features of the fishery conditions for other ports can be gathered from the appended tables. A considerable increase in the total quantity of fish landed in comparison with that of the previous year is shown in the figures for Dunedin and Otago district, the total having risen by 7,104 cwt., or 32·3 per cent. The landings at Thames are up by 3,245 cwt., or 21 per cent.; Timaru, 2,881 cwt., or 22·6 per cent.; Gisborne, 1,570 cwt., or 37·3 per cent.; Invercargill (with Bluff, &c.), 1,473 cwt., or 46 per cent.; French Pass, 730 cwt., or 38·2 per cent.; and Akaroa, 632 cwt. or 18·5 per cent. The most noticeable decreases occurred at the following ports: Auckland, 19,137 cwt., or 12 per cent.; Napier, 2,046 cwt., or 13·1 per cent.; Nelson and district, 1,391 cwt., or 24·8 per cent.; Blenheim, 795 cwt., or 34·3 per cent.; Kaikoura, 680 cwt., or 18·2 per cent.; and Mercury Bay, 407 cwt., or 22·3 per cent. A decline of 3,622 cwt., or 23·7 per cent., is shown for Lyttelton, where the trawler catch fell by 24·7 per cent., which was due to a reduction in fishing operations consequent upon the loss of the steam trawler "Muriel." It should also be explained that in previous years the Lyttelton total included fish caught in Lake Ellesmere, which are now shown separately. At Dunedin, where the total landings showed a substantial increase, the catch by trawlers increased by 135·7 per cent. largely owing to the addition of the steam trawler "Hananui II" to the local fleet.

The statement which follows indicates the relative importance of each of the principal methods of fishing for each port:—

Port.	Method of Fishing.	Percentage (by Weight) caught by each Method.	Principal Kinds of Fish caught by each Method (in order of Quantity).
North Island.			
Awanui	Lines	71·5	Snapper, groper.
	Set-nets	28·5	Mullet, flounder.
Mangonui	Lines	52·7	Snapper.
	Set-nets	47·3	Flounder.
Whangaroa	Lines	78·6	Snapper, groper.
	Set-nets	21·4	Mullet, snapper.
Russell	Set-nets	52·9	Mullet, snapper.
	Lines	47·1	Snapper, groper.
Whangarei	Lines	65·5	Snapper, groper.
	Set-nets	34·5	Snapper, mullet.
Auckland	Danish-seine	72·4	Snapper, tarakihi, flounder.
	Trawls	22·8	Tarakihi, snapper.
	Lines	2·4	Snapper, groper.
	Set-nets	2·4	Mullet, flounder, snapper.
Thames	Set-nets	72·8	Snapper, flounder, gurnard.
	Lines	15·8	Snapper, gurnard.
	Danish-seine	11·4	Snapper, flounder, gurnard.
Mercury Bay	Lines	91·9	Snapper, tarakihi, groper.
	Set-nets and seine	8·1	Snapper, mullet, flounder.
Tauranga	Lines	66·3	Snapper, groper.
	Danish-seine	31·9	Snapper, flounder.
	Set-nets	1·8	Snapper, butterfish.
Whakatane	Danish-seine	95·1	Snapper, tarakihi.
	Lines	4·9	Snapper, groper, tarakihi.
Opotiki	Set-nets	89·1	Flounder, snapper.
	Lines	10·9	Snapper.
Gisborne	Trawl	69·4	Tarakihi, gurnard.
	Line	30·4	Groper, tarakihi.
	Set-nets or seine	0·2	Moki, flounder.
Napier	Trawl	58·4	Tarakihi, gurnard, sole.
	Lines	21·3	Groper, snapper.
	Danish-seine	20·1	Gurnard, sole.
	Set-nets or seine	0·2	Sole.
Wellington	Trawl	64·6	Tarakihi, hake, red cod.
	Lines	29·7	Groper, hake, ling.
	Set-nets or seine	5·7	Warehou, butterfish.
Makara	Lines	55·7	Snapper, groper.
	Set-nets	44·3	Warehou, butterfish.
Paremata	Lines	87·5	Groper.
	Set-nets	12·5	Butterfish, warehou, moki.
Paraparaumu	Lines	94·0	Snapper.
	Set-nets	6·0	Butterfish.
Foxton	Lines	70·1	Snapper
	Set-nets or seine	29·9	Flounder, warehou.

Port.	Method of Fishing.	Percentage (by Weight) caught by each Method.	Principal Kinds of Fish caught by each Method (in order of Quantity).
NORTH ISLAND—*continued.*			
Tangimoana	Lines	91·9	Snapper.
	Set-nets or seine	8·1	Flounder.
Wanganui	Lines	89·6	Snapper, red cod, groper.
	Drag-nets	10·4	Flounder, snapper, kahawai.
New Plymouth	Lines	99·8	Snapper, groper, ling.
	Set-nets	0·2	Flounder, flat fish.
Kawhia	Lines	59·9	Snapper, groper.
	Set-nets	40·1	Flounder, mullet, snapper.
Raglan	Lines	61·6	Snapper, groper.
	Set-nets	38·4	Flounder, snapper.
Kaipara	Set-nets	92·3	Flounder, mullet, snapper.
	Lines	7·7	Snapper.
Hokianga	Set-nets	98·4	Mullet, flounder, snapper.
	Lines	1·6	Snapper.
SOUTH ISLAND.			
Havelock	Set-nets and seine	86·4	Flounder, sole.
	Lines	13·6	Blue cod, red cod, snapper.
Picton	Lines	95·6	Groper, blue cod, hake.
	Set-nets and seine	4·4	Butterfish, moki.
Blenheim	Trawl	92·6	Flat fish, ling, moki.
	Lines	4·3	Groper, ling, blue cod.
	Set-nets and seine	3·1	Moki, butterfish, flounder.
Kaikoura	Lines	94·0	Groper, ling, trumpeter.
	Set-nets and seine	5·9	Butterfish, sole.
	Trawl	0·1	Sole.
Lyttelton	Trawl	69·2	Tarakihi, ling, elephant-fish, groper.
	Danish-seine	15·4	Gurnard, sole, elephant-fish.
	Set-nets and seine	13·1	Whiting, elephant-fish, flounder.
	Lines	2·3	Red cod, ling, groper.
Akaroa	Trawl	84·6	Elephant-fish, sole, gurnard, ling.
	Lines	6·9	Groper, ling.
	Set-nets and seine	6·2	Red cod, flounder, warehou.
	Danish-seine	2·3	Gurnard, sole, elephant-fish.
Timaru	Lines	40·9	Ling, groper.
	Trawl	30·0	Red cod, flounder, sole.
	Danish-seine	29·1	Sole, flounder, gurnard, red cod.
Oamaru	Lines	97·1	Groper, red cod, blue cod.
	Set-nets and seine	2·9	Moki, herring.
Moeraki	Lines	99·8	Groper, blue cod, ling.
	Set-nets and seine	0·2	Mullet.
Karitane	Lines	99·1	Groper, blue cod, barracouta.
	Set-nets and seine	0·9	Moki, butterfish.
Port Chalmers	Trawl	77·8	Tarakihi, sole, red cod, barracouta.
	Lines	13·6	Groper, red cod, ling.
	Set-nets and seine	8·6	Warehou, red cod, flounder.
Taieri Mouth	Trawl	80·6	Sole.
	Lines	19·4	Groper, blue cod.
Nuggets	Trawl	87·1	Sole, flounder.
	Lines	12·9	Groper.
Waikawa	Trawl	59·6	Sole, flounder.
	Lines	39·2	Blue cod, groper.
	Set-nets and seine	1·2	Flounder.
Invercargill	Drag-nets	66·1	Flounder, mullet.
	Lines	33·9	Blue cod, groper.
Bluff	Lines	85·7	Blue cod, groper.
	Set-nets and seine	14·3	Flounder, butterfish.
Stewart Island	Lines	97·9	Blue cod, groper, trumpeter.
	Set-nets and seine	2·1	Butterfish, moki.
Riverton District	Lines	71·7	Blue cod, groper.
	Trawl	23·9	Sole, flat fish.
	Set-nets and seine	4·4	Sole, flat fish.
Hokitika	Lines	82·6	Groper, ling.
	Set-nets	15·4	Herring, kahawai.
	Trawl	2·0	Sole.
Greymouth	Trawl	94·4	Sole, gurnard.
	Lines	5·4	Groper, ling.
	Set-nets and seine	0·2	Sole.
Westport	Trawl	64·4	Sole, gurnard, turbot.
	Lines	32·5	Groper, ling.
	Set-nets	3·1	Flounder.
Golden Bay	Lines	91·2	Snapper, blue cod, groper.
	Set-nets	8·8	Flounder, butterfish.
Motueka	Lines	93·6	Snapper, groper, blue cod.
	Set-nets and seine	6·4	Flounder.
Nelson	Lines	73·9	Snapper, gurnard, blue cod, groper.
	Danish-seine	22·9	Snapper, flounder, sole, gurnard.
	Set-nets and seine	3·2	Gurnard, flounder, snapper.
French Pass	Lines	96·6	Blue cod, groper, snapper.
	Set-nets	3·4	Butterfish, moki.

The quantities of the different kinds of classes of fish constituting the grand total of all wet fish landed for the year, together with their value, are shown below in order of abundance:—

Kind or Class of Fish.	Quantity.		Value.	
	Hundredweight.	Percentage of Total.	£	Percentage of Total.
Snapper	127,850	35·94	120,535	29·14
Tarakihi	56,332	15·84	56,090	13·56
Groper	31,186	8·77	54,072	13·08
Blue cod	30,972	8·70	34,065	8·24
"Mixed round fish" ..	19,097	5·37	16,230	3·92
Flounder	15,602	4·38	39,416	9·53
Sole	14,550	4·09	29,168	7·06
Ling	10,567	2·97	9,977	2·41
Gurnard	9,974	2·81	6,457	1·56
Red cod	7,000	1·97	4,577	1·11
"Mixed flat fish" ..	6,147	1·73	13,142	3·18
Hake	5,544	1·56	8,995	2·17
Elephant-fish	3,632	1·02	5,040	1·22
Warehou	3,223	0·91	2,837	0·69
Mullet (northern) ..	2,810	0·79	2,379	0·58
Barracouta	2,191	0·62	825	0·20
Moki	1,849	0·52	1,802	0·43
John-Dory	1,705	0·48	1,685	0·41
Pioke	1,480	0·42	337	0·08
Butterfish	1,321	0·37	2,585	0·62
Whiting	1,018	0·28	1,360	0·33
Trumpeter	815	0·23	1,478	0·36
Trevally	561	0·16	258	0·06
Kingfish (northern) ..	116	0·03	125	0·03
Kahawai	107	0·03	60	0·01
Maomao	38	0·01	21	0·01
Totals	355,687	..	413,516	..

Snapper still stands well at the head of the list in order of both relative abundance and value. The total catch of snapper, however, has diminished by 14,570 cwt., or by 10·2 per cent., in comparison with last year's total and represents 35·94 per cent. of all the wet fish landed in the Dominion, as against 39·22 per cent. last year. Tarakihi, which comes second in order of abundance, has risen from 14·63 to 15·84 per cent. of the total catch. Groper (hapuku), in the third position, has decreased by 487 cwt., or 1·6 per cent. of last year's total for this kind, but remains practically unchanged in proportion to the grand total of which it forms 8·77 per cent. Other kinds of fish which show a diminished total compared with last year's figures are ling, which are down by 2,156 cwt.; John-dory, which have decreased by 453 cwt. and moki, which are 428 cwt. less than last year. Improved total yields are shown for flounders, which are 4,610 cwt. above last year's figure; blue cod, up by 3,569 cwt.; hake, 3,382 cwt. more; tarakihi, 3,218 cwt. more; red cod, 2,918 cwt.; and soles, 2,579 cwt. above the respective totals for 1936–37. The class which is shown in the list with the unsatisfactory description "mixed round fish" amounts this year to 19,097 cwt., or 5·37 per cent. of the total fish landed. Last year this item represented 9·03 per cent of the grand total. It is an undesirable item in a statement that is intended to have statistical significance, and it appears chiefly because some portion of the fish landed from small trawlers is sold usually as a mixed lot and the fishermen have not yet been prevailed upon to discriminate between the various kinds of the smaller and less valuable fishes in their returns, which, in fact, would be difficult to do in quantitative terms because of the smallness of the quantities involved. Gurnard, red cod, warehou, trevally, and kahawai in varying proportions are the kinds that make up the great bulk of "mixed round fish."

Methods of Capture.—Steam-vessels (practically all trawlers) accounted for 84,027 cwt. (23·6 per cent.) of the total catch, motor-vessels, 266,749 cwt. (75·0 per cent.), and row-boats, 4,911 cwt. (1·4 per cent.).

The total fish caught by each of the more important methods of fishing is shown in the following analysis, which, however, is defective in that it has not been possible in tabulating data from returns to distinguish between long-line and hand-line catches because landings sometimes consist of fish caught by both methods. Similarly, set-nets and seines may be used as alternative methods for the same boat.

Method of Fishing.	Quantity.		Value.	
	Hundredweight.	Percentage of Total.	£	Percentage of Total.
Trawl	111,906	31·5	126,891	30·7
Danish seine	116,442	32·7	119,649	28·9
Long- and hand-lines ..	94,873	26·7	121,702	29·4
Set- and drag-nets or seine	32,466	9·1	45,274	11·0
	355,687	..	413,516	..

Comparing the quantities taken by each method with those for the year 1936–37, it will be seen that trawl-caught fish declined from 127,711 cwt. to 111,906 cwt., whilst Danish-seine catches increased from 114,909 cwt. to 116,442 cwt., long- and hand-line from 94,478 cwt. to 94,873 cwt., and set- and drag-net or seine from 26,030 cwt. to 32,466 cwt. The respective percentages were 31·5, 32·7, 26·7, and 9·1, as against 35·2, 31·6, 26·0, and 7·2 in 1936–37.

Tarakihi, soles, and snapper contributed 43·8 per cent., 10·5 per cent., and 9·2 per cent. respectively to the trawl catch, 75·9 per cent of the Danish-seine catch was made up of snapper, while snapper and flounder together formed 61·2 per cent. of the set- and drag-net landings. The bulk of the line catch was made up of blue cod, groper, and snapper, the percentages being 32·6, 30·9, and 19·2 respectively.

Sardines and Tuna.

In connection with the Cook Strait fisheries mention may be made of a development which one hopes may be the fore-runner of operations of a wider significance in future commercial fishing operations. In the pursuit of sufficient and suitable bait for the long-line groper fishing it has been found that the pilchard (" Picton herring " or sardine) provides a bait that has quite superior powers of attraction for the groper. For a time the desired pilchards were obtained by purchase from one or two fishermen who specialized in the " Picton herring " fishery, but subsequently the owners of long-lining boats on both sides of Cook Strait acquired for themselves large seines of small mesh suitable for the capture of these fish in shallow bays, the shores of which they frequently approach on summer evenings at sunset. During the 1937–38 summer operations Queen Charlotte Sound and certain bays in the neighbourhood of French Pass have been the scene of operations which have on occasions provided good catches, sometimes more than one ton being taken at a single haul. At other times the fishermen have had no luck, and it is safe to say that for every fish taken millions have been seen in the shoals that have frequented the waters of the Sounds, Admiralty Bay, and Tasman Bay and have shown themselves at the surface both off shore and in proximity to the land during the past summer, and at the same season for the last four or five years. It is certain that if there had been suitable boats equipped with suitable gear—*e.g.*, the purse-seine, which is so successfully used in the Californian sardine fishery—heavy catches could have been made. These would have been far in excess of bait requirements, for which purpose, however, the line fishermen paid from £1 to £1 10s. per benzine-box. These fish have a high nutritive value and are indistinguishable from Californian or European sardines so far as edibility is concerned. There are difficulties attendant upon handling them in the fresh condition, but they are among the most valuable of varieties for canning, and it seems worth while considering ways and means of facilitating their commercial utilization. The working-costs in this kind of fishing are such that there must be an assurance of a profitable market for catches before one can undertake it without risking heavy financial losses. The purse-seine itself, or any equally suitable gear, is a costly item, the boat must be suitable as to size, power, and equipment, and a crew of about eight men is necessary for the operations involved.

Somewhat similar is the position with regard to the fishes of the tuna family. Their occurrence in New Zealand waters and the preliminary attempts at their capture were mentioned in last year's report. Since then further reports have been obtained which indicate the possibility of creating a fishery for tuna in the areas extending from North Cape to East Cape. The problem here also is to ascertain at what cost commercial catches can be made and to provide the most lucrative method of dealing with supplies. In this case also canning is indicated as the most promising, if not the only, economic possibility.

Exports.

Statistics of both imports and exports of fishery products, for which we are indebted to the Customs Department, are shown in Table V (p. 55). In this table the exports of blue cod, snapper, flounders, and crayfish from the five principal shipping ports are shown separately and also, this year, for the first time the quantity and value of tarakihi exported are also given. Of recent years the demand for this species on the Australian markets has increased, and, as will be seen from the table, tarakihi now stands third in importance among the different classes of fish exported from New Zealand. The detailed figures are given in Table V. The following statement shows the quantities in the principal classes of exports over the last six years :—

——	1932–33.	1933–34.	1934–35.	1935–36.	1936–37.	1937–38.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Frozen fish (including crayfish)	19,854	34,738	46,714	54,267	50,727	45,036
Fish, smoked, dried, pickled, or salted	521	1,243	1,968	2,519	3,724	1,088
Fish, potted or preserved in tins—	lb.	lb.	lb.	lb.	lb.	lb.
Oysters	51,620	128,028	95,270	172,855	331,747	208,460
Other kinds	103,186	384,282	184,148	174,438	160,994	172,993

The value of the total exports of New Zealand fish and shell-fish has risen from £175,122, which was the figure for the previous year, to a total value of £177,733 for the year under review, an increase of about 1·5 per cent.

The export of both fresh and canned oysters shows a diminution as compared with the previous year's totals. This would be more than counterbalanced by the export of dehydrated oyster-meal in the form of patent therapeutic dietary preparations.

Among the principal kinds of fish that are frozen for export a diminution of 6 per cent. in quantity is shown for blue cod, but the total value has increased by 32 per cent. Snapper exports are down by 31·6 per cent. in quantity by weight and by 26·8 per cent. in total value. The total quantity of flounders exported shows an increase of 36·7 per cent., with a rise in total value of 48·5 per cent. Exports of frozen crayfish have fallen 22·9 per cent. in quantity, but have risen 8·3 per cent. in value.

Among the principal classes of canned products exported crayfish show an increase from 23,783 lb. to 31,098 lb. in quantity, and from £1,697 to £2,480 in value. Whitebait and oyster exports declined, but toheroa show an increase from 32,979 lb. to 47,198 lb. in quantity exported and from £2,425 to £3,073 in value of the same.

Rock Oysters.

Picking for the 1937 season began at the Bay of Islands, Coromandel, and the Hauraki Gulf on 18th May, on Rangitoto on the 19th, on the Great Barrier Island on the 20th, and in Whangarei on the 24th. Unusually bad weather prevailed throughout the season, with sudden changes of wind and almost continuous rain, which produced uncomfortable conditions for those working on the beds. The conditions were most trying on the Coromandel coast, where practically all the beds are exposed to westerly winds. In spite of these handicaps supplies were well maintained, and much credit is due to all those who were responsible for the organization of consignments and for the supervision and operation of oyster-picking on the different beds. The condition of the oysters, though an improvement on that of the previous season, was not up to the highest standard. The best-quality oysters were obtained from the Hauraki Gulf, but those sent from Whangarei Harbour were also of remarkably good quality. The Kaipara beds were left untouched this season on account of the great predominance of young oysters on most of the grounds in this area. Picking ceased on 6th August.

The numbers of sacks brought in from each area were as follows: Bay of Islands, 1,830; Whangarei, 131; Hauraki Gulf, 1,657 (Takatu – Gull Point, 44; South Shore, 50; Kawau, 136; Rakino, 72; Ponui, 216; Waiheke, 852; Rangitoto, 133; Motutapu, 110; Brown's Island, 2; Motuihi, 30; Tamaki River, 12); Coromandel, 326; Great Barrier Island, 259: total, 4,203 sacks (of 3 bushels each). The gross proceeds from sales amounted to £5,214.

With a marked increase in the number of dealers requiring oysters the supplies at the depot were never sufficient to meet the demand, and it was necessary almost throughout the season to resort to a system of rationing. At the Auckland depot 4,113 sacks were disposed of, and 90 sacks were sold at Russell. An increased quantity was required for retailing direct to consumers at the depot, 878 sacks being disposed of in this way, as compared with 632 during the 1936 season.

Oyster-cultivation.

After the close of the picking season the usual cultivation operations were carried out by the inspecting staff, assisted, where necessary, by specially employed labour. The major operations of creating new beds were again confined to the Kaipara area, where there is most scope for these developments. The details of the work done during the year are given in the following statement:—

Work done, Area, and Cost—

I. Bay of Islands: 529,500 borers and 6,130 pupus destroyed and 4,850 square yards of rock cleared of weed. Cost, £100 16s.

II. Whangarei: 234,000 borers and 380 pupus destroyed, 2,601 square yards of rock cleared of weed, and 3,604 square yards of rock cleared of dead shell. Cost £90 6s.

III. Kaipara: 64,703 square yards of new stone laid down. Cost, £1,658 9s. 8d.

IV. Takatu to Gull Point: 440,000 borers and 173 pupus destroyed and 1,332 square yards of rock cleared of dead shell. Cost, £36.

VI. Coromandel: 708,160 borers and 8,884 pupus destroyed, 2,098 square yards of rock cleared of weed, and the capstones at Manaia and Te Kouma removed and spaced out. Cost, £40 3s.

X. Motutapu: 32,000 borers and 56 pupus destroyed. Cost, Nil.

XII. Motuihi: 33,000 borers destroyed. Cost, £1 12s.

XIII. Waiheke: 705,700 borers and 699 pupus destroyed, 7,105 square yards of rock cleared of weed, and 8,225 square yards of rock cleared of dead shell. Cost, £107 4s. 8d.

XIV. Ponui: 455,300 borers and 305 pupus destroyed, 7,199 square yards of rock cleared of weed, 2,382 square yards of rock cleared of dead shell, and 40 square yards of new rock face exposed by blasting. Cost, £90 8s. 7d.

XVI. Great Barrier: 60,500 borers destroyed, 2,141 square yards of rock cleared of weed, 831 square yards of clean stone laid down, 3,132 square yards of oyster-bearing rock shifted to a better position, and 2,454 square yards of mixed oyster-bearing and clean rock laid down. In course of wharf-extension 7½ sacks of oysters were removed and relaid. Cost, £79 1s. 6d.

All areas: 3,198,160 borers and 16,627 pupus destroyed; 25,994 square yards of rock cleared of weed; 15,543 square yards of rock cleared of dead shell; 65,534 square yards of clean stone laid down; 3,132 square yards of oyster-bearing rock shifted to a better position; 2,454 square yards of mixed oyster-bearing and clean rock laid down; and 40 square yards of new rock face were exposed by blasting, capstones from some of the walls removed and spaced out, and 7½ sacks of oysters were picked and relaid. Total cost, £2,210 1s. 5d.

The general condition of the rock-oyster beds in all areas is more satisfactory than has been the case for many years. The reefs are generally well covered with oysters, which, though as yet mostly too young to be quite suitable for picking, will afford a good reserve, both for utilization and for brood purposes, over the next few years. Moreover, the exceptionally high water-temperatures prevailing during the 1937–38 summer have brought about a very copious fixation of young oysters, which should ensure an abundant succession when these have come to maturity. Reference to the record of sea-water temperatures given in Appendix III will show that for each of the localities from which readings were taken the monthly averages have been above 20° C. (= 68° F.) for each month from December to April inclusive. If such conditions could be repeated every year it would simplify the problems of oyster-conservation and would provide better results at lower costs from cultivation operations.

Dredge Oysters.

During the Foveaux Strait oyster-dredging season, which lasted from February to September inclusive, twelve vessels in all were engaged in the oyster industry, seven of which worked for the whole season, two for seven months out of the eight, one for the first four months only, and one other for the second four months; one vessel made only twenty-one landings all told. The total number of landings for the year was 1,258, the number of landings each month varying from a minimum of 133 in February to a maximum of 185 in August. The average number of landings per boat per month was 13·3.

The total quantity of oysters taken was 66,387 sacks (of 3 bushels each), and the total value of the oysters taken during the season was £48,125. The total yield for 1937 thus exceeds that of the previous year, which was the highest hitherto attained.

Over the last six years (beginning with the year 1932) the annual production of oysters from Foveaux Strait has been as follows: 37,484, 42,176, 52,254, 49,712, 63,412, and 66,387 sacks. This increased production is not altogether a matter for satisfaction in that it has been accompanied by some deterioration in the average quality of the oysters brought to market. Beds from which the best-quality oysters are obtained have clearly been unable to maintain their former yield and the oyster-vessels have been obliged to operate on other grounds in order to obtain the supplies required. The question of restricting the operations, possibly by closure of certain grounds, has been under consideration. This is a fishery that calls for far more attention than the Department has hitherto been in a position to give to it.

Toheroas.

The products packed during the 1937 season by the two canneries in North Auckland amounted to 48,558 lb., valued at £4,863. Export statistics for the year show a total of 47,198 lb., valued at £3,073.

Though the stocks of toheroas on the areas leased to the cannery companies have been well maintained, those on the beaches in the neighbourhood of camps frequented by the general public or which are easily accessible by motor-car have been subject to progressively increasing abstractions, the effects of which are clearly evident in the more frequented areas. However, the depletion by human agency, obvious though it was in certain places after the summer holiday season, was insignificant in comparison with the losses resulting from a severe and general mortality of toheroas on practically all the beds of the North Island west coast in February and March, 1938. An unofficial observer estimated that about twenty million toheroas perished on the Ninety-mile Beach, and it is reported that other beds have also suffered severely. The beds on the Waitarere Beach, being nearest to Wellington, were the only ones of appreciable value that could be inspected at the time when the deaths were actually taking place. Observations of considerable interest have been made here by the District Inspector of Fisheries (Mr. A. C. Kaberry) and by the Biologist (Mr. A. M. Rapson).

The conditions that were primarily responsible for the mortality were evidently associated with the very abnormal meteorological conditions that prevailed. A continuous succession of easterly winds, failure of the flood tides to reach the normal high-water mark, absence of surf, with the continuous hot and dry weather, probably all operated to some degree in producing unhealthy conditions for the toheroas, and a very considerable proportion of these perished. It is not possible to state the precise cause of death, but there is reason to believe that it was not a matter of the direct effect of the abnormal physical conditions, but that the devitalized molluscs were attacked by some kind of pathogenic organism to which some individuals were susceptible and some immune. A characteristic symptom of the disease was the paralysis of the contractile muscles of the siphons. In numerous cases this muscular tubelike part of the animal affected could be seen protruding above the surface of the sand, though sometimes the animal might still be alive. Others were found dead *in situ* in their normal position in the sand, and the majority were washed out by the surf and finally deposited on the beach. The great value of sea-gulls as scavengers was demonstrated during the height of the mortality. They freely fed on the dead and dying shellfish exposed at low water, and were thus instrumental in keeping the beach from serious contamination by the great amount of putrifying material that would otherwise have been left. Many toheroas were found in which the exposed siphon had been bitten off by a fish or by a bird. It is not possible to say whether any of the affected (or infected) animals recovered. That some individuals were immune was indicated by the fact that on the same spot (where the external conditions would be the same for all) some individuals were seen to be normal and apparently healthy, while others were dead. Only the beds on the Ninety-mile Beach, in North Auckland, and those in the Wellington Provincial District have so far been inspected since the mortality took place. Those in the Wellington district have been most thoroughly examined, and here it appears that there has been practically a complete annihilation of the toheroa in the relatively sparsely populated areas from the Ohau River southwards.

During the first half of December, 1937, Messrs. Rapson and Kaberry made the first systematic observations that have been conducted for the Department on the toheroas occurring on the Muriwai Beach, Auckland. The work they did was, in the first place, of the nature of a survey of the available stocks. By counting the individual toheroas in numerous squares of known area, taken as representative samples of representative beds, the Biologist estimated the total population of toheroas of takable

size (over 3 in.) to be about four million. To what extent the stock has been reduced by the subsequent mortality has not yet been investigated. The total area of all the beds was estimated as 87,470 square yards. The data obtained by measuring samples of the population indicated that 47·5 per cent. of the stock on the beds examined consisted of toheroas over 3 in. in length. For these data the individual bivalves were measured in quater-inch size-groups, the most numerous group being that representing a length of between $2\frac{3}{4}$ in. and 3 in., which contained 18 per cent. of the total sample measured. Of the total sample 44·3 per cent. were between 2 in. and 3 in. long, which was a promising indication of the availability of ample supplies of toheroa of legal size for the following year. From consideration of the percentage of toheroas in each size-group and from weighing representative samples in each size-group it was estimated that toheroas of legal size would provide an average of 3 lb. 6 oz. of toheroa meat per one hundred shellfish; but as these results were obtained early in December after the toheroa had recently spawned, and were therefore in poor condition, it may be assumed that, when in their best condition in winter or prior to spawning in spring, the yield of meat would be appreciably higher. As opportunities occur observations of the sexual conditions in toheroa are being made and the factors affecting their population-density studied. The pelagic larval stages still remain to be discovered.

Whitebait.

The 1937 whitebait-fishing season, generally speaking, was a decided improvement on that of 1936, which had been regarded as the worst on record. Our departmental contacts with whitebaiters and their operations are better than formerly, but we still have to go a long way before we can achieve that amount of surveillance that is necessary for the best possible understanding of the problems of the fishery and for its more rational and effective control in the interests of conservation. Reports and returns from various centres have been summarized to provide the statement given below, which, though it is not so complete nor so quantitatively accurate as is desirable, will serve to show the main aspects of the fishery and will enable comparisons to be made between the production of whitebait in different localities and in different seasons.

Whitebait Fishery.

Inspector's Centre.	River fished.	Method of Fishing.	Fishing began	Best Month.	Number of Fishermen. (Approximately.)		Total Quantity caught. (Approximately.)
					Whole Time.	Part Time.	
							Cwt.
Auckland ..	Waikato	Hand-nets ..	July ..	September ..	70	50	931
Auckland ..	Kaituna	Hand-nets ..	July ..	September ..	25	5	49
Auckland ..	Tarawera and Rangitaiki	Hand-nets ..	July ..	September ..	28	8	59
Napier ..	Tukituki, Ngaruroro, and Wairoa	Set-nets ..	July ..	September ..	40	30	56
New Plymouth	Awakino, Waiongona, Waitara, Mimi, Mokau, Urenui, Tehenui, and Timau	Hand and set nets	July ..	Good throughout season	..	100	60
Wanganui ..	Wanganui ..	Hand-nets ..	September	October ..	..	20	7
Foxton ..	Manawatu ..	Set-nets ..	July ..	October ..	..	20	14
Wellington ..	Ohau, Otaki, Waimeha, Waitohu, Hutt, Lake Ferry, Waikanae, Rangitikei	Hand and set nets	July ..	October ..	12	57	29
Blenheim ..	Wairau, Opawa, Tuamarina	Hand-nets ..	September	November–December	5	30	25
Nelson ..	Motueka	Set-nets ..	August ..	October ..	17	12	89
Nelson ..	Takaka and Motupipi	Hand-nets ..	September	October ..	..	9	13
Karamea ..	Karamea and Little Wanganui	Hand-nets ..	August ..	September ..	5	45	60
Westport ..	Buller and Orawaiti	Hand-nets ..	August ..	October ..	25	200	504
Greymouth ..	Teremakau, Grey, and New	Set and hand nets	August ..	November ..	20	100	394
Hokitika ..	Hokitika, Mahinapua Creek, Waimea, Totara, and Waitaha	Set and hand nets	August ..	October ..	..	73	535
Christchurch	Waimakariri, Styx, Kaiapoi, Avon, Cam, Saltwater Creek, Ashley	Set and hand nets	August ..	November ..	100	150	148
Dunedin ..	Molyneux, Mataura, Titiroa, Taieri, Waikouaiti, Kakanui, Pleasant, and Waiheno	Set and hand nets	August ..	October–November	75	15	64
Invercargill ..	Mataura, Oreti, Aparima, Titiroa, Waiau, and Makarewa	Hand-nets ..	August ..	October–November	42	67	74
							3,111

The estimated total production for the season amounts to 3,111 cwt., which is nearly twice that for 1936 and little less than the estimated totals shown for 1934 and 1935.

The fishing in the rivers in Auckland, Bay of Plenty, and, to a less degree, in Taranaki was much restricted in the early part of the season by floods and bad weather, but conditions improved after a time and fishing was generally good in August and September, so that the season as a whole produced

much better results than in 1936. Floods also interfered with fishing in Hawke's Bay, Marlborough, and Nelson, and, though to a less extent than usual, in South Westland. Canterbury, Otago, and Southland experienced favourable conditions for fishing, and catches were generally up to the average of recent years and decidedly better than in 1936. Once more airplane transport was utilized for the carriage of whitebait from South Westland to Dunedin.

There is more variation from year to year in this fishery than in any other, with the possible exception of that for salmon. Like salmon-fishing, whitebaiting operations are very dependent on conditions of weather and water. Also, like salmon, whitebait appear mysteriously from the sea more or less at their appointed times, and the "runs" of both vary from year to year. In both cases favourable conditions for fishing-operations bring about a smaller escapement of fish to be the potential parents of future generations; but we have no accurate conceptions as to the optimum amount of escapement that is required for the maintenance of the stock. We have prescribed a somewhat copious set of regulations, which are modified from time to time, in the attempt to place competing fishermen on a more or less level handicap and to ensure that a proportion of the runs of whitebait survive to reproduce the species; and for this latter purpose the worst weather would appear to have a more potent effect than the best regulations. In many respects the administrative control of the whitebait fisheries still leaves much to be desired; it would be more to the point to say much to be done. The only path to better administrative control is by making better contacts with the material factors in the fishery—the operating fishermen in the first place, but also with the natural conditions or the ecological factors that also have a say in deciding the "to be or not to be" question for the whitebait species. There is abundant evidence of the general decline of whitebait stocks as time goes on, though ups and downs are shown from year to year. We have no comprehensive statistical data on which to draw to demonstrate how we stand in this respect. The figures for the whitebait commercially handled at Hokitika, which have been carefully recorded over the past eleven years, may serve to indicate the trend. Beginning with 1927 and ending with 1937, the successive annual totals are 925, 463, 1,319, 914, 360, 1,570, 309, 880, 580, 243, and 535 cwt. It is significant that the average for the first five years is 798 cwt., and for the second five years 716 cwt., a fall of 10 per cent. and last season's total is considerably below the average for the preceding five years. The radius of operations has certainly extended. The satisfactory elucidation of these conditions calls for much more detailed information than we possess at present. The information that is most urgently required in the first place is a statistical record of the production of the fishery—in other words, of the abstractions from the stock by direct human agency. This implies more administrative contact with and control of those operating the fisheries. Those whitebaiters who are seriously interested in this fishery as an occupation, and who are concerned about its maintenance, are practically unanimously in favour of a licensing system for whitebait fishing; and the sooner this is established the sooner will the Department be in a position to get a proper understanding of what is necessary for whitebait-conservation and able to do something constructively to ensure it. This idea was first advocated at least six years ago, but was not pressed for two main reasons, both arising out of the conditions of financial depression that then prevailed. One was the knowledge that there would be many who would find it difficult to raise the necessary cash for the fee and the other was the fact that any expansion of departmental activity was precluded by the curtailment of financial appropriations at that time. At the present time there would appear to be two quarters from which opposition to a license system for whitebait fishing may be expected. One is the amateur whitebaiter who regards whitebait fishing as a desirable accompaniment to a picnic and may even consider it a form of "sport," but likes to make it payable if he can. If such whitebaiters are to be allowed to continue their "sport" they might either take out the same license and conform to the same conditions as the commercial fisherman, or else be compelled to use less effective fishing methods and be subject to a "bag" limit as is the case with other sport fishing. The prescription of whitebait-fishing licenses for Maoris may also be difficult and, in some cases, a policy that is open to question, though there are many Maoris who are among the keenest advocates of the license system. Some Natives, however, are inclined to regard any administrative restrictions on whitebait fishing as an infringement on their ancient rights and their acknowledged heritage. The answer to these is that measures for the conservation of fishery resources were not only in use but very much more strict and effective in the ancient days than they are at the present time; and fishery regulations, far from being a menace to their heritage, are the only means by which it may be saved for future generations.

Quinnat Salmon.

Hatchery operations at Hakataramea for the 1937 season began with the construction of the usual rack across the Hakataramea River a few chains above its confluence with the Waitaki. This was started on 1st April and completed by 6th April. In the early stages conditions were unfavourable for the running of salmon as the Hakataramea River was abnormally low, while the main river was in high flood, so that there was no deep channel with a good flow of water to induce fish to run up the tributary. The small average size of the earliest fish to be trapped was probably due to these conditions. It was not until 15th April that the first two pairs of salmon came up to the rack, and the total number of fish trapped during the month of April was considerably lower than in the two preceding years. The numbers of fish and eggs taken were as follows:—

——	Males.	Females.	Ova.
April (15th to 30th)	72	38	143,000
May (1st to 14th)	303	216	857,000
	375	254	1,000,000

In addition to the fish taken for hatchery purposes, 147 male and 216 female salmon were taken and liberated above the rack to spawn naturally in the Hakataramea River. Thirty-six male and twenty-two female brown trout, together with a single rainbow trout, were also trapped and liberated above the rack.

Consignments amounting to 400,000 quinnat salmon (eyed) ova were sent to the Westland Acclimatization Society for the stocking of West Coast waters. From the rest of the ova approximately 585,000 fry were planted in the Hakataramea River, being distributed in the portion between fourteen and twenty-five miles above the hatchery. Fifteen thousand were placed in the five rearing-ponds, to be liberated as yearlings after marking. As in the preceding year, there was again an unusually late run of fish seen in the Waitaki River, some of which entered the Hakataramea. The definite run was observed on 22nd July and odd pairs of fish were seen entering the Hakataramea and spawning in the month of October.

The Fish Culturist paid his usual visit for the inspection of Deep Creek, a tributary of the Rangitata River formerly used as a spawning-place by considerable numbers of quinnat salmon. Very few redds and spawning fish were seen, although the Rangitata run had been much better than average, and it is evident that the change in the character of the confluence of Deep Creek with the main river brought about by the shifting of the course of the Rangitata and the disappearance of the former deep channel with one strong stream of water into the main channel of the Rangitata has depreciated the value of Deep Creek as a spawning and nursery ground for Rangitata salmon.

Reports from the Clutha state that an unusually large number of spawning salmon were seen in that river above Cromwell, and many redds were exposed to view by the abnormally low level to which the water fell in the winter of 1937.

In all the snow-fed rivers of Canterbury there were practically continuous floods throughout February and March, 1938, and salmon-anglers had a very poor fishing-season in consequence. Records kept by Mr. F. W. Pellett for the Rangitata show that from 1st February to 31st March there were forty-six days on which the river was too turbid to be fishable. Twenty-one salmon were caught in the Rangitata in February and twenty-four during March, but one of 18 lb. had been caught near Arundel as early as December. The Opihi, however, was fishable for most of the period of the principal salmon-runs. Records of fish caught at the mouth of the Opihi show that 124 quinnat salmon were caught by thirty-four anglers between 26th January and 11th April. The total weight of these fish was 2,507 lb., the largest fish caught was 36 lb., and the average weight was 20·2 lb. This season anglers on the Opihi were more successful in the month of February than they were in the same month last year, but the most productive period was the first half of March as in 1937.

The returns sent in by holders of selling licenses have been tabulated in the usual form, and with the net-fishing returns, are summarized in the table that follows:—

Quinnat Salmon, 1938.

——	Males.	Females.	Sex not given.	Totals.
Return from Rods.				
Opihi River, 16/2/38 to 15/3/38 (one rod)—				
Number of fish caught	..	..	7	7
Total weight	..	..	152 lb.	152 lb.
Average weight	..	..	21·7 lb.	21·7 lb.
Rakaia River, 3/2/38 to 18/3/38 (four rods)—				
Number of fish caught	35	56	..	91
Total weight	693 lb.	889 lb.	..	1,582 lb.
Average weight	19·8 lb.	15·9 lb.	..	17·4 lb.
Rangitata River, 26/1/38 to 17/3/38 (ten rods)—				
Number of fish caught	10	14	2	26
Total weight	225 lb.	251 lb.	52 lb.	528 lb.
Average weight	22·5 lb.	17·9 lb.	26·0 lb.	20·3 lb.
Waimakariri River, 8/3/38 (one rod)—				
Number of fish caught	2	1	..	3
Total weight	33 lb.	16 lb.	..	49 lb.
Average weight	16·5 lb.	16·0 lb.	..	16·3 lb.
Waitaki River, 1/5/38 to 15/5/38 (two rods)—				
Number of fish caught	20	4	6	30
Total weight	482 lb.	76 lb.	74 lb.	632 lb.
Average weight	24·1 lb.	19·0 lb.	12·3 lb.	21·7 lb.
Combined Rivers, 26/1/38 to 15/5/38 (eighteen rods)—				
Number of fish caught	67	75	15	157
Total weight	1,433 lb.	1,232 lb.	278 lb.	2,943 lb.
Average weight	21·4 lb.	16·4 lb.	18·5 lb.	18·7 lb.
Returns from Nets.				
Waimakariri River, 27/1/38 to 31/3/38 (three nets)—				
Number of fish caught	251	228	..	479
Total weight	3,132 lb.	3,104 lb.	..	6,236 lb.
Average weight	12·5 lb.	13·6 lb.	..	13·0 lb.

The rod catch by selling-license holders shows a great decrease in comparison with previous years. The total weight taken in the 1937 season by eleven rods was 5,990 lb. (average catch per rod, 545 lb. or 36·3 fish), and in the 1936 season for eleven rods the corresponding figures are 4,375 lb. (398 lb., or 25·7 fish). This season the total weight of fish caught by eighteen holders of selling licenses was 2,943 lb., with an average catch per rod of 163·5 lb. or 8·7 fish. It will be noticed that the average weight of the salmon is unusually high this year.

The net catches in the Waimakariri River show an improvement on the exceptionally poor results obtained last year, although the water conditions were for the most part unfavourable for successful netting operations. The river-bed, however, was in much better order for netting than it had been during the previous summer, when its contour had been considerably changed by the effects of heavy floods.

Atlantic Salmon.

To obtain parent fish for the supply of ova for the hatchery at Te Anau, a rack was constructed in the Upokororo River on the same site as was used last year. Owing to alterations in the contour of the river-bed from the deposit of shingle due to flood effects an appreciable amount of extra work was involved to prepare the site so as to provide a supply of water for the fish-pens and a good flow of water through the trap. This preparatory work was hindered by the effects of a flood on 7th March. The rack was completed on 20th March and the first salmon were taken on 24th March. The best runs of fish come up with a flood that occurred on 12th to 14th April and with another good fresh that came between 2nd May and 8th May. The rack was opened out on 30th July. The largest fish stripped was a female of 8 lb., but bigger female salmon were seen to come up in the month of August. Three male salmon showing the red coloration (normal in British salmon, but abnormal in New Zealand, and which in my opinion indicates sea-run fish) were taken, and several very small males of 1 lb. to 1½ lb. weight came to the rack, but were not kept for stripping. The total take of salmon was much lower than in the previous winter. The following statement shows the numbers of each sex taken each month :—

——	Males.	Females.	Totals.
March	3	6	9
April	26	36	62
May	23	52	75
June	9	6	15
July	4	9	13
	65	109	174

The total number of ova collected was 208,000. They hatched out with little loss, and the resulting fry were liberated in the upper waters of the Upokororo River.

Very little information is available regarding Atlantic-salmon fishing in the 1937–38 season, Some fish were reported to have been caught in tidal waters at the beginning of the season, and in October a salmon of 8¼ lb. weight, but in poor condition, was taken by an angler in the Waiau at Clifden. According to the report of the Angling Committee of the Southland Acclimatization Society, published in that society's annual report for the year ended 31st March, 1938, " A fair number of trout and salmon were got in the Waiau between Lakes Te Anau and Manapouri," and the stock seemed to have been maintained at about its former abundance.

Marine Fishery Research.

Investigational work upon sea fisheries has been conducted by Mr. A. M. Rapson, M.Sc. This department of the work of the Fisheries Branch has for long been in a very rudimentary stage in comparison with what has been done in many other countries, but a definite step forward has been made this year by the allocation of a whole-time worker for marine research and by the provision of the Sydney Street Laboratory to accommodate both the marine and fresh-water biologists. No departmental fishery-research vessel being available, Mr. Rapson has made use of trips on commercial fishing-vessels for the collection of data and material at sea. In the early part of the year he continued his observations on the spawning of the commercial fishes, more particularly the flatfish in Admiralty and Tasman Bays, and also made some special observations in the flatfish stock, with special reference to size and abundance in the lower part of Pelorus Sound. Reference to the Biologist's work in collaboration with the District Inspector of Fisheries in connection with toheroa observations on Waitarere and Muriwai Beaches was made in the Toheroa Section above.

On 8th February, 1938, Mr. Rapson sailed on the Royal Research Ship " Discovery II " to observe and to take part in the work that is being carried out under the auspices of the Discovery Committee of the Colonial Office in connection with whale research in the Antarctic seas. An understanding of the laws governing the occurrence, growth, migrations, and general life-history of whales, and a rational conception of the effects which are produced on the stocks by the commercial exploitation of these marine mammals by man, depends upon marine biological research, which is fundamentally the same for general marine fishery as for whaling problems. The opportunity of making a voyage of about three months' duration under working-conditions on a ship possessing the most modern equipment for marine biological investigations and carrying a highly qualified and experienced staff of scientists has undoubtedly been of considerable benefit to our young Biologist, and hence to the Department and to the Dominion. Incidentally, Mr. Rapson has also profited by the opportunity of making some study of both practical and biological aspects of the whaling and fishing industries in the Falklands, South Georgia, Capetown, Natal, and Australia.

Fresh-water Fisheries.

In the past, although responsible for the departmental administration of fresh-water fisheries under Part II of the Fisheries Act, 1908, the Marine Department has had but a remote contact and a somewhat second-hand acquaintance with material conditions in respect of the general fresh-water fisheries of the Dominion apart from its activities in connection with the acclimatization of quinnat and Atlantic salmon, and with subsequent hatchery and stocking operations. With its assumption of the responsibility of conducting fresh-water research in the Dominion and with the appointment of departmental officers as District Inspectors of Fisheries for the Wellington, Canterbury, and Otago districts, the interest and activities of the Marine Department in relation to inland fisheries have been extended during the past year. It seems fitting, therefore, that some reference should here be made to the nature of the responsibilities with which we are faced and to the Department's attitude and policy in relation to the fresh-water section of the nation's fishery resources. Of principal importance among these are our trout fisheries, which constitute an asset of high recreational value both to our own people and to our overseas visitors. And, since the kinds of fresh food available to many of our population are lacking in variety, though generally ample in quantity, the value of our trout and salmon fisheries as a source of food-supply is by no means inconsiderable.

The earliest trout-fishery problems of New Zealand were those pertaining to their original creation —in other words, the introduction and naturalization of European and American species of trout in the rivers and lakes of New Zealand—and these were overcome by the enterprise and zeal of the pioneers of sixty to seventy years ago, who succeeded in hatching out fry from ova imported into this country and planted them in suitable and unsuitable—but mostly suitable—waters throughout the colony. Once introduced, the trout, like so many other naturalized species, found Nature in New Zealand a most beneficient, not to say indulgent, foster-mother. They waxed fat and lusty, they increased and multiplied, and in a remarkably short space of time they made this country an angler's El Dorado. The waters were virgin and pure ; food for baby trout, food for youthful trout, and food for the giant of the tribe was there in plenty. There were clean stream-beds of gravel and shingle for spawning and deep pellucid pools where the big fish had their lairs. The average trout's expectation of life was not unduly lowered by the wiles of the angler, or even by the predatory attentions of the poacher, because there were relatively few of either. Certain work in connection with trout fisheries had to be done, and was done, by acclimatization society staffs, but actually the task of maintaining them was a sinecure for many years.

That was in the past. There are wonderful trout, and there is first-class trout fishing to be got in New Zealand to-day. But whereas formerly this was the usual thing in many waters throughout both North and South Islands, it is now rather the exceptional thing ; and the indications of progressive deterioration in our trout-fishing assets, high though the standard is in comparison with that of the fishing obtained in most other countries, are a matter for serious concern among those who are responsible for the management of inland fisheries.

As to the causes to which deterioration of trout-stocks in various waters is ascribable, one may hear the question freely discussed and sometimes confidently settled wherever two or more anglers are gathered together, but there is insufficient reference to facts in such discussions, and conclusions reached are often contradictory. The only inquiry into the question that has been made in a scientific way was that carried out by Professor E. Percival, whose findings were set out in a paper entitled " On the Depreciation of Trout Fishing in the Oreti (or New) River, Southland, with Remarks on Conditions in other Parts of New Zealand," which was published by this Department as Fisheries Bulletin No. 5 in 1932. The most significant point that is demonstrated in the paper is with reference to the part played by the angler. Percival's principal conclusion is " that the primary factors in bringing about depreciation are an increased number of anglers with greater facilities for taking fish, owing to the ease and speed of locomotion, and the almost complete absence of restrictions ; so that the killing-power has become constantly greater." One may take it that, so far as the Oreti River is concerned, Professor Percival has proved his case ; and with regard to other waters, concerning which accurate and comprehensive data for scientific analysis are not available, it is quite certain that increased intensity of fishing of late years has been a dominantly operative factor. It is not, however, the whole story applicable to all waters where fishing has depreciated. Apart from the undoubted fact that the trout living in New Zealand in the nineteenth century ran much less risk of coming to an untimely end through meeting an alluring-looking morsel with a barbed hook concealed in it, in many of our rivers the trout of 1937 is living in a markedly different habitat from that in which his progenitor of 1897, or even of 1917, was reared and lived his life. The rivers themselves have been changed in character. The dominating agency by which the changes have been wrought has been the erosion that has taken place in the higher lands from which their waters drain. In the last fifty years hundreds of thousands of tons of debris have been brought down from the hillsides and much of it deposited in the beds of rivers, here changing what was once stable stream-bottom into beds of shifting shingle, and there filling up once deep pools where the big trout lurked in safety. There is also the increased tendency for floods to be higher and more sudden in their incidence and for low-water conditions to be more extreme and of longer duration than when the land surface of the watershed was in its primeval state as Nature made it, before the extensive areas of bush, scrub, and tussock had been afflicted by their present-day baldness and before the land-drainage works that have been necessitated by agricultural requirements had changed the riparian character of the lower courses. With increased abstraction of water from rivers for irrigation purposes the ill-effects of reduced water-flow in dry weather are augmented and more prolonged. Such conditions not only reduce food-supplies for the fish, but also prevent their ascent to and return from the upper waters where the natural spawning-places are. These conditions alone are sufficient to account for a

considerable degree of deterioration in the trout-stocks of many waters. However, increase of population and the development of industries were accompanied by a tendency on the part of various sections of the public to "regard a river as a slop-basin to pour their waste material into," and so we have sewage, sawdust, dairy-factory waste, drainage from sheep-dips, putrifiable disjecta from freezing-works and abattoirs, effluents from gasworks, and oil-soaked mud from town drains finding their way with toxic effects of varying degree into streams that were pure when the pioneers of fish-acclimatization planted their first trout in them. There is no need to wonder why trout fisheries have deteriorated. Fortunately, in our sparsely populated and well-watered land the deterioration of fishing-waters is not universal and occurs on nothing like the scale which has caused and is still causing fishery authorities so much trouble and expense in more densely peopled and more highly industrialized countries. Our duty as a fisheries administration is to realize and understand the conditions and to set about their amelioration before they become worse and so make either the removal of causes or the remedying of effects more problematical and more difficult than they are already. It is an anomaly and, from the fisheries point of view, a deplorable state of affairs that those responsible for the well-being of fresh-water fisheries have no authority whatever, either direct or vicarious, over the water in which the fish live. All they can do is to prosecute the responsible parties when pollution has taken place and can be proved. There would appear to be need for some legislative and administrative effort to remove this anomaly. A new development that has taken place this year, and that should be recorded, is the formation of a committee to investigate and to give technical advice in connection with the disposal of dairy-factory wastes in Taranaki. The committee was formed at the suggestion of the Hon. the Minister of Marine following a conference with representatives of the Federation of Taranaki Co-operative Dairy Factories and of the local acclimatization societies, which was attended also by the Hon. the Minister of Agriculture. On the committee are representatives of both the fishing interests and the dairy-factory interests. This is a welcome development which one hopes may be extended to other fields. Unlike the quality of mercy "that blesseth him that gives, and him that takes," the pollution of streams is a curse to the parties that cause it because they are liable to be prosecuted, and to the parties that suffer from it, because the water in which they find their pleasure is fouled and the fish on which they have based their hopes and spent their money are poisoned or driven away to more salubrious haunts. The most satisfactory means of preventing trouble is by the elucidation of the material circumstances attending each case, of which no two are precisely alike, and by each of the parties appreciating the other's difficulties and doing all that is practicable to remove or minimize them. The hopes of fishery interests are brightened by the knowledge that not only anglers are interested in the maintenance of the purity of rivers and streams, but pollution is only one of the factors that creates problems for fishery authorities.

As in the case of marine fisheries, the basis of effective administration and rational management for fresh-water fisheries is an enlightened understanding of the material factors concerned. Making sure of the facts is the purpose of scientific investigation, and in this connection it is expedient at the outset to put the question, "What knowledge is of most worth?" For while the study of trout embraces a whole universe of various forms of scientific inquiry there are some problems whose solution would appear to be of more direct practical value than others.

Fresh-water Research.

Although the physical and chemical character of the habitat and the effects of various aspects of human agency have an intimate effect on fish-life, the study of trout is essentially a biological inquiry, and it is on this premise that one must discuss the policy to be followed in connection with the work to be done by the fresh-water research section of the Fisheries Branch. With the harvest of problems so plentiful it is important to concentrate on those questions which appear to have the most direct bearing on the practical management and the possible development of fresh-water fisheries. The general aim is to ensure that whatever is done in connection with fisheries management is done in the light of the best possible understanding of causative conditions and of observed effects—and effects have to be observed before they can be understood. Among causative conditions there are both natural and artificial factors: (1) The natural phenomena resulting from the operation of biological laws (which when elucidated by scientific research can be taken into account, though not amenable to direct control by man), and (2) those operations connoted by the term pisciculture which in New Zealand consist largely of the work done by the executives and staffs of acclimatization societies for the maintenance of fishing. In aquiculture, as in agriculture, we need to plant our seed where it will yield the best harvest either in sporting or food value; and we have a lot to learn before we shall be able to do it with any real confidence. The past fish cultural work of acclimatization societies and of this Department, in the absence of scientific observations such as would afford definite knowledge of the life-conditions of the fish-stocks, were to a very large extent speculative ventures. They must necessarily remain speculative until they are combined with observational work in which causative factors and effects that follow are properly demonstrated and recorded. A policy was initiated by the former Fresh-water Research Committee, and furthered largely by the efforts of Mr. D. F. Hobbs, by which local fishery authorities have been encouraged to make departures from their traditional plan of distributing hatchery-produced fry in the hope that benefit to fishing would accrue, but in most cases with no definite knowledge that such would be or had been the case. Some of them have been induced to recognize the experimental aspect of hatchery and stream-stocking operations and to continue them in such a way that useful data may be forthcoming which will throw light on the questions that require to be cleared up before the speculative element can be eliminated. For several years now the Waitaki Acclimatization Society has modified its policy for investigational purposes, and more recently the Auckland Society and smaller ones have followed its lead. The Wellington

Society turned a proposed shag destruction campaign into a shag investigation and thereby afforded useful data. The Southland Society, which desired to reduce the eel fauna of the Makarewa River system, agreed to keep careful records of eels captured and costs of operations, to provide material for examination, and generally to assist the research organization to ascertain the effect of operations on the trout population.

Reference was made in last year's report to the circumstances under which this Department took over the responsibility for the prosecution of fresh-water fishery investigations in continuation of the work previously carried on from Canterbury College, Christchurch, as headquarters, under the Fresh-water Research Committee of the New Zealand Acclimatization Societies Association. The transference to Wellington took place in June, 1937, when two rooms equipped as a laboratory were provided in the Public Works District Office building in Sydney Street. Mr. D. F. Hobbs, who had been Honorary Research Secretary and later Field Biologist to the Fresh-water Research Committee, and Mr. D. Cairns, M.Sc., were appointed as Biologists, with Miss V. K. Lawrey, of the former Christchurch staff, as Laboratory Assistant. During the year the Whangarei, Hobson, Auckland, Waimarino, East Coast, Hawke's Bay, Wellington, Waitaki, and Southland Acclimatization Districts were visited by one or other of the biologists in connection with special investigations or at the request of the local society.

The examination of samples of trout-scales from numerous fishing-waters throughout the Dominion has shown that there is no profound difference in the general rate of growth and no indication of a lack of food-supplies for the trout-stocks of any waters. The superfluity of food organisms that apparently existed in the early days of trout acclimatization, and that doubtless served to nourish the monster fish that could be taken not infrequently in those times, has presumably long since been reduced to more or less a stable state of affairs in which there is a fair balance maintained between the predators and prey. Without losing sight of the general fact that the relatively large-sized food organisms—*e.g.*, koura (crayfish), "silveries," whitebait, and the adult *inanga* or other members of the *Galaxias* family, bullies, and the larger insects—are less abundant in trout waters than formerly, and that such food-supply is favourable if not altogether necessary to the production of big trout, and without disregarding the future possibilities of artificially helping to maintain the supply of such trout-food, it would appear that the most immediate problem in present trout-fishery management is the maintenance of a head of fish. Given a sufficiency of well-filled trout nurseries, enough of the young fish will survive and grow to a size that will give the angler satisfactory sport, though he may rarely land an individual fish that will make him hesitate to tell the truth about it for fear of not being believed. The study of the factors that make for successful reproduction and survival of trout is thus of primary and fundamental importance, and this is the direction which the investigations carried out by Mr. Hobbs have taken and in which they are being at present pursued.

A female trout produces anything from six hundred to one thousand eggs per pound of its weight, yet such a production of eggs is little more than enough to maintain the population. Obviously, somewhere between the time when eggs are produced and that when the survivors of them attain maturity, tremendous losses occur. Possibly no phase of the investigational work is more important than that which aims at finding out at what stage the heaviest loss occurs and, generally, the extent and causes of losses at different stages of the fish's development. Stock-maintenance work generally aims at three things: (1) The prevention of poaching; (2) the protection of fish from anglers until they approach maturity; and (3) the collection of ova from wild fish to be safeguarded in hatcheries until they pass the embryo stage, which has been assumed to be their most vulnerable point. The results of the investigational work of Mr. Hobbs during the last six years have raised doubts as to the soundness of this third phase of maintenance-work, at least in some of its customary applications. An account of his first three years' investigations is given in Fisheries Bulletin No. 6 issued by this Department recently. These investigations aimed at showing the extent and causes of losses occurring in natural spawning-beds from the time when ova are deposited until the resulting fish emerge from the gravel as fry. Contrary to what had been very generally believed, it was found that losses during this stage of development very frequently assumed only moderate proportions, and were often, indeed, so slight as to call into question the soundness of the basic assumption of fish-hatchery practice. Generally the evidence obtained was such as to show that natural reproduction was a very much more efficient process than had hitherto been supposed, and to suggest it as not unlikely that the fish hatcheries of New Zealand unnecessarily safeguarded the young over a period through which they are much less in need of safeguarding than in an equal period of time immediately following their liberation. Over the last three years this study, which was commenced in Canterbury and Westland, has been greatly extended, and, during the last year, approximately a quarter of a million more specimens of eggs and larval fish were obtained from natural spawning-areas in the Southland and Auckland districts. The further data will be made the basis of another bulletin this coming year, and, in addition, some comment will be made on the relation of the investigational work to present fish-cultural practice. Other studies, arising from Mr. Hobbs's work over the last six years, include one on the food and habits of young trout and salmon and their inter-relationships with other fish, and one on the productivity of trout and on certain causes of differences in their growth-rates. Data under these heads accumulated over the period when the earlier research organization had no funds to publish results. The preparation of papers embodying these data will occupy Mr. Hobbs's time for many months. When these papers are completed they should constitute an important addition to existing knowledge of the spawning requirements of adult fish, the reactions of ova and larval fish to the main types of environment New Zealand offers, and the ecology of early post-larval fish. The study of the factors affecting the growth-rate of young fish will be linked with the study of later growth as determined by scale-reading.

Scale-reading constitutes a necessary part of the general scheme of investigational work. It is, however, very far from being an exact science and, with a view to determining more precisely the significance and limitations of scale-reading, Miss Lawrey is collaborating with Mr. Hobbs in a critical examination of existing technique. Meanwhile, although the routine examination of scales is not being proceeded with, the collection of representative samples for reference in connection with future studies is going on.

In making a general report on fresh-water-research activities Mr. Hobbs refers to the value of general impressions, resulting from surveys of stream conditions in different parts of New Zealand in indicating which of a number of possible lines of investigation may prove most fruitful. Two such impressions, arising from the observations he has made over a number of years, are recorded. The first is that the density of fish-stocks varies chiefly according to the facilities different streams offer for successful natural reproduction. The second is an exception to the first—namely, that trout-stocks, considerably in excess of what the extent and quality of spawning-areas lead one to expect, are found when there is a relative or complete absence of eels. This second impression, together with evidence of depredation by eels which has been accumulated over the last six years, suggested the need for a more thorough investigation of the whole eel problem. The commencement towards the end of 1937 of extensive eel-destruction campaign in the Hedgehope and Makarewa Rivers in Southland afforded an excellent opportunity for an extensive scientific study to be made on some aspects of the life-history of eels, and their inter-relationships with trout. At the same time evidence regarding the effect of a large eel-population on trout stocks could be obtained.

Mr. D. Cairns, Fresh-water Biologist, commenced observations in November, 1937, on the various aspects of the biology of the eel indicated above, and it will be necessary to keep a close watch on the Hedgehope-Makarewa experiment for the next few years.

Investigations carried out so far have included studies of the food of the eel and its feeding-habits, the age as determined by its scales and otoliths, seasonal migrations and maturity, and the distribution of the two species and sexes in certain New Zealand waters, and other relevant details. This work has made good progress, and much valuable information has already been collected under these various headings. It is hoped later in the year to publish a paper embodying the results obtained. The establishment of a commercial eel fishery in New Zealand has been the subject of comment in past annual reports, and the present scientific study of the biology of the eel would form a useful background should such an industry be eventually established. With a view to testing how money available for stock-maintenance can best be spent the cost of the Makarewa-Hedgehope experiment is being closely observed and will form a useful basis for possible future operations.

Mr. Cairns has occupied the bulk of his time on the above investigation, but other work has included the general survey of food and conditions in the rivers of the Wellington Province, collection of scale data periodically from one experimental stream (the Horokiwi), study of excessive aquatic weed-growths in two places in Southland, scale-reading, and general laboratory work. In addition, the biologist has co-operated with Mr. Kaberry (District Inspector) on preliminary experiments relating to fishing methods and catches and on pollution problems.

A. E. Hefford,
Chief Inspector of Fisheries and Director
of Fishery Research.

RETURN SHOWING THE NUMBER OF SEAMEN ENGAGED AND DISCHARGED IN NEW ZEALAND, AND THE FEES RECEIVED, FOR THE YEAR ENDED 31ST MARCH, 1938.

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	1,861	179 9 0	1,627	161 5 0	1,349	115 12 0	1,427	123 12 0	3,210	295 1 0	3,054	284 17 0	6,264	579 18 0
Dunedin	414	39 7 0	341	33 12 0	98	8 15 0	93	8 5 0	512	48 2 0	434	41 17 0	946	89 19 0
Gisborne	..	..	..	..	184	15 10 0	191	15 9 0	184	15 10 0	191	15 9 0	375	30 19 0
Greymouth	33	3 4 0	31	3 0 0	43	3 9 0	36	2 13 0	76	6 13 0	67	5 13 0	143	12 6 0
Hokitika	..	..	..	..	18	0 17 0	19	0 19 0	18	0 17 0	19	0 19 0	37	1 16 0
Invercargill	22	2 4 0	14	1 8 0	49	3 5 0	51	3 3 0	71	5 9 0	65	4 11 0	136	10 0 0
Lyttelton	253	23 16 0	232	21 14 0	238	21 10 0	222	19 7 0	491	45 6 0	454	41 1 0	945	86 7 0
Napier	23	2 6 0	18	1 16 0	396	36 16 0	395	38 12 0	419	39 2 0	413	40 8 0	832	79 10 0
Nelson	3	0 6 0	2	0 4 0	448	33 14 0	444	32 12 0	451	34 0 0	446	32 16 0	897	66 16 0
New Plymouth	17	1 14 0	22	1 18 0	27	2 14 0	32	2 18 0	44	4 8 0	54	4 16 0	98	9 4 0
Oamaru	..	..	1	0 2 0	18	1 16 0	18	1 16 0	18	1 16 0	19	1 18 0	37	3 14 0
Onehunga	..	..	..	..	94	8 2 0	85	7 2 0	94	8 2 0	85	7 2 0	179	15 4 0
Patea	..	..	..	..	42	2 0 0	43	2 0 0	42	2 0 0	43	2 0 0	85	4 0 0
Picton	27	2 9 0	27	2 9 0	38	3 3 0	39	3 5 0	65	5 12 0	66	5 14 0	131	11 6 0
Tauranga	..	..	..	..	4	0 8 0	4	0 8 0	4	0 8 0	4	0 8 0	8	0 16 0
Te Kopuru	1	0 2 0	1	0 2 0	..	..	..	..	1	0 2 0	1	0 2 0	2	0 4 0
Timaru	9	0 18 0	5	0 10 0	44	3 10 0	44	3 10 0	53	4 8 0	49	4 0 0	102	8 8 0
Wairau	..	..	..	..	4	0 8 0	3	0 6 0	4	0 8 0	3	0 6 0	7	0 14 0
Wanganui	12	1 4 0	10	0 18 0	52	4 9 0	73	6 8 0	64	5 13 0	83	7 6 0	147	12 19 0
Wellington	2,993	285 18 0	3,081	291 4 0	2,015	164 18 0	2,001	162 7 0	5,008	450 16 0	5,082	453 11 0	10,090	904 7 0
Westport	11	1 2 0	11	1 2 0	107	8 14 0	109	8 18 0	118	9 16 0	120	10 0 0	238	19 16 0
Foxton	..	..	..	..	10	1 0 0	20	2 0 0	10	1 0 0	20	2 0 0	30	3 0 0
	5,679	543 19 0	5,423	521 4 0	5,278	440 10 0	5,349	445 10 0	10,957	984 9 0	10,772	966 14 0	21,729	1,951 3 0

TABLE SHOWING COST OF MAINTENANCE (EXCLUDING INTEREST ON CAPITAL AND DEPRECIATION) OF NEW ZEALAND COASTAL LIGHTHOUSES FOR THE YEAR ENDED 31ST MARCH, 1938.

Name of Lighthouse.	Salaries and Wages.	Fuel.	General Maintenance.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Akaroa Head	544 7 9	47 14 9	231 11 9	823 14 3
*Baring Head	817 8 1	41 10 8	504 12 4	1,363 11 1
Brothers	786 7 4	50 15 3	265 1 9	1,102 4 4
Cape Brett	928 9 5	40 19 5	340 8 5	1,309 17 3
Cape Campbell	592 18 10	50 12 8	192 3 1	835 14 7
Cape Egmont	255 0 0	21 5 11	82 13 0	358 18 11
Cape Maria	799 3 0	61 7 4	749 16 2	1,610 6 6
Cape Palliser	646 9 5	40 0 10	118 15 5	805 5 8
Cape Saunders	521 15 3	53 13 5	142 9 2	717 17 10
Castlepoint	494 7 7	41 17 8	258 5 8	794 10 11
Centre Island	787 10 8	24 2 7	243 16 5	1,055 9 8
Cuvier Island	735 4 2	51 1 6	263 3 3	1,049 8 11
Dog Island	530 12 0	30 7 5	185 13 3	746 12 8
East Cape	535 16 2	43 17 3	300 1 6	879 14 11
Farewell Spit	824 15 0	64 15 7	299 3 3	1,188 13 10
French Pass	225 0 0	7 10 7	61 8 10	293 19 5
*Godley Head	299 15 4	43 16 7	202 11 5	546 3 4
*Kahurangi Point	255 0 0	22 13 1	146 6 11	424 0 0
Kaipara Heads	818 2 9	92 2 10	398 8 11	1,308 14 6
*Manukau South Head	255 0 0	16 8 2	119 14 2	391 2 4
Moeraki	533 14 8	52 16 9	232 17 9	819 9 2
Moko Hinou	794 10 6	66 10 2	325 17 7	1,186 18 3
Nugget Point	599 8 6	55 3 11	176 15 10	831 8 3
Portland Island	947 13 1	66 16 1	287 13 9	1,302 2 11
Puysegur Point	745 13 10	27 12 0	261 11 9	1,034 17 7
Stephens Island	838 7 9	56 19 3	204 15 5	1,100 2 5
Waipapapa Point	522 3 0	30 2 1	126 10 3	678 15 4
Marine store	954 1 8	..	80 12 10	1,034 14 6
Automatic lights (unwatched)	..	283 16 0	502 10 4	786 6 4
Fog-signals	602 4 0	88 19 3	62 14 1	753 17 4
Government steamer	13,604 5 11	3,922 19 8	6,522 3 1	24,049 8 8
Radio beacons	..	..	68 4 8	68 4 8
	31,795 5 8	5,498 8 8	13,958 12 0	51,252 6 4

* Watched automatic lights.

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, 1938.

Name of Seaman.	Balance to Credit of Estate on 1st April, 1937.	Amount received.	Amount paid.	Balance to Credit of Estate on 31st March, 1938.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
R. L. Earl	..	23 14 3	..	23 14 3
J. R. Henry	16 18 8	7 8 6	24 7 2	..
W. A. Johnson	..	18 11 0	18 11 0	..
W. Kenney	55 4 3	1 2 0	..	56 6 3
J. Laine	26 1 1	..	26 1 1	..
A. Marshall	..	145 15 2	145 15 2	..
C. Motz	..	14 10 2	14 10 2	..
J. McCormick	..	4 8 2	2 0 0	2 8 2
A. McKay	..	6 14 11	6 14 11	..
D. Nash	12 1 8	..	12 1 8	..
J. Payne	..	14 2 2	..	14 2 2
W. D. Robinson	2 10 0	..	2 10 0	..
L. H. Robson	..	25 1 11	25 1 11	..
F. G. Stevens	4 5 9	..	4 5 9	..
F. Wareline	0 1 2	..	0 1 2	..
R. D. Watts	..	6 12 5	6 12 5	..
	117 2 7	268 0 8	288 12 5	96 10 10

RETURN SHOWING AMOUNTS RECEIVED PRIOR TO 1ST APRIL, 1937, STANDING TO CREDIT OF ESTATES OF DECEASED SEAMEN AND FOR WHICH CLAIMS HAVE NOT BEEN PROVED.

	Balance to Credit of Estate, 31st March, 1938.
	£ s. d.
G. Banks, late seaman, s.s. "Marama"	6 16 6
W. H. Carle, late seaman, s.s. "Rata"	3 17 7
C. de Faire, late seaman, s.s. "Rangi"	7 12 0
H. Helgesen, late seaman, s.s. "Rangi"	8 0 0
P. A. Linton, late seaman, s.s. "Koonya"	0 1 0
J. McEvoy, late trimmer, s.s. "Koromiko"	0 1 3
R. Wassel, late seaman, s.s. "Elsie Mary"	0 1 3
	£26 9 7

Return of Wrecks and Casualties to Shipping reported to the Marine Department from 1st April, 1937, to 31st March, 1938.

Date of Casualty.	Vessel's Name, Class, and Age.	Rig.	Register Tonnage.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Remarks, or Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1937. Mar. 16	Waimarino, s.s.; 7 years	Schooner ..	1,752	31	..	400 tons general ..	Stranded	..	Bluff Harbour ..	Calm	..	When approaching No. 7 berth the vessel took the ground about 40 ft. from wharf. With the assistance of a tug the vessel was refloated, and it was found that she had sustained damage	W. D. Cameron.
April 2	Holmglen, m.v.; 9 years	Schooner ..	290	12	..	15 tons general ..	Engine failure	..	South Taranaki Bight ..	N.W.	5	Owing to failure of one set of cooling-pipes the engines stopped. Temporary repairs were effected and the vessel put into Queen Charlotte Sound	M. McArthur.
,, 18	Aorangi, m.v.; 12 years	Schooner ..	10,733	275	..	1,700 tons general ..	Fractured crankshaft-web ..	..	Tasman Sea	..	..	After the vessel had berthed at Auckland it was found that the starboard inner No. 5 crankshaft-web had been fractured	T. Hill.
,, 23	Akaroa, s.s.; 23 years ..	Schooner ..	9,461	164	33	2,597 tons general ..	Damaged by heavy seas ..	..	Lat. 26° 25′ S.; Long. 177° 51′ W. (Pacific Ocean)	W.	9	The vessel shipped heavy seas over the forecastle head, breaking open No. 1 hatch fore-peak and damaging two No. 1 hold-ventilators. Also minor damage to ship and fittings	W. C. Summers.
,, 27	Thomas Currell, s.s.; 20 years	Schooner ..	84	9	..	10 tons fish	Leaky boiler	..	Off Matakana Island, N.Z.	W.	4	It was discovered that the boiler had developed a leak in the combustion-chamber, and the vessel put into Tauranga for repairs	J. Holt.
May 1	Doric Star, s.s.; 16 years	Schooner ..	6,359	62	..	General	Leaking	..	Auckland	..	..	A leak was discovered in No. 6 'tween decks, causing damage to the cargo	N. G. Oswald.
,, 1	Tees, s.s.; 26 years ..	Schooner ..	247	17	11	1,000 sheep	Lost anchor and cable ..	..	Pitt Island, Chatham Islands	W.N.W.	5	Owing to the vessel ranging, the starboard cable parted in hawse-pipe while the 45 fathom shackle was in the water. To be recovered on next visit to the Chathams	J. B. Allsop.
,, 10	Pono, m.v.; 24 years ..	Schooner ..	30	4	..	General	Collision	..	Auckland Harbour ..	S.W.	Light	At 11.45 p.m. a launch was seen close on the starboard side and two green lights close on port side. Simultaneously something was heard to have carried away, which was found to be the tow-line between a launch and the barge "Kitty Fraser," which bumped the "Pono." The "Kitty Fraser" was slightly damaged and the "Pono" sustained damage to her port bulwarks	N. Morgan.
,, 11	Kawau, s.s.; 28 years ..	Ketch ..	52	10	..	2 tons general	Loose propeller	..	Vivian Bay, Kawau Island	N.W.	Light	When engines going half-speed astern the propeller worked loose on the boss, and vessel had to be towed to Auckland for repairs	J. V. Ruthe.
,, 15	Robey, m.v.; 31 years ..	Cutter ..	6	2	..	Towing only	Stranded	..	Auckland Harbour ..	N.E.	Gale	Owing to engine trouble, freshening wind and sea, and the parting of the tow-lines connecting the vessel with the barges "Samoa" and "Argyle," the anchors of all three vessels were dropped in the Tamaki Passage. Later all three vessels dragged and were driven ashore. The barges were successfully refloated, and efforts are being made to refloat the "Robey." Subsequently refloated	P. Baron.
,, 15	Haere, m.v.; 34 years ..	Schooner ..	59	5	..	Nil	Stranded	..	Marsden Point, Whangarei	N.	Heavy gale	While the vessel was sheltering off Whangarei Heads, during a heavy gale the vessel commenced to drag her anchors, and at 10 p.m. the vessel touched the rocks. The vessel was beached for safety and was subsequently refloated, apparently undamaged	E. W. Norton.

,,	16	Omana, s.s.; 22 years ..	Schooner ..	1,513	33	..	3,400 tons coal and timber	Stranded	Greymouth	E.	3	The vessel grounded while swinging and set down on the s.s. "Rata." The "Omana's" bulwarks were damaged, but no damage to "Rata"	J. E. Warwick.
,,	25	Kawau, s.s.; 28 years ..	Ketch ..	52	10	..	3 tons general	Engine trouble	Mangawai Harbour ..	E.	Light	The pump-links on air and water circulating pump on the main engine broke. Engine temporarily repaired and vessel proceeded at slow speed for Auckland	J. V. Ruthe.
June	12	Haere, m.v.; 34 years ..	Schooner ..	59	5	..	90 yards sand	Fire	Between Tiri Island and Whangaparau	S.	Light	Fire caused through the donkey-engine back-firing and setting the benzine alight. No damage to hull or machinery	E. W. Norton.
,,	12	Rangitiki, m.v.; 8 years	Schooner ..	10,271	207	185	5,000 tons general ..	Engine trouble	Lat. 7° 24′ N.; Long. 79° 54′ W. (Panama Gulf)	Calm	..	It was found that the second-stage air-compressor intercooler of port main engine had broken down. The vessel returned to Balboa for repairs	H. Barnett.
,,	25	Kaiwarra, s.s.; 18 years	Schooner ..	1,847	39	..	4,000 tons coal.. ..	Damaged by heavy seas	Tasman Sea	S.E.	8–9	During a heavy gale the vessel shipped heavy seas, washing away the ventilators on the fore-deck as well as various deck fittings. After the vessel had been docked it was found that several plates had been cracked and that the rudder lower pintle had been broken	S. Hewitt.
,,	26	Kartigi, s.s.; 12 years ..	Schooner ..	1,166	31	..	2,930 tons coal.. ..	Leaking	Tasman Sea	S.E.	9	A slight leak was discovered in the shell-plating on starboard side of stokehold bilge. The vessel was hove-to and the leak plugged with wooden wedges	W. H. Gardner.
July	6	Huia, m.v.; 44 years ..	Schooner ..	166	12	..	145 tons general ..	Damaged by heavy seas	Tasman Sea	S.	6–7	The vessel shipped a heavy sea, which stove in engine-room skylight and washed ventilator and binnacle top overboard. The poop-rails were also started	A. J. Atkins.
,,	9	Huanui, m.v.; 27 years	Ketch ..	58	6	..	100 tons general ..	Engine trouble	Cook Strait	Calm	..	It was found that the bottom end bolt of port engine had come adrift and the casting of the crank-case had been broken. Vessel headed for Wellington for repairs	C. Thomsen.
,,	10	City of Shanghai, s.s.; 20 years	Schooner ..	3,748 ..	72	..	General	Intermediate shaft fractured ..	Lat. 19° 04′ S.; Long. 137° 50′ W. (Pacific Ocean)	N.E.	Moderate	The engines were stopped on account of an unusual noise in the shaft-tunnel, and on investigation it was found that the intermediate shaft had been fractured at after-coupling. The fracture extended the length of five bolts and through the flange	W. L. Butler.
,,	18	Combine, m.v.; 27 years	Schooner ..	39	5	..	55 yards shingle ..	Leaking	Tutukaka Harbour ..	S.W.	3	When leaving Tutukaka the vessel had a list and water was close up to the engine-room. After pumping for three-quarters of an hour the leak was discovered on the port bow just below the sheathing	D. Scott.
,,	19	Hawera, m.v.; 28 years	Schooner ..	97	10	..	118 tons general ..	Stranded	Patea Harbour ..	N.E.	3	The vessel grounded about 100 yards inside the end of the eastern wall. Vessel came off under her own power, and apparently undamaged	P. McLachlan.
,,	21	Huia, m.v.; 44 years ..	Schooner ..	166	12	..	Nil	Collided with a hulk	Auckland Harbour ..	Squally, N. to W.	..	While the vessel was berthing at the Viaduct a sudden shift of wind carried vessel down upon a hulk, carrying away No. 5 jibboom short off at bowsprit cap	S. J. Atkins.
,,	30	Kohi, m.v.; 26 years ..	Schooner ..	20	6	..	25 tons general ..	Engine trouble	Tasman Bay	Calm	..	On a voyage from Collingwood to Nelson the after web of starboard crank-shaft broke. The vessel continued on the port engine to Nelson for repairs	R. Goldie.
,,	29	Ngahau, m.v.; 13 years	Schooner ..	50	5	..	80 tons shingle.. ..	Windlass carried away	Tokomaru Bay ..	S.E.	3	While discharging shingle a heavy surge came in, and with the extra weight on the forward spring the windlass carried away	E. Brown.
,,	30	Tees, s.s.; 26 years ..	Schooner ..	247	17	21	150 tons general ..	Damaged by heavy seas	Off the Chatham Islands	S.W.	8	During boisterous weather and the vessel labouring heavily, a heavy sea was shipped. Next day a leak was discovered in the after peak and later a slight distortion of the plating in the tunnel-shaft	J. B. Allsop.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT FROM 1ST APRIL, 1937, TO 31ST MARCH, 1938—*continued*.

Date of Casualty.	Vessel's Name, Class, and Age.	Rig.	Register Tonnage.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Remarks, or Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
Aug. 11	Rita, s.s.; 39 years ..	..	5	5	..	2½ tons oysters ..	Collision	..	Foveaux Strait ..	N.E.	2	The Court found that the casualty was contributed to by the default of the Master of the "Black Cat" in that (*a*) being under way within the meaning of the Collision Regulations, he failed to give way, and (*b*) he failed to keep a proper look out. The Court also found that the Master of the "Rita" was guilty of an error of judgment in that he did not appreciate the possible danger of a collision in time to avoid it and reduce his speed, more particularly as other vessels which he was approaching were in close proximity at the time. The Court further found that the degree of culpability of each Master was (1) The "Black Cat" two-thirds, and (2) the "Rita" one-third. No order as to costs were made	H. M. L. Jones.
	Black Cat, m.v. ..	..	9	7	..	2¼ tons oysters ..							W. E. Johnson.
,, 13	Kawau, s.s.; 28 years	..	52	10	..	20 tons general ..	Stranded	..	Warkworth River ..	Calm	..	When proceeding down the river the vessel ran on to the bank and remained fast. Vessel subsequently refloated apparently undamaged	J. W. Monaghan.
,, 25	Combine, m.v.; 27 years	Schooner ..	39	5	..	Nil	Stranded	..	Auckland Harbour ..	Calm	..	When approaching the viaduct with engine running slow ahead the tide set the vessel's bow down on the eastern piles. The anchor fouled the piles, causing slight damage to the bulwarks	D. Scott.
,, 29	Awatea, s.s.; 1½ year ..	Schooner ..	8,033	239	313	1,810 tons general ..	Damaged by heavy seas ..	..	Tasman Sea	E.S.E.	9	During heavy weather four bulwark stays on port side were carried away at foot and bent at right angles, also one ventilator-plug and cover washed out	A. Davey.
Sept. 10	Pupuke, s.s.; 28 years ..	..	68	3	2	Nil	L.P. Piston-ring broken ..	..	Auckland Harbour ..	Calm	..	Engine failed through the L.P. piston-ring breaking	J. Pitcher.
,, 14	Hauturu, m.v.; 10 years	Schooner ..	162	11	..	5 tons general	Leaking	..	Off Cape Egmont ..	W.	8	During heavy weather the vessel was lifted by a sea which left her quickly, causing the vessel to come down heavily. It was subsequently found that the vessel was leaking and that several rivets were loose	R. J. Fowler.
Oct. 7	Muriel, s.s.; 30 years ..	Schooner ..	22	8	..	9 cases fish	Stranded, total loss ..	..	Sumner Bar	S.E.	2	The vessel went ashore in a dense fog. The Court considered that the Master should have either stopped his vessel, taken soundings, and waited for the fog to lift, or he should have altered his course well to the east in order to pick up the fog-signal. The Court found that the casualty was contributed to by an error of judgment on the part of the Master, and ordered him to pay £10 10s. towards the costs of the inquiry	W. Stephen.
,, 14	Tuhoe, m.v.; 18 years ..	Schooner ..	97	9	..	100 tons general ..	Stranded	..	Waihou River ..	S.	Light	The vessel touched a snag in the river. The vessel was beached, and it was found a propeller-blade had been bent	W. Raynes.
,, 17	Middlesex, s.s.; 16 years	Schooner ..	5,460	52	..	1,791 tons general ..	Collision	..	Bluff Harbour ..	W.	6–7	When the tug "Awarua" was coming alongside she struck the "Middlesex" on the fifth and sixth strake below the sheer, making an indentation over an area of 30 in. to a maximum depth of 1⅝ in. in way of No. 2 hatch and slackening sixteen rivets	H. J. Wilde.

Nov.	1	Presto, s.s.; 39 years ..	Cutter ..	20	2	..	Nil	Collision	Auckland Harbour ..	S.W.	Light	The fishing-boat "Joan" crossed the bows of the "Presto" from the port side. The engine was reversed and helm put hard to port, but the "Presto" struck the "Joan" amidships, shattering a few of the seams on the foredeck of the "Presto"	D. E. Bradney.
,,	6	Kaiwarra, s.s.; 18 years	Schooner ..	1,847	39	..	4,410 tons coal ..	Collision	Newcastle, N.S.W. ..	N.E.	4	When swinging from berth assisted by a tug, the towing-wire parted, causing the vessel to swing to starboard. The anchor was dropped, but the vessel continued headway and swinging struck the "Boambee," which was moored at the wharf	C. C. Waters.
,,	6	Hokianga, m.v.; 8 years	Schooner ..	76	9	..	120 tons general ..	Damaged by heavy seas	Hokianga Bar ..	Calm	..	While standing off Hokianga awaiting signal to take the bar, the vessel was struck by a heavy sea, which carried away the connecting-link in port steering chain. The vessel slewed round when another sea broke aboard, carrying away the port side light and damaging the screen. Eventually the vessel got clear of the bar, and later it was found that the rudder had completely gone	J. W. Laing.
,,	11	Pakura, m.v.; 15 years..	Schooner ..	364	17	..	20 tons general ..	Anchor and chain lost	Te Awaiti Anchorage ..	N.E.	4–5	While the vessel was anchored at Te Awaiti during a fresh north-easterly wind with moderate swell, the starboard anchor parted with 43 fathoms of chain. The port anchor was dropped immediately, and a spare anchor shackled on to the remaining 60 fathoms of chain	C. W. Coldicutt.
,,	16	Nikau, m.v.; 28 years ..	..	97	11	..	130 tons cement ..	Stranded	The Snout, Queen Charlotte Sound	N.W.	5–6	During strong wind with heavy rain squalls the vessel stranded on The Snout, but was later refloated under her own power. The plates near the bow were strained, but the vessel did not make any water	E. A. Eden.
,,	29	Claymore, s.s.; 29 years	Schooner ..	119	17	16	60 tons general ..	Stranded	Whangarei River ..	Calm	..	Owing to a dense fog the vessel stranded on a mud-flat bank about 300 yards from the wharf. About 15 tons of cargo were removed, and the vessel floated off on the next tide	A. Johnson.
Dec.	3	Tongariro, s.s.; 11 years	Schooner ..	5,472	54	..	Frozen meat	Defects in rudder	Opua	Calm	..	Slack rivets were discovered in nosing-piece of the Dertz rudder. The rivets were hardened up and thirteen renewed. A slight crack on the top of the nosing was welded	P. B. Clarke.
,,	14	Esme, m.v.; 29 years ..	Cutter ..	19	4	..	5 yards sand	Mast carried away	Whangapoua	Calm	..	While loading sand the forestay carried away at the nip, bringing the mast down. No other damage	G. E. Webb.
,,	29	Kawau, s.s.	Schooner ..	52	10	..	12 tons general ..	Stranded	Matakana River ..	Calm	..	While proceeding up the river, the vessel struck a sunken log. Vessel cleared and proceeded on voyage, apparently undamaged	H. Rutledge.
1938.													
Jan.	8	Pono, m.v.	Schooner ..	30	4	..	30 tons general ..	Broken connecting-rod	Pipiroa	N.W.	2	A connecting-rod on starboard engine broke and engine stopped	J. W. Monaghan.
,,	12	Pupuke, s.s.; 28 years ..	..	68	3	3	..	Damage to pump levers	Auckland	S.	2	The rocker shaft on the pump-levers carried away. Repairs effected on board	C. A. Gouk.
,,	26	Port Whangarei, m.v.; 32 years	Schooner ..	286	14	..	500 tons general ..	Struck wharf	Wellington	S.W.	4	While berthing, the vessel failed to swing, with the result that she collided head on to the wharf, causing a fracture to the port hawse-pipe and plate and damage to the wharf	A. G. Chapman.
,,	30	Tiri, m.v.; 7 years ..	cutter ..	69	9	..	140 tons general ..	Fire	Hauraki Gulf ..	N.	Moderate	A fire was discovered in the lifeboat. The vessel was stopped and the fire extinguished. The lifeboat was badly charred inside	H. W. Parker.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT FROM 1ST APRIL, 1937, TO 31ST MARCH, 1938—*continued*.

Date of Casualty.	Vessel's Name, Class, and Age.	Rig.	Register Tonnage.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Remarks, or Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1938.													
Feb. 2	City of Bagdad, s.s.; 18 years	Schooner ..	4,715	77	..	General ..	Collision	..	Off Otago Heads ..	W.S.W.	2–3	When taking up position to receive the pilot on board, it was observed that the pilot boat was coming on the port side, rounding the stern of the "City of Bagdad" too closely. Apparently the propellers of the "City of Bagdad" struck the pilot boat, which sank immediately after the pilot was put aboard. The pilot boat became a total loss	J. A. White.
„ 9	Pilot, m.v.; 30 years ..	..	6	2	1	Nil	Stranding	..	Nukualofa, Tonga ..	Calm	..	When entering The Narrows from Biha Passage on rounding the beacon the vessel hauled up to Black Buoy, eastern side. The buoy appeared out of position with discoloured water to windward, and course was altered to inside of buoy to apparently clear water, but vessel touched bottom. It was found that two blades of starboard propeller bent and damage to bilge-keel	W. Thomson. A. H. Prosser.
„ 10	Matua, m.v.; 2 years ..	Schooner ..	2,107	59	26	400 tons, general, and 4,000 cases fruit							
„ 16	Seagull, m.v.; 33 years	Schooner ..	50	6	..	44 logs	Collided with wharf ..	..	Whangaroa	E.	5	When approaching the wharf a squall caught the vessel and blew her on to the corner of the wharf, smashing the stock of the starboard anchor	J. C. Hall.
„ 20	Bellbird, s.s.; 32 years	Schooner ..	52	7	..	25 tons butter ..	Collision	..	Kaipara Harbour	N.E.	4–6	On board the "Bellbird" a white light showed close up on the port bow, which light proved to be from a hurricane lamp in the cockpit of the launch "Trial." Suddenly the launch altered course to starboard, crossing the bows of the "Bellbird," the engines of which were put immediately astern, but the "Bellbird" struck the launch a slight blow on its starboard quarter, causing damage to the "Trial"	C. W. Smith.
	Trial	..	..	5	..	..							G. Marinovich
Mar. 29	Durham, m.v.; 3½ years	Schooner ..	6,261	89	..	1,000 tons frozen meat and general	Loss of anchor	..	Stewart Island ..	E.S.E.	4	When anchoring off the Murray River, Stewart Island, the port anchor cable parted in chain-locker, due to a defective link. The port anchor and 20 fathoms of cable were lost	C. R. Pilcher.
	Nor West, m.v.; 20 years	Ketch ..	5	3	..	40 tons general ..	Stranded	..	Waipu River	N.E.	Light	When crossing the bar the vessel stuck on the bar and was later washed up on the South Beach. Vessel later refloated, apparently undamaged	E. Donovan.

SUMMARY OF EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS MASTERS AND MATES FOR THE YEAR ENDED 31ST MARCH, 1938.

Class of Certificate.	Auckland.				Wellington.				Totals.				Total Examinations.
	Final Pass.	Partial Pass.	Failed.	Partial Failure.	Final Pass.	Partial Pass.	Failed.	Partial Failure.	Final Pass.	Partial Pass.	Failed.	Partial Failure.	
Foreign-going, masters and mates	15	8	..	6	3	..	..	..	18	8	..	6	32
Home-trade, masters and mates ..	14	9	..	4	2	..	..	..	16	9	..	4	29
Master, river (steam)	4	..	1	..	1	..	..	..	5	..	1	..	6
Yacht-master, New Zealand waters	..	..	2	..	..	..	..	..	..	..	2	..	2
Signals only	8	..	..	..	..	..	..	..	8	..	..	..	8
Square-rigged endorsement ..	3	..	..	..	..	..	..	..	3	..	..	..	3
Fore and aft endorsement ..	1	..	..	..	..	..	..	..	1	..	..	..	1
Sub-Lieutenant, R.N.V.R. ..	2	..	..	..	3	..	4	..	5	..	4	..	9
Totals	47	17	3	10	9	..	4	..	56	17	7	10	90

SUMMARY OF EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS MARINE ENGINEER FOR THE YEAR ENDED 31ST MARCH, 1938.

Class of Certificate.	Auckland.			Wellington.			Christchurch.			Dunedin.			Other Centres.			Totals.		
	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.
IMPERIAL VALIDITY.																		
First and second class (steam) ..	1	..	1	3	3	6	..	2	2	..	..	..	..	..	..	4	5	9
First and second class (motor) ..	1	..	1	5	4	9	..	..	..	..	..	..	..	..	..	6	4	10
First and second class motor endorsement	..	1	1	8	4	12	..	1	1	1	..	1	..	..	..	9	6	15
Totals	2	1	3	16	11	27	..	3	3	1	..	1	..	..	..	19	15	34
VALID IN NEW ZEALAND ONLY.																		
Third class (steam)	5	5	10	10	2	12	2	3	5	3	7	10	..	..	..	20	17	37
River engineer (steam)	2	1	3	..	1	1	1	..	1	..	..	..	2	..	2	5	2	7
First and second class coastal motor..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Seagoing engineer, P.V.O.S. ..	32	12	44	20	4	24	3	1	4	3	..	3	25	7	32	83	24	107
Restricted limits engineer, P.V.O.S. ..	13	3	16	7	..	7	..	..	..	..	..	..	22	6	28	42	9	51
Totals	52	21	73	38	7	45	6	4	10	6	7	13	49	13	62	151	52	203
Grand totals	54	22	76	54	18	72	6	7	13	7	7	14	49	13	62	170	67	237

SUMMARY OF CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT DURING THE FINANCIAL YEAR ENDED 31ST MARCH, 1938.

Nature of Casualty.	On or near the Coasts of 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	22	..	..	..	..	1	22	..
Damaged	10	3,905	..	1	2,107	..	11	6,012	..
Undamaged	5	325	..	..	..	..	5	325	..
Total strandings	16	4,252	..	1	2,107	..	17	6,359	..
Fires—									
Total loss	..	..	..	..	..	..	..	..	..
Damaged	2	128	..	..	..	..	2	128	..
Undamaged	..	..	..	..	..	..	..	..	..
Total fires	2	128	..	..	..	..	2	128	..
Collisions—									
Total loss	2	15	..	..	..	..	2	15	..
Damaged	6	5,686	..	..	..	..	6	5,686	..
Undamaged	2	4,767	..	1	1,847	..	3	6,614	..
Total collisions	10	10,468	..	1	1,847	..	11	12,315	..
Miscellaneous, including damage by heavy seas to hull and cargo, breakdown of machinery, &c.	19	19,690	..	9	45,753	..	28	65,443	..
Total number of casualties reported	47	34,538	..	11	49,707	..	58	84,245	..

RETURN OF LAND BOILER AND MACHINERY INSPECTIONS DURING THE YEAR ENDED 31ST MARCH, 1938.

Boiler inspections—	
Stationary, portable, and traction boilers	4,880
Steam-pressure vessels	3,732
Air-receivers	815
Total boilers	9,427
Machinery inspections—	
Lifts	3,146
Cranes	466
Hoists	1,461
Machines driven by steam power	11,763
Machines not driven by steam power	68,583
Electric-power-supply station units	137
Tractors	287
Total machinery	85,843
Grand total	95,270

Return of New Boilers inspected for the Year ended 31st March, 1938.

Class.	Made in Dominion.		Imported.		Total.	
	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.
Stationary, portable, and traction	77	2,091	43	2,345	120	4,436
Digesters, jacketed pans, sterilizers, vulcanizers, and other steam-receivers	142	..	242	..	384	..
Air-receivers	85	..	58	..	143	..
Total	304	2,091	343	2,345	647	4,436

Return of the Number of Certificates issued to Land Engine-drivers and Electric-tram Drivers during the Year ended 31st March, 1938.

Class.	Number.	Class.	Number.
Service—		Competency—*continued.*	
First-class engine-driver	4	Locomotive and traction engine driver ..	47
Electric-tram driver	4	Locomotive-engine driver	10
Competency—		Traction-engine driver	21
Extra first-class stationary engineer ..	1	Electric-tram driver	78
First-class engine-driver	29	Electric-tram driver (one-man car) ..	5
Second-class engine-driver	272		
Steam-winding-engine driver	5	Total	477
Electric-winding-engine driver	1		

Return of Land Engineers', Engine-drivers', and Electric-tram Drivers' Examinations held throughout New Zealand during the Year ended 31st March, 1938, showing the Number of Successful and Unsuccessful Candidates.

Place.	Extra First Class.		First Class.		Second Class.		Locomotive and Traction.		Loco-motive.		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 ..	..	..	9	3	31	8	4	1	2	..	..	..	..	..	..	..	17	2	63	14	77
Christchurch ..	..	..	2	2	17	9	3	..	1	..	6	..	..	..	..	..	15	..	44	11	55
Dunedin ..	..	..	1	..	13	3	1	..	1	..	1	..	..	..	..	..	5	..	22	3	25
Gisborne ..	..	..	..	1	2	1	1	..	..	..	..	..	..	..	..	..	..	..	3	2	5
Greymouth ..	..	..	8	7	17	9	5	4	5	..	..	..	1	..	..	..	..	..	36	20	56
Hamilton ..	..	..	1	6	26	6	1	..	..	..	1	..	1	..	..	..	..	..	30	12	42
Invercargill ..	..	..	2	2	33	18	3	..	..	..	5	1	..	..	..	..	..	..	43	21	64
Mangonui ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Napier ..	..	..	..	..	4	1	..	1	..	..	..	..	..	..	..	..	..	..	4	2	6
Nelson ..	..	..	..	..	8	4	..	..	1	..	..	..	..	..	..	..	..	..	9	4	13
New Plymouth ..	..	..	2	5	37	26	1	..	..	1	2	..	..	..	..	..	1	..	43	32	75
Palmerston N. ..	..	..	2	3	19	4	1	..	..	..	..	..	..	..	..	..	..	..	22	7	29
Rawene ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Timaru ..	..	..	..	..	4	1	1	..	..	..	1	..	..	..	..	..	..	..	6	1	7
Wanganui ..	..	..	..	1	9	2	2	1	..	..	..	..	..	..	..	..	5	..	16	4	20
Wellington ..	1	..	2	5	23	5	1	..	..	..	1	..	..	..	..	..	40	2	68	12	80
Westport ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Whangarei ..	..	..	..	4	5	2	1	..	..	..	1	..	..	..	..	..	..	..	7	6	13
	1	..	29	39	250	100	25	7	10	1	18	1	2	..	..	..	83	4	418	152	570

TABLE I.—SHOWING THE NUMBER OF FISHING-VESSELS AND THE NUMBER OF FISHERMEN AND OTHER PERSONS ENGAGED IN THE INDUSTRY AT EACH PORT, FOR THE YEAR ENDED 31ST MARCH, 1938.

Name of Port.	Vessels licensed 1st January, 1937–31st March, 1938.			Vessels engaged in Fishing for Wet Fish.										Vessels engaged in Shell-fishery.						Number of Persons employed.					
				Steam Trawlers.		Motor Trawlers.		Motor-vessels Danish-seining.		Motor-vessels, Set-net and Line Fishing.		Rowing-boats.		Oyster-dredging Vessels.		Mussel-dredging Vessels.		Crayfishing Vessels.		Fishermen.		Others.		Total.	
	Total Number.	Number Fishing.	Number not Fishing.	Who 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.
Awanui and district	14	14	..	..	..	..	..	..	..	..	9	..	5	..	..	..	..	..	..	..	17	..	..	..	17
Mangonui	5	4	1	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	6	..	8	..	14
Hokianga	21	18	3	..	..	..	..	..	..	1	2	..	15	..	..	..	..	..	..	2	24	..	..	2	24
Whangaroa	10	10	..	..	..	..	..	..	..	..	5	..	5	..	..	..	..	..	3	..	15	..	..	..	15
Russell	27	19	8	..	..	..	..	..	..	1	13	..	5	..	..	..	..	..	6	2	27	..	..	2	27
Kaipara	30	27	3	..	..	..	..	..	..	17	10	..	..	..	..	..	..	..	..	19	11	6	10	25	21
Whangarei	14	13	1	..	..	..	..	..	..	2	8	..	3	..	..	..	..	..	1	4	20	..	..	4	20
Auckland (including Manukau and Coromandel)	204	177	27	..	3	..	..	42	3	14	50	2	49	..	..	1	1	13	16	181	182	60	50	241	232
Thames	51	45	6	..	..	..	..	2	1	25	6	3	6	..	..	1	1	..	..	77	22	23	3	100	25
Mercury Bay	14	12	2	..	..	..	..	..	..	2	4	..	3	..	..	..	..	2	5	10	13	2	..	12	13
Tauranga and district	63	42	21	..	..	..	..	1	2†	8	22	1	6	..	..	..	..	..	11	19	44	4	8	23	52
Opotiki	6	6	..	..	..	..	..	..	..	..	2	..	4	..	..	..	..	..	..	..	5	..	..	..	5
Whakatane	6	4	2	..	..	..	..	1	..	..	2	..	1	..	..	..	..	..	..	3	7	..	..	3	7
Raglan	6	6	..	..	..	..	..	..	..	3	1	..	2	..	..	..	..	..	..	5	5	..	..	5	5
Kawhia	8	7	1	..	..	..	..	..	..	3	4	..	..	..	..	..	..	..	..	6	8	..	..	6	8
Gisborne	32	22	10	..	1	3	1	..	..	2	7	..	2	..	..	..	..	..	13	12	29	6	5	18	34
Napier	46	38	8	2	..	4	..	3	1	4	13	1	8	..	..	..	..	..	9	35	48	10	4	45	52
New Plymouth	21	13	8	..	..	..	..	..	..	3	8	..	2	..	..	..	..	..	3	6	22	6	22	12	44
Wanganui	21	15	6	..	..	..	..	..	..	..	8	..	7	..	..	..	..	..	..	..	32	..	..	..	32
Wellington and district	142	100	42	2	..	..	..	..	..	27	27	2	31	..	..	..	..	..	19	108	106	50	2	158	108
Picton and Havelock	35	27	8	..	..	..	..	..	..	8	18	..	1	..	..	..	..	..	2	17	35	..	..	17	35
Blenheim (Wairau)	10	9	1	..	..	3	1	..	..	..	6	..	..	..	..	..	..	..	7	6	13	..	1	6	14
Nelson and district	43	29	14	..	..	..	..	3	..	9	15	..	2	..	..	..	..	..	4	19	23	4	5	23	28
French Pass	42	34	8	..	..	..	..	..	..	10	22	..	2	..	..	..	..	..	..	19	40	..	..	19	40
Westport	12	9	3	..	..	..	2	..	..	..	6	..	1	..	..	..	..	..	4	..	19	..	..	..	19
Greymouth	9	9	..	3	..	2	1	..	..	..	4	..	..	..	..	..	..	..	1	13	6	..	..	13	6
Hokitika	6	5	1	..	..	..	1	..	..	..	3	..	2	..	..	..	..	..	..	..	15	..	..	..	15
Kaikoura	26	23	3	..	..	..	1	..	..	9	7	2	1	..	..	..	..	1	7	19	15	1	..	20	15
Akaroa	23	16	7	..	..	4	..	..	1	3	2	1	5	..	..	..	..	..	8	16	11	..	4	16	15
Lyttelton	57	41	16	1	1	1	..	..	2	6	5	..	23	..	..	..	..	..	5	32	30	15	..	47	30
Lake Ellesmere	31	25	6	..	..	..	..	..	..	..	5	4	16	..	..	..	..	..	..	8	30	..	..	8	30
Timaru	29	26	3	..	1	4	11	3	3	9	11	..	..	..	..	..	..	..	..	42	..	3	..	45	..
Oamaru and Moeraki	35	28	7	..	..	..	..	..	..	13	15	..	1	..	..	..	..	..	5	19	22	3	4	22	26
Dunedin and Otago district	111	102	9	1	1	19	13	..	..	13	39	4	12	..	..	..	..	..	15	104	76	32	3	136	79
Invercargill and Bluff district, also Stewart Island	132	107	25	..	..	..	2	..	..	45	42	1	6	9	2	..	..	..	1	176	89	12	33	188	122
Chatham Islands	17	15	2	1‡	..	..	..	..	..	10	4	..	..	..	..	..	..	..	..	48	10	3	3	51	13
Totals	1,359	1,097	262	10	7	40	33	55	13	247	407	21	228	9	2	2	2	16	145	1,027	1,077	240	165	1,267	1,242

* Part-time vessels may appear in more than one place. † One motor vessel and one steamer. ‡ Fish-carrier "South Sea." Vessel does not trawl, but engages in line-fishing.

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, 1938.

Name of Port.	Principal Kinds of Fish caught.	Quantity landed (Fish).	Total Value (Fish).	Shell Fishery (excluding Toheroa).							Grand Total Value.
				Oysters.	Value.	Mussels.	Value.	Crayfish.	Value.	Total Value (Shell-fish)	
		Cwt.	£	Sacks.	£	Sacks.	£	Cwt.	£	£	£
Awanui and district	Snapper, mullet, groper, flounder	1,128	1,145	..	..	..	..	..	..	..	1,145
Mangonui	Snapper, flounder, groper, mullet, tarakihi	91	132	..	..	..	..	..	..	..	132
Hokianga	Mullet, soles, flounder	927	715	..	..	..	..	..	..	..	715
Whangaroa	Mullet, snapper, groper	483	448	..	..	..	..	283	266	266	714
Russell	Snapper, mullet, flounder, groper, crayfish, kingfish, tarakihi, gurnard, maomao	1,294	1,233	..	..	..	..	168	199	199	1,432
Kaipara	Flounder, snapper, mullet	2,642	5,878	..	..	..	..	..	..	..	5,878
Whangarei	Snapper, groper, mullet, blue cod, flounder	990	1,579	..	..	..	..	4	5	5	1,584
Auckland (including Manukau and Coromandel)	Snapper, flounder, tarakihi, groper, gurnard, pioke, dory, mullet, crayfish, blue cod, kingfish, trevally, frost-fish, barracouta, piper, oysters (rock), mussels, sardines	140,234	133,159	4,203	5,043	6,776	1,679	1,364	1,887	8,609	141,768
Thames	Snapper, flounder, dab, mullet, gurnard, dory, pioke, mussels	18,692	23,174	..	..	635	190	..	..	190	23,364
Mercury Bay	Snapper, tarakihi, groper, gurnard, blue cod, flounder, kingfish, crayfish	1,422	1,254	..	..	..	..	1,047	1,365	1,365	2,619
Tauranga and district	Snapper, tarakihi, groper, mullet, blue cod, kingfish, trevally, pioke	3,669	3,670	..	..	..	..	143	214	214	3,884
Whakatane	Snapper, tarakihi, groper	2,117	2,122	..	..	..	..	..	..	..	2,122
Opotiki	Snapper, flatfish, groper, gurnard, tarakihi	64	140	..	..	..	..	..	..	..	140
Raglan	Snapper, flounder	412	740	..	..	..	..	..	..	..	740
Kawhia	Snapper, flounder, mullet	710	749	..	..	..	..	..	..	..	749
Gisborne	Tarakihi, gurnard, snapper, groper, sole, flounder, kahawai, crayfish	5,789	6,859	..	..	..	..	622	552	552	7,411
Napier	Tarakihi, gurnard, sole, snapper, groper, flounder, barracouta, crayfish	13,539	17,639	..	..	..	..	317	384	384	18,023
New Plymouth	Snapper, groper, crayfish, tarakihi, cod, gurnard, kingfish, kahawai	1,457	1,952	..	..	..	..	33	46	46	1,998
Wanganui	Snapper, groper, blue cod, flounder, kahawai	249	322	..	..	..	..	..	..	..	322
Wellington and district	Tarakihi, blue cod, groper, ling, hake, snapper, barracouta, moki, butterfish, skate, warehou, crayfish, flounder, sole, kahawai, trevally, red cod, kingfish, gurnard, conger-eel	56,742†	61,090	..	..	..	..	2,150	2,980	2,980	64,070
Picton and Havelock	Flounder, butterfish, moki, blue cod, groper, crayfish	3,952	6,895	..	..	..	..	648	466	466	7,361
Blenheim (Wairau)	Sole, flounder, moki, tarakihi, red cod, snapper, butterfish, groper, gurnard, crayfish	1,521	2,003	..	..	..	..	377	295	295	2,298
Nelson and district	Snapper, flounder, dab, groper	4,212	5,756	..	..	..	..	73	119	119	5,875
French Pass	Blue cod, groper, sole, flounder, snapper, butterfish, gurnard	3,537	5,185	..	..	..	..	..	..	..	5,185
Westport	Sole, snapper, groper, ling, flounder, crayfish, gurnard, turbot, red cod	163	267	..	..	..	..	28	32	32	299
Greymouth	Sole, groper, snapper, flounder, turbot, tarakihi, kingfish, red cod, ling	1,950	2,575	..	..	..	..	1	3	3	2,578
Hokitika	Groper, ling, snapper	149	213	..	..	..	..	..	..	..	213
Kaikoura	Groper, trumpeter, hake, ling, tarakihi, bass, blue cod, crayfish	3,063	5,817	..	..	..	..	1,606	1,070	1,070	6,887
Akaroa	Flounder, sole, groper, brill, red cod, blue cod, crayfish, barracouta, kingfish, kahawai, butterfish, moki	4,052	6,301	..	..	..	..	393	297	297	6,598
Lyttelton	Flounder, dab, groper, tarakihi, ling, gurnard, red cod, elephant-fish	10,784	17,069	..	..	..	..	127	101	101	17,170
Lake Ellesmere	Flounder, herring	852	1,890	..	..	..	..	..	..	..	1,890
Timaru	Flounder, sole, groper, ling, red cod, blue cod, kingfish, elephant-fish, gurnard, brill, barracouta	15,657	26,798	..	..	..	..	1	1	1	26,799
Oamaru and Moeraki	Groper, blue cod, red cod, ling, barracouta, crayfish	3,070	4,402	..	..	..	..	924	502	502	4,904
Dunedin and Otago district	Sole, groper, flounder, snapper, red cod, blue cod, trevally, ling, moki, brill, barracouta, crayfish, gurnard, mullet, garfish, tarakihi, red perch, kingfish, trumpeter, skate, kahawai	29,072	38,183	..	..	..	..	1,903	1,176	1,176	39,359
Invercargill, Bluff, and district	Blue cod, groper, flounder, sole, greenbone, trevally, ling, kingfish, crayfish	4,673	7,697	66,387	48,125	..	..	..	..	48,125	55,822
Stewart Island	Blue cod, groper, trumpeter, greenbone, moki	9,881	14,657	..	..	..	..	..	..	..	14,657
Chatham Islands	Blue cod, groper	6,448‡	3,808	..	..	..	..	..	..	..	3,808
	Totals	355,687	413,516	70,590	53,168	7,411	1,869	12,212	11,960	66,997	480,513

* Not including whitebait. † Includes 9,458 cwt blue cod caught at the Chatham Islands and landed at Wellington. ‡ Exclusive of fish shipped direct to Wellington from fishing-boats by s.s. "South Sea."

TABLE IIA.—SHOWING APPROXIMATELY THE QUANTITIES OF DIFFERENT KINDS OF FISH LANDED AT CERTAIN PORTS DURING THE YEAR ENDED 31ST MARCH, 1938.

—	Russell.	Kaipara.	Whangarei.	Auckland.*	Thames.	Mercury Bay.	Tauranga and District.	Gisborne.	Napier.	New Plymouth.	Wellington and District.	Blenheim. (Wairau.)	French Pass.	Nelson and District.	Westport.	Greymouth.	Kaikoura.	Akaroa.	Lyttelton.	Timaru.	Oamaru-Moeraki.	Bluff-Invercargill-Riverton.	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.
Barracouta ..	..	..	..	2	..	..	..	..	..	..	796	..	32	..	..	..	27	..	24	43	2	..	..
Blue cod	..	..	1	23	1	16	5	3	19	3	9,591	3	1,479	120	..	..	54	6	2	20	584	3,321	6,153
Butterfish (greenbone)	2	..	..	1	11	..	3	..	..	..	789	9	74	8	..	..	103	5	4	..	..	25	..
Elephant-fish ..	..	..	..	..	..	..	..	..	..	..	21	..	..	..	..	..	..	1,873	1,137	583	..	..	..
Flounders	29	2,127	36	4,447	3,044	24	10	22	26	1	208	6	10	247	5	33	..	201	267	1,900	..	454	..
Gurnard	3	3	1	3,028	954	4	3	337	3,376	1	169	2	1	186	28	216	..	338	278	956	..	..	..
Hake	..	..	..	8	..	..	..	..	..	..	4,252	..	15	2	2	3	23	1	296	4	40	..	..
Hapuku (groper) ..	35	..	12	1,600	1	66	463	1,265	2,052	84	9,740	47	688	110	41	119	1,267	230	406	2,752	2,000	367	295
John Dory ..	..	..	..	1,575	2	..	..	..	..	..	54	..	..	16	..	..	..	..	..	6	..	3	..
Kahawai	21	3	..	1	20	..	..	2	1	..	37	..	..	11	..	..	..	..	..	..	..	..	..
Kingfish	..	..	..	41	4	11	1	..	1	..	27	..	45	..	..	1	..	..	..	..	..	..	..
Ling	..	..	..	..	..	..	..	1	..	6	2,426	242	..	..	8	41	928	358	1,453	3,633	117	..	..
Maomao	34	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Moki	..	..	..	..	..	..	..	160	1	..	1,337	30	17	..	..	..	10	4	97	..	29	3	..
Mullet	477	183	47	848	7	26	29	3	1	..	..	..	..	..	..	..	..	..	..	..	..	8	..
Pioke	..	..	..	833	279	..	..	..	..	..	22	..	..	..	..	4	..	1	50	52	..	..	..
Red cod	..	..	..	..	..	..	2	..	..	..	1,347	12	..	59	..	37	1	138	270	1,921	203	..	..
Snapper	668	318	853	97,296	13,400	1,142	2,951	181	211	1,358	1,848	5	608	3,051	4	28	10	..	..	18	..	..	..
Soles	..	..	..	..	..	..	..	14	1,412	..	20	2	..	78	55	1,202	42	440	320	2,256	..	298	..
Tarakihi	..	..	..	24,240	1	125	172	1,455	1,907	..	18,538	15	13	4	5	145	1	102	3,971	23	1	..	..
Trevally	..	3	35	401	3	..	1	..	..	..	115	..	..	..	..	..	..	..	..	..	..	..	..
Trumpeter ..	..	..	..	..	..	..	..	2	..	..	66	..	..	..	..	..	569	..	8	..	..	5	..
Warehou	..	..	..	..	..	..	..	..	..	..	2,374	..	..	..	..	..	..	27	18	..	..	..	..
Whiting	..	..	..	..	..	..	..	..	..	..	391	..	..	..	..	..	..	..	627	..	..	..	..
Mixed flat fish ..	25	..	4	521	954	..	1	263	521	1	21	409	14	271	8	120	..	56	327	691	..	145	..
Mixed round fish and kinds not specified	..	5	1	5,369	11	6	28	2,081	4,011	3	2,553	739	541	49	7	1	28	272	1,229	799	94	44	..
Totals ..	1,294	2,642	990	140,234	18,692	1,422	3,669	5,789	13,539	1,457	56,742†	1,521	3,537	4,212	163	1,950	3,063	4,052	10,784	15,657	3,070	4,673	6,448‡

* Includes Coromandel.

† Total includes 9,458 cwt. blue cod landed at Wellington by fish-carrier "South Sea" from Chatham Islands.

‡ Exclusive of fish shipped direct to Wellington from fishing-boats by s.s. "South Sea."

TABLE IIB.—SHOWING THE QUANTITIES OF DIFFERENT KINDS OF FISH* CAUGHT BY THE DIFFERENT METHODS OF FISHING FOR THE YEAR ENDED 31ST MARCH, 1938.

—	Trawl.						Danish-seine.						Other Nets.						Lines.								Grand Total.	
	Steam.		Motor.		Total.		Steam.		Motor.		Total.		Motor.		Row-boat.		Total.		Steam.		Motor.		Row-boat.		Total.			
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Barracouta ..	1,538	514	12	3	1,550	517	..	..	2	1	2	1	9	3	5	3	14	6	..	..	624	300	1	1	625	301	2,191	825
Blue cod	1	2	4	5	5	7	..	..	11	17	11	17	..	..	..	..	..	..	189	49	30,745	33,950	22	42	30,956	34,041	30,972	34,065
Butterfish (greenbone)	..	..	2	4	2	4	..	..	12	5	12	5	1,283	2,538	24	38	1,307	2,576	..	..	..	..	..	..	..	..	1,321	2,585
Elephant-fish ..	803	1,376	2,224	3,057	3,027	4,433	..	..	367	435	367	435	234	165	..	..	234	165	..	..	4	7	..	..	4	7	3,632	5,040
Flounder	191	468	1,825	4,665	2,016	5,133	2	2	4,654	12,408	4,656	12,410	7,044	17,575	1,886	4,298	8,930	21,873	..	..	..	..	..	..	..	..	15,602	39,416
Gurnard	1,358	1,104	2,137	1,822	3,495	2,926	..	..	5,434	3,060	5,434	3,060	649	240	26	9	675	249	..	..	342	198	28	24	370	222	9,974	6,457
Hake	2,940	4,576	10	19	2,950	4,595	..	..	16	27	16	27	..	..	..	..	..	..	..	..	2,578	4,373	..	..	2,578	4,373	5,544	8,995
Hapuku (groper) ..	1,587	2,682	116	185	1,703	2,867	..	..	414	701	414	701	2	3	..	..	2	3	17	25	28,965	50,334	85	142	29,067	50,501	31,186	54,072
John Dory ..	1,019	1,001	..	..	1,019	1,001	..	..	636	619	636	619	..	..	..	..	..	..	..	..	50	65	..	..	50	65	1,705	1,685
Kahawai	..	..	..	..	..	..	..	..	..	..	..	..	84	42	21	16	105	58	..	..	1	1	1	1	2	2	107	60
Kingfish	..	..	1	1	1	1	..	..	24	24	24	24	1	1	..	..	1	1	..	..	88	97	2	2	90	99	116	125
Ling	2,281	2,406	646	579	2,927	2,985	..	..	132	156	132	156	2	5	..	..	2	5	..	..	7,504	6,828	2	3	7,506	6,831	10,567	9,977
Maomao	..	..	..	..	..	..	..	..	..	..	..	..	30	14	..	..	30	14	..	..	8	7	..	..	8	7	38	21
Moki	1,392	1,323	184	201	1,576	1,524	..	..	..	..	..	..	264	270	8	7	272	277	..	..	1	1	..	..	1	1	1,849	1,802
Mullet	..	..	..	..	..	..	..	..	1	1	1	1	2,585	2,177	232	203	2,817	2,380	..	..	..	..	..	..	..	..	2,818	2,381
Pioke	113	29	71	40	184	69	..	..	229	88	229	88	969	166	27	4	996	170	..	..	71	10	..	..	71	10	1,480	337
Red cod	2,072	1,299	2,247	1,391	4,319	2,690	..	..	673	451	673	451	132	81	468	333	600	414	..	..	1,297	928	111	94	1,408	1,022	7,000	4,577
Snapper	10,208	9,527	135	133	10,343	9,660	226	211	88,133	81,192	88,359	81,403	10,850	10,257	82	83	10,932	10,340	..	..	17,308	18,061	908	1,071	18,216	19,132	127,850	120,535
Sole	2,512	4,368	9,223	17,978	11,735	22,346	..	..	2,580	6,338	2,580	6,338	228	468	7	16	235	484	..	..	..	..	..	..	..	..	14,550	29,168
Tarakihi	45,606	45,149	3,391	3,993	48,997	49,142	..	..	6,723	6,257	6,723	6,257	31	33	..	..	31	33	..	..	512	562	69	96	581	658	56,332	56,090
Trevally	39	27	..	..	39	27	..	..	326	110	326	110	183	109	11	10	194	119	..	..	2	2	..	..	2	2	561	258
Trumpeter	8	17	..	..	8	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	807	1,461	..	..	807	1,461	815	1,478
Warehou	211	194	..	..	211	194	..	..	..	..	..	..	2,391	2,307	616	332	3,007	2,639	..	..	5	4	..	..	5	4	3,223	2,837
Whiting	362	506	..	..	362	506	..	..	..	..	..	..	641	833	..	..	641	833	..	..	15	21	..	..	15	21	1,018	1,360
Mixed flat fish ..	555	791	2,827	5,333	3,382	6,124	..	..	1,951	4,847	1,951	4,847	762	2,064	52	107	814	2,171	..	..	..	..	..	..	..	..	6,147	13,142
Mixed round fish and kinds not specified	8,797	6,838	3,258	3,285	12,055	10,123	..	..	3,896	2,699	3,896	2,699	453	303	174	161	627	464	..	..	2,468	2,888	43	54	2,511	2,942	19,089	16,228
Total ..	83,593	84,197	28,313	42,694	111,906	126,891	228	213	116,214	119,436	116,442	119,649	28,827	39,654	3,639	5,620	32,466	45,274	206	74	93,395	120,098	1,272	1,530	94,873	121,702	355,687	413,516

* Not including whitebait.

TABLE III.—SHOWING THE NUMBER OF SACKS AND VALUE OF THE OYSTERS OBTAINED IN THE DOMINION DURING THE YEAR ENDED 31ST DECEMBER, 1937.

Locality.	Quantity.	Value (Wholesale).
DREDGE OYSTERS.		
	Sacks.	£ (N.Z.).
Foveaux Strait	66,387	48,125
ROCK OYSTERS.		
Bay of Islands	1,810	
Whangarei Harbour	131	
Kaipara Harbour	..	
Hauraki Gulf*	1,657	5,043
Coromandel	326	
Great Barrier Island	259	
Whangaruru Harbour	20	
Total	4,203	
Grand total	70,590	53,168

* Takatu to Gull Point, 44; South Shore, Tamaki Strait, 50; Kawau, 136; Rakino, 72; Rangitoto, 133; Motutapu, 110; Brown's Island, 2; Motuihi, 30; Waiheke, 852; Ponui, 216; Tamaki River, 12.

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, 1938.

Whaling-station.	Number of Whales taken.	Species.	Yield of Oil.	Quantity of Bonedust and Fertilizer.
			Tons.	Tons.
Marlborough Sounds (Picton)	55	Humpback ..	280	16
	1	Blue whale ..		

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, 1938.

Fish and Shell-fish imported.

Kind of Fish.	Quantity.	Value.
		£ (N.Z.).
Anchovies, salted, in containers of 28 lb. or over	42 cwt.	247
Other fish—		
Frozen, smoked, pickled, dried, or salted	1,169 cwt.	3,794
Potted or preserved in tins	5,151,370 lb.	201,819
Total value	..	205,860

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, 1938—*continued.*

Fish and Shell-fish exported.

Kind of Fish.	Exporting Ports.	Quantity.	Value.
(a) Produce of New Zealand.			£(N.Z.)
Oysters, fresh	Auckland	704 doz.	31
	Wellington	9,286 doz.	231
	Invercargill	55,480 doz.	689
	Total	65,470 doz.	951
Blue cod, frozen	Auckland	9 cwt.	45
	Wellington	8,110 cwt.	30,492
	Lyttelton	35 cwt.	80
	Dunedin	366 cwt.	1,151
	Invercargill	8,807 cwt.	29,412
	Total	17,327 cwt.	61,180
Snapper, frozen	Auckland	10,076 cwt.	31,722
	Wellington	528 cwt.	1,215
	Total	10,604 cwt.	32,937
Flounder, frozen	Auckland	2,178 cwt.	7,984
	Wellington	613 cwt.	2,269
	Lyttelton	388 cwt.	1,274
	Dunedin	335 cwt.	1,208
	Invercargill	357 cwt.	1,111
	Total	3,871 cwt.	13,846
Tarakihi, frozen	Auckland	4,460 cwt.	17,223
	Wellington	624 cwt.	1,384
	Lyttelton	103 cwt.	312
	Dunedin	1,186 cwt.	3,179
	Invercargill	281 cwt.	750
	Total	6,654 cwt.	22,848
Crayfish, frozen	Auckland	170 cwt.	599
	Wellington	310 cwt.	798
	Lyttelton	136 cwt.	598
	Dunedin	334 cwt.	1,144
	Total	950 cwt.	3,139
Other kinds, frozen	Auckland	289 cwt.	1,758
	Wellington	1,791 cwt.	3,779
	Lyttelton	782 cwt.	1,473
	Dunedin	2,368 cwt.	5,555
	Invercargill	400 cwt.	1,126
	Total	5,630 cwt.	13,691
Total exports of frozen fish from New Zealand	,,	45,036	147,641
Smoked, dried, pickled, or salted	,,	1,088 cwt.	2,896
Preserved in tins—			
Crayfish	Auckland	159 lb.	6
	Wellington	461 lb.	38
	Dunedin	29,694 lb.	2,374
	Invercargill	784 lb.	62
	Total	31,098 lb.	2,480
Oysters	Auckland	2,573 lb.	184
	Wellington	4,736 lb.	251
	Dunedin	30,262 lb.	2,151
	Invercargill	170,889 lb.	8,348
	Total	208,460 lb.	10,934
Toheroa	Auckland	46,868 lb.	3,045
	Dunedin	330 lb.	28
	Total	47,198 lb.	3,073
Whitebait	Auckland	45,140 lb.	4,375
	Wellington	13,156 lb.	1,381
	Dunedin	28,560 lb.	3,555
	Greymouth	7,690 lb.	430
	Invercargill	151 lb.	17
	Total	94,697 lb.	9,758
Value of total exports of New Zealand fish and shell-fish	,,	..	177,733
(b) Re-exports.			
Potted and preserved in tins	,,	15,907 lb.	618

APPENDIX I.

Report on Portobello Marine Biological Station.

Dunedin, 22nd April, 1938.

The Hon. the Minister of Marine, Wellington.

Sir,—

I have the honour to submit the annual report of the Portobello Marine Biological Station for the year ended 31st March, 1938.

The members of the Board are Professor Benham (Chairman), Mr. L. D. Coombs, Mr. A. E. Hefford, Mr. C. Howes, Professor Malcolm, Mr. J. McG. Wilkie, and Mr. Chas. Wilson. Mr. G. Howes acts as Honorary Secretary and Treasurer.

We have one employee—Mr. Adams—and the work and care of the station are dependent on his services. Mr. Howes gives spare time to assist Mr. Adams whenever possible.

Temperature and weather reports have been continued over this past year. These records have been continuous for thirty years, and cover the temperature of sea-water in the harbour as well as in the ponds and in the aquarium tanks. Weather reports are sent to the Government Meteorologist.

April, 1937, was a cold month, and wintry conditions prevailed. The temperature of the sea-water dropped 5° during the month.

May was marked by overcast weather and much rain, but the sea temperature remained steady.

June brought a decided drop in temperature, and the heater had to be started to warm slightly the water passing through the aquarium tanks. At the end of the month an exceptionally heavy frost killed a number of fish in the outside ponds and one or two in the inside aquaria.

July was the coldest July on our records for many years. Hard frosts killed most of the fish in the outside ponds, but by the end of the month the temperature started to rise slowly.

August weather was fairly settled and warmer. Water temperature 4° higher than in July, and by the end of the month the heater was discontinued.

September showed a further rise in water temperature.

October, November, and December gave gradually increasing warmth, until in January, 1938, the supply water, which was 16·5° C. (61·7° F.) at 9 a.m., rose during the day to 22·5° C. (72·5° F.).

Fish were not adversely affected by the high temperature.

February this year produced the highest sea-temperature record for this month since the Station came into existence. The average in February at 9 a.m. has been 14·5° C. (58·1° F.) over a number of years. This year the average at 9 a.m. was 18·5° C. (65·3° F.).

During *March* there was a decided drop; but still the records showed 3° (5·4° on the Fahrenheit scale) higher than is usually recorded at this time of the year.

Although warm weather did not affect the fish, the winter cold causes them to gradually cease feeding with the exception of red cod (*Physiculus bacchus*) and wrasse (*Pseudolabrus* sp.), which do not appear to be so susceptible as most other species.

Cold weather, especially the exceptional cold in July, killed most of the fish in the outside ponds, including garfish, kelp-fish, and an octopus; but red cod, wrasse, and mullet survived.

During cold weather there are not many fish available from the harbour, and it is sometimes a problem to secure sufficient for fish food; but the fish-traps can always be relied upon to produce a few of the common fish such as wrasse and pigfish.

An exceptional quantity of loose, floating weed occurred from August to December, making it almost impossible to use set-nets, drag nets, or fish-traps without constant work taking them ashore and cleaning them. Conditions were much better by February, and kelp-fish (*Odax vittatus*), greenbone (*Coridodax pullus*), weedfish (*Notoclinus fenestratus*), large numbers of spotties (*Pseudolabrus celidotus*), wrasse (*Pseudolabrus miles*), pigfish (*Congiopodus leucopoecilus*), trigger-fish (*Pseudomonocanthus scaber*), and sea-horses (*Hippocampus abdominalis*) were taken in the traps, along with a variety of crabs, starfish, and bullies. During March the traps were exceptionally successful, and one trap when lifted contained eight greenbone and kelp-fish and forty spotties and wrasse. Three dozen kelp-fish and greenbone were secured by this trap in four days, along with over one hundred wrasse and spotties. Large mullet (*Agonostomus forsteri*) were also caught in fair numbers by the set-net. The use of fish traps has the great advantage that the fish are secured in perfect condition and uninjured. An odd marble-fish (*Haplodactylus meandratus*), Maori-chief (*Notothenia macrocephala*), and small weedfish (*Notoclinus fenestratus*) were also taken, and one specimen of the bearded rockling (*Motella novae zelandiae*); but the season has proved rather disappointing, in that quite a variety of fish we expect to see have not appeared.

Tarakihi (*Dactylosparus macropterus*) are usually common, but only a very few small ones have appeared. Small warehou (*Seriolella brama*) were very plentiful in December. No red cod have been taken since December.

A 300 c.p. light suspended over the jetty at night has provided some welcome additions, but because of time, weather, and tides it is only on an occasional night that conditions are suitable for its use. The light attracted garfish (*Hemirhamphus intermedius*) in May and again in September and from then on until April. They are mostly small, but large gravid females appear in February and March. Small mullet (*Agonostomus forsteri*) and cucumber-smelt (*Retropinna retropinna*) occur right through the year. In July a fine lamprey (*Geotria australis*) was taken at the light. This fish lived in the aquarium tank for six months, and during this period refused to feed—a second lamprey was

taken in September which also refused food. A number of squilla (*Lysiosquilla spinosa*) (the mantis shrimp) appeared in August, and one night twenty fine specimens were taken. The specimens we secured varied from ½ in. to 2 in. They are rarely seen in Otago waters. A variety of sea-worms and fish-lice are generally exceedingly plentiful when the light is turned on, and occasionally small squid and octopus are attracted. Swimming crabs (*Nectocarcinus antarcticus*) are fairly common. One species of sea-worm (*Nereis* sp.) grows to a fair size, and, being bright red in colour with a golden egg mass attached, they form a most interesting sight when they appear in hundreds swimming rapidly in graceful curves through the water. Mullet chase and seize these worms, but always fresh supplies appear. Using this worm as a bait on a small hook it is possible to catch mullet and warehou in the area illuminated by the light.

During the months December to April the tremendous shoals of whale-feed (*Munida gregaria*) which covered the surface of the harbour waters have made collecting by light-attraction rather unproductive, as the masses of red whale-feed are attracted by the light, and swim up in such vast numbers that it is impossible to see anything else in the water.

Whale-feed appeared near the station in November, and gradually the following swarms arrived until by the end of March they were in masses everywhere. Large numbers were stranded on the beaches. They form a limitless supply of food for all fish, and it is surprising to note that the number of fish in the harbour this year is rather below normal. During December dogfish (*Mustelus antarcticus*), moki (*Latris ciliaris*), warehou (*Seriolella brama*), small mullet (*Agonostomus forsteri*), garfish (*Hemirhamphus intermedius*,) and a large number of wrasse (*Pseudolabrus* sp.) were in the vicinity of the Station, and a few blue cod (*Parapercis colias*) were also taken.

Flathead (*Kathetostoma giganteum*), greenbone (*Coridodax pullus*), kelp-fish (*Odax vittatus*), trigger-fish (*Pseudomonacanthus scaber*), black cod (*Notothenia microlepidota*), and pigfish (*Congiopodus leucopoecilus*) were more or less plentiful, and a few kahawai (*Arripis trutta*) appeared in the vicinity of the Station.

The seine net gave only poor results, a few small flounder, leather-jackets, and pigfish being the usual haul.

The set-net produced large moki and dogfish, and the latter were rather too plentiful. The net could not be left for any length of time without risking considerable damage.

Several medium-sized octopus (*Octopus maorium*) appeared in March, and a couple were secured for the aquarium, along with one or two fine jellyfish which floated in on the tide. Small, not yet identified, squid laid eggs in the tank, and these eggs took seventy-five days to hatch out.

Professor Percival, of Canterbury College, sent a number of elephant-fish eggs (*Callorhynchus milii*), and these, with skate eggs (*Raja nasuta*) laid by a captive female skate, were retained for hatching. Several lots of elephant-fish eggs were sent back to Canterbury College as the embryos showed development —a very interesting and perhaps unique experiment. Both skate and elephant-fish embryos were taken from their egg-capsules and kept alive in glass jars, and developed quite normally. They lived equally well whether left in their normal state or taken out of their protective cases, and the young fish with the large yolk-sac attached were very interesting to visitors. The yolk-sac of the elephant-fish was completely absorbed by October ; but we could not induce them to take any food, and although they were tried in various ways and different situations they all died. Their delicate snouts were destroyed by bumping up against the walls of the tanks and ponds.

Small skate hatched at the same time were quite easy to keep. The incubation period of the skate from the date of egg deposition is 362 days—*i.e.*, twelve months.

From the time we received the elephant-fish eggs their incubation period was 314 to 326 days—*i.e.*, more than ten months.

Several trips were made to Otago Heads for specimen fish for the aquarium, but the results were not evry favourable, few fish of special interest being obtained.

Mr. Hansen, of the fishing-launch " Grace," brought in some fine specimens for the tanks, and Mr. Hayward, of the " Stina," presented a fine torpedo-ray (*Narcobatis fairchildi*) 39 in. in length, which lived for some time, and proved attractive to visitors. This fish was capable of giving a quite powerful electric shock. We have also to thank Captain Black, of the " Hananui," for a very fine collection of large anemones, hermit-crabs, spider-crabs, and star-fish, including the curious *Panopaea zealandica*.

Mr. Adams accompanied the " Hananui " on one trip, and spent two days between Moeraki and Oamaru, but was unfortunate in striking very bad weather. He was able to bring back some fine spider-crabs, sea-slugs, brittle-stars, and sea-urchins.

A number of fish have been sent to the Station by fishermen, and these have been identified for them.

Three lots of various forms of marine life (live material) have been collected for the use of the Otago University, and we have been able to supply to their specification.

The Sea-fisheries Investigation Committee visited the Station in April, 1937. Mr. Hefford, Chief Inspector of Fisheries, paid an official visit in February, and Mr. Campbell, Secretary of Marine, visited the Station in March.

Professor Marples, of the Otago University (recently arrived from England), with University students made a visit, and expressed surprise at the variety of life held in the aquaria.

The Dunedin Naturalist Field Club, various school classes, and fifty-three students from the Training College were shown over the aquarium, and were very interested in the particulars and information given by Mr. Adams. The Training College has arranged to repeat this trip at an early date.

Bad weather early last year cut down the number of visitors, but a surprising number have been to the Station during recent months despite the assumed difficulty of access and the expense of bringing down a family party.

Experiments with balanced aquaria have been continued and satisfactory results obtained.

The collection of preserved crabs has been overhauled, and a lot of decomposed and useless material rejected, the balance being cleaned and fresh preservative used. Crabs are being collected and sent to Mr. Melbourne Ward, Sydney, and we are building up a named collection. Sea-slugs are being gathered and sent to Miss Joyce Allan, Sydney, and named duplicates secured. We have found some interesting material, including *Atagema carinata*, described in 1832 from Thames Firth, later reported from Dusky Sound, and no other records. One *Dendrodoris* is not yet named, although specimens have previously been secured.

At the end of September, 1937, a heavy gale tore off the roof of the large salt-water storage tank, and this had to be recovered. The Station was closed for several weeks, and the storage tanks, the pipes, and the aquarium tanks were all thoroughly cleaned. A large amount of silt had to be removed from the supply tank, and although this had not been disturbed for many years only a few shell-fish and sea-slugs were found in the tank. Forty-eight sheets of new G.C. iron were required to cover it. The aquarium was overhauled, and the pipes and tank frames cleaned and painted. The whole work was completed in sixteen days, and Mr. Adams did most of the work himself, but was provided with assistance when he required it. During the work the fish were released in the outside ponds, and when ready for restocking a fair supply of new specimens were collected. While shore collecting a number of the Æolid, *Fiona narina* were secured, and of these one specimen about 1 in. in length spawned on the side of a glass jar.

By the end of October the whole Station was fully stocked, and again in good order.

Among the repairs necessary during the year a wharf-pile and a fore and aft stringer were replaced in the jetty, and a 9 in by 4 in. ironbark 25 ft. long was used to strengthen the wharf. Decking was replaced where necessary. The screens around the valves of the ponds were renewed. The launch underwent the usual overhaul and repainting. Moorings were inspected, and renewed where necessary, and the dingy was repaired and repainted on several occasions. This boat has had continual heavy use for thirty-years and is not as sound as it used to be, but is still giving good service.

A heavy growth of weed in the ponds makes keeping them clear a continual effort, and an unusual amount of drifting weed caused trouble with both nets and traps. Even the kelp near the Station has not been in a healthy condition. In December it was covered with slime, and if placed in the aquarium tanks rotted quickly and caused the water to become cloudy. Kelp-fish would not eat it when in this condition. It is now again in a healthy state.

A strong growth of slime weed in the ponds is again showing, and entails a good deal of work to keep the ponds clear.

The last English lobster, a fine male, died aged about nineteen years, finally concluding the experiment of trying to introduce lobsters to New Zealand waters. This lobster has lived in our ponds for ten years.

To maintain the Station in good repair, doing the necessary work, and at the same time keeping the aquarium tanks full of interesting living material, as well as doing a certain amount of scientific work is quite a noteworthy performance on the small grant of £300 per annum. In addition to the usual work, quite a lot of time is occupied in showing visitors around, and explaining the material shown.

I have, &c.,
WM. B. BENHAM, F.R.S.,
Chairman.

APPENDIX II.

LEGISLATION.

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

PART I.

9th April, 1937 ..	Prohibiting trawling and Danish-seining off Bay of Islands, Doubtless and Rangaunu Bays, and Danish-seining off part of east coast of Otago Province.
27th July, 1937 ..	Amending the Salt-water Fisheries Regulations by defining "herring" and "sardine," and fixing size of nets for taking garfish.
13th October, 1937 ..	Prescribing close season for seals and prohibiting "windy-buoy" fishing.
8th December, 1937 ..	Prohibiting the dragging of nets over the sea-bottom by two vessels or by engine-power, except off Godley Head to Wakaroa Point.
23rd February, 1938 ..	Prohibiting trawling and Danish-seining in Bay of Plenty and trawling in Bay of Islands and altering the monthly statistics return.

PART II.

23rd June, 1936 ..	Amending Fresh-water Fisheries Regulations 1936.
8th September, 1937 ..	Making regulations for taking trout in the Whangarei Acclimatization District.
8th September, 1937 ..	Making regulations for taking trout in the Southland Acclimatization District.
8th September, 1937 ..	Making regulations for taking trout in the Wellington Acclimatization District.
8th September, 1937 ..	Making regulations for taking trout in the South Canterbury Acclimatization District.
29th September, 1937 ..	Making regulations for taking trout in the Waimate Acclimatization District.
29th September, 1937 ..	Making regulations for taking trout in the Ashburton Acclimatization District.
29th September, 1937 ..	Making regulations for taking trout in the Waitaki Acclimatization District.
29th September, 1937 ..	Making regulations for taking trout in the Auckland Acclimatization District.
13th October, 1937 ..	Making regulations for taking trout in the North Canterbury Acclimatization District.
13th October, 1937 ..	Making regulations for taking trout in the Nelson Acclimatization District.
13th October, 1937 ..	Making regulations for taking trout in the East Coast Acclimatization District.
20th October, 1937 ..	Making regulations for taking trout in the Waimarino Acclimatization District.
3rd November, 1937 ..	Making regulations for taking trout in the Otago Acclimatization District.

APPENDIX III.

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

Month.	Auckland Harbour (off Nelson Street Wharf.)			Tamaki Estuary (off Panmure.)			Bay of Islands (off Russell).			Kaipara Harbour (Whakapirau Estuary).			Coromandel (off Wharf).		
	1935–36.	1936–37.	1937–38.	1935–36.	1936–37.	1937–38.	1935–36.	1936–37.	1937–38.	1935–36.	1936–37.	1937–38.	1935–36.	1936–37.	1937–38.
	°C.	°C.	°C.	C.°	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
May ..	16·3	15·2	15·9	..	14·3	14·2	16·4	15·7	14·6	15·7	14·3	14·7	15·6	14·7	14·8
June ..	13·7	12·9	13·9	..	11·5	14·9	14·2	13·7	13·5	12·6	12·2	13·2	14·1	12·3	13·6
July ..	12·1	12·5	12·2	12·7	11·7	..	14·1	13·2	13·0	11·9	11·6	11·9	12·7	12·0	12·4
Aug. ..	12·0	12·6	12·6	12·1	14·6	11·2	13·8	13·5	13·2	12·5	11·2	12·6	12·2	13·2	12·8
Sept. ..	12·6	13·4	14·1	13·2	18·3	..	13·5	13·8	14·8	12·3	12·9	12·4	12·9	13·6	14·2
Oct. ..	15·1	14·6	15·4	16·8	18·7	15·0	15·5	17·0	16·3	16·6	16·8	16·6	15·2	16·6	17·5
Nov. ..	15·1	17·9	17·3	18·0	20·0	17·0	15·9	16·0	15·2	16·4	17·9	18·3	15·8	19·1	18·7
Dec. ..	18·9	18·6	20·0	22·1	20·1	22·3	19·7	18·1	21·1	22·1	19·2	23·5	20·1	19·0	22·8
Jan. ..	20·9	19·8	22·4	23·8	24·5	..	21·0	19·8	22·6	22·6	20·9	23·6	21·1	19·8	23·1
Feb. ..	21·4	19·5	23·0	22·4	21·9	..	20·7	19·1	22·6	21·8	20·8	23·9	20·5	19·9	22·6
March ..	18·7	19·9	22·5	22·8	20·6	24·2	19·4	19·3	22·1	21·8	20·1	23·4	19·2	19·3	22·4
April ..	18·1	19·3	22·0	18·3	18·5	..	18·5	18·6	21·3	17·0	18·0	22·6	17·9	17·9	20·6

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