1936.

NEW ZEALAND.

MARINE DEPARTMENT.

ANNUAL REPORT FOR THE YEAR 1935–36.

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

Marine Department, Wellington, 20th August, 1936.

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.

Marine Department, Wellington, 24th July, 1936.

SIR,—

I have the honour to submit the Annual Report on the operations of the Marine Department for the financial year ended 31st March, 1936.

During the recent period of financial stress this Department had to meet the situation by the exercise of the very strictest economy, and the result has been that for the past four years the departmental balance-sheet, after providing for interest on capital and for depreciation, has shown a credit balance. This has been possible only by holding staff down to the barest minimum, by reducing maintenance expenditure to the lowest possible, and by refusing to expand into activities for which the Department holds the responsibility. This policy, while it may be necessary in meeting conditions of emergency and can be followed for a short time, stores up an accumulation of trouble for the future.

The position has now definitely got to be faced that the staff of the Department must be strengthened up so that it may move on again, and money must be found to catch up arrears of maintenance and construction. This will mean that the credit balance will be changed to a debit, but it can well be argued that the Department should not be expected to fully support itself, that many of its activities should be partly in the nature of social services, as, for instance, the care of fisheries and the inspection of machinery for safeguarding of workmen.

The need for more informative and accurate charting of the New Zealand coast-line has been recognized for many years, and as the work could only be carried out by a fully equipped surveying-ship, and no such ship was available on this side of the world, it was not possible to put the survey in hand. Following on negotiations with the Admiralty the Lords Commissioners have now advised

that H.M.S. "Endeavour" will arrive in New Zealand in April, 1937, to undertake the survey, and that His Majesty's Government in Great Britain will provide the ship complete and bear the expenses connected with pay, victualling, &c., of the officers and ship's company, leaving the New Zealand Government to provide coal and the cost of docking and refitting, including stores used.

The very generous manner in which the British Government has met the needs of New Zealand is much appreciated.

It is interesting to note that the ship which is now to resurvey the New Zealand coast-line bears the historic name of the barque in which Captain Cook made the first of his famous voyages, when in October, 1769, he made the coast of New Zealand at Young Nick's Head and spent six months exploring, mapping, and sailing around both islands.

A technical officer of the Post and Telegraph Department proceeded to Great Britain during the year past and acquired first-hand information on the most recent developments in the use of wireless on ships, both for communication purposes and for direction-finding from radio beacons. He obtained valuable information from the lighthouse authorities responsible for radio beacons in England and Scotland, also from technical men engaged in the manufacture of the apparatus, and on his report the Government can proceed confidently with the installation of a system of radio beacons on the New Zealand coast.

Plant is being ordered at once from England, and it is confidently anticipated that before the end of the year radio beacons will be in operation at Baring Head and Cape Campbell, covering the eastern approach to Cook Strait. The work involves not only the purchase of the electrical apparatus but also the housing of operators. Other stations will follow throughout New Zealand as quickly as funds can be made available, until the network is complete.

The activities of the Department are dealt with in more detail under appropriate headings.

Financial.

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

Branch.	1922–23.	1931–32.	1932–33.	1933–34.	1934–35.	1935–36.
			Revenue.			
Shipping Branch—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Light dues	39,688 16 8	78,334 6 0	87,297 17 7	89,075 6 0	91,108 3 3	94,020 10 10
Engagement and discharge fees	3,179 11 0	2,002 13 0	1,561 10 11	1,712 19 6	1,711 13 6	1,793 8 6
Survey fees	3,095 9 0	3,809 5 0	3,551 3 5	3,542 5 9	3,500 12 0	3,625 5 10
Examination fees, &c.	395 12 6	252 13 6	264 17 6	229 12 6	194 14 10	202 3 0
Lighthouse tender—						
Freight, passage-money, &c.	1,785 0 7	756 10 10	1,527 12 4	719 4 0	4,464 17 0	642 3 8
Miscellaneous	1,289 0 4	1,543 7 3	1,717 14 1	1,370 19 10	1,305 7 9	1,416 6 10
Harbours—						
Pilotage, port charges, &c.	764 14 6	1,293 4 1	1,860 7 5	1,806 3 0	1,711 15 1	2,044 0 11
Foreshore revenue	1,126 14 1	2,611 18 9	2,498 11 3	2,192 8 1	1,963 13 11	2,203 17 10
Inspection of Machinery—						
Inspection fees, &c.	17,126 19 6	22,801 19 8	18,981 3 10	19,529 12 2	19,331 14 10	19,566 5 8
Examination fees, &c.	667 0 0	384 7 0	401 0 0	313 2 6	359 4 6	422 14 6
Fisheries—						
Sale of oysters	7,702 9 6	5,430 8 5	5,101 9 4	5,359 16 9	5,925 8 4	3,765 6 8
Fishing-boat license fees, &c.	324 9 6	691 0 3	560 1 6	613 7 6	513 17 1	555 8 9
Rental of toheroa-beds	10 0 0	309 0 0	317 18 6	320 1 9	316 0 0	313 0 0
Ross Sea revenue	..	600 0 0	..	1,000 7 6	600 0 0	500 0 0
Miscellaneous revenue	2,800 11 4	26 1 7	27 17 1	14 8 10	525 11 8	516 19 1
Totals	79,956 8 6	120,846 15 4	125,669 4 9	127,799 15 8	133,532 13 9	131,587 12 1
			Expenditure.			
Head Office	9,612 2 8	8,931 6 9	7,124 6 0	7,788 11 9	8,612 5 5	9,193 9 7
Harbours	4,826 13 2	2,409 16 0	1,919 12 1	1,792 3 3	2,071 3 7	2,333 3 11
Lighthouses	49,532 14 2	38,801 11 5	36,707 5 3	38,306 13 11	40,190 0 8	43,928 18 8
Mercantile marine	15,150 17 11	21,216 13 0	19,383 12 5	18,868 11 0	19,629 5 3	20,256 11 9
Inspection of Machinery	27,015 0 0	22,800 13 1	14,636 5 6	14,279 19 6	15,130 5 5	15,863 12 0
Fisheries	9,580 7 1	7,207 0 7	8,784 6 10	8,948 11 2	10,191 16 10	9,785 3 4
Miscellaneous services	2,655 3 8	1 14 8	0 18 11	25 19 6	..	5 0 0
Grants and subsidies	1,510 0 0	125 0 0	629 3 4	550 0 0	550 0 0	250 0 0
Depreciation	8,156 0 10	13,343 13 2	13,598 8 3	13,303 8 10	13,140 4 9	12,961 3 2
	128,038 19 6	114,837 8 8	102,783 18 7	103,863 18 11	109,515 1 11	114,577 2 5
Interest on capital	15,716 7 3	20,325 19 2	20,609 4 5	20,634 1 0	14,331 17 2	13,917 8 0
Totals	143,755 6 9	135,163 7 10	123,393 3 0	124,497 19 11	123,846 19 1	128,494 10 5
	Deficit.	Deficit.	Surplus.	Surplus.	Surplus.	Surplus.
Financial result	63,798 18 3	14,316 12 6	2,276 1 9	3,301 15 9	9,685 14 8	3,093 1 8

It will be observed that the position has improved to a remarkable extent since 1922–23, when the finances of the Department were subjected to a complete overhaul. At that time there was a substantial deficit, which, as the result of a careful financial policy, has been gradually overtaken, until the Department is now fully self-supporting. It should be noted, however, that provision will require to be made in the near future for the expenditure on a complete survey of the New Zealand coast, and this will fully absorb the small surplus which is being realized at present.

The principal features of this year's accounts are the decrease of about £2,000 in revenue and the increase of approximately £5,000 in expenditure. Light dues, which is the main source of revenue increased by nearly £3,000, but this was more than offset by the decrease in oyster sales and in the earnings of the lighthouse tender s.s. "Matai." The supply of rock oysters last season had to be restricted in order to conserve the beds, while the position in regard to the s.s. "Matai" is that during 1934–35 the vessel was hired for a voyage to the Cook Islands, with the result that this Department received a substantial credit in the way of hire charge. The vessel was not hired during 1935–36, but was engaged in her usual service throughout the year.

The rise in expenditure is accounted for largely by the partial restoration of cuts in wages and salaries combined with the increased cost of repairs to s.s. "Matai."

Harbours.

The general policy is that harbours shall be controlled by local boards set up as directed in the Harbours Act. Where the port is so small that a special Board is not warranted, control is frequently vested in County Councils, the Councils being clothed with the powers of the Harbours Act for this purpose. The only exceptions are in the cases of Picton and Westport Harbours.

At Picton the wharves are owned and worked by the Railways Department, while the harbour itself is in the care of the Marine Department.

Westport Harbour, since 1921, has been directly administered by the Marine Department.

The Department also takes care of the numerous minor harbours where local government is not possible.

Greymouth Harbour has for many years been subsidized out of the Consolidated Fund, and during this year the subsidy was £2,625, compared with £12,000 for the previous year. The reason for the decrease is that, following upon a close investigation of the Board's finances, the Greymouth Harbour Board Amendment Act, 1935, was passed, relieving the Board of its loan liability and cancelling the subsidy, which now disappears from this Department's vote.

Westport Harbour.—No further construction work was carried out during the year, but a survey is now in hand for the purpose of estimating the amount of dredging required to so increase the tidal compartment within the harbour that, by the additional scouring effects so obtained, the necessary depths will be maintained on the bar during the periods of low flow in the Buller River, and under conditions of unfavourable movement of sand on the coast.

The average working-depth on the bar at high water was 20 ft. 10 in., an increase of 10 in. on the previous year. The following table shows the number of days in each year during the past ten years on which the specified depths were maintained:—

Depth.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	1935–36.
Over 14 ft. ..	..	..	..	..	..	..	..	365	365	366
,, 16 ft. ..	..	..	365	365	365	..	365	360	357	361
,, 18 ft. ..	..	366	350	363	340	366	350	279	353	355
,, 20 ft. ..	365	351	249	345	208	360	287	152	263	263
,, 22 ft. ..	339	217	168	276	43	252	144	42	81	90
,, 24 ft. ..	227	102	107	99	..	53	14	..	15	6
,, 26 ft. ..	102	17	26	11	..	10	..	..	..	..
,, 28 ft. ..	32	..	3	..	..	..	..	..	..	..

The depths on the bar were, in general, adequate for the shipping using the port, except for a short time in February, 1936, when a sudden shoaling, due to an extremely low river and heavy sand movement along the coast reduced the depths by 3 ft. to 4 ft., and some vessels were unable to fully load.

In the fairway the average working-depth was 25 ft. 6 in. as against 24 ft. in 1934–35, and 24 ft. 10 in. in 1933–34, the decrease for the past year being due to shoaling.

Dredging operations were carried out by the suction dredge "Eileen Ward"; the bucket dredge "Maui" and the suction dredge "Rubi Seddon" being out of commission.

During the period 171,323 cubic yards were dredged from the bar, 97,277 cubic yards from the lower river, 76,453 cubic yards from the berthages, and 11,582 cubic yards from the floating basin—a total of 356,635 cubic yards, all of which was transported and deposited at sea.

The dredge worked on 127 days for an average cost of 8·01d., a higher rate than that for 1934–35 of 6·499d.

The rainfall recorded on the harbour gauge for the year was 73·33 in., rain falling on 178 days. For the three preceding years the figures were—1932–33, 66·99 in., 179 days; 1933–34, 81·27 in., 174 days; 1934–35, 79·57 in., 169 days.

The "Eileen Ward" was sent to Wellington for annual overhaul and was well maintained during the whole period.

The tug "Mana" was only required once to tow a vessel from the port, but was utilized on several occasions in dragging for submerged objects. Running repairs to the dredges and plant kept the workshops staff fully employed.

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	40,298 17 9	30,891 0 7	,, 9,407 17 2

An examination of this statement discloses that the Harbour was a heavily losing proposition when the administration of the port was transferred from the late Harbour Board to the Department fifteen years ago. In 1921–22 there was a deficit of over £38,000, which was substantially reduced in the two succeeding years. From 1924–25 to 1930–31 inclusive there was an average annual surplus of £2,563 16s. 11d., but during the past four years the abnormal depression in the coal trade has undermined the finances of the port. At present the revenue is sufficient to meet minimum working-expenses and interest on loans, but is unable to provide for sinking fund.

The bunkering trade continues to improve, but does not bear comparison with what it was in pre-depression years. The number of vessels which called at Westport for bunker coal during the past eleven years is as follows:—

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

Port dues on ships calling for bunker coal have been reduced to a minimum, with the object of encouraging this trade as far as possible.

Karamea Harbour.—Owing to the alteration of the course of the river at its mouth, the port is not now workable.

Little Wanganui Harbour.—Owing to the lack of sufficient floods and to adverse sea conditions, the entrance at times shoaled sufficiently to interrupt working, which is only possible during spring tides. Since the a.s. "Fairburn" was wrecked on the Westport Breakwater, the harbour was not used for a short period, but another vessel is now taking up the trade.

Okarito Harbour.—The Okarito Harbour Co. has continued to develop this harbour, and in doing so completed the construction of a timber training-wall north of the proposed entrance straight out from the present wall.

A cut was made in the shingle-bank, but all efforts to close the present entrance and open a new one have been unsuccessful. The company erected a dam in the north channel of the lagoon, but this was unsuccessful owing to the nature of the underlying strata; various other temporary measures, such as the erection of scrub groynes, have been tried, but so far without success. The present wharf was demolished and a new wharf commenced. It is now the company's intention to temporarily abandon the project of a new entrance and build a wharf to suit the present entrance.

Waikokopu Harbour.—This port has been operated by the Wairoa Harbour Board on behalf of the Public Works Department. During the year sixty-six coastal vessels worked the port and handled 3,147 tons of general cargo, 309 42 ft. poles, and 9,000 ft. of hardwood timber. In addition seven overseas vessels worked the port and lifted 8,023 quarters of beef, 81,092 carcasses of mutton and lamb, 1,056 bales of wool, 274 sacks of hides, 41 casks of tallow, 54 tons of manure, 1,639 pigs, 1,019 carcasses of pork, 500 boxes of casings, 2,024 packages sundries, and 100 cases of jellied veal.

Necessary repairs have been carried out to the wharf and buildings. Approximately 200 yards of concrete cast in blocks and *in situ* have been added to the top of the breakwater at the sea ends, and this has somewhat improved the conditions at the wharf. Soundings taken during the year show no appreciable change in depth either at the wharf or the roadstead.

Elmslie Bay Wharf and Approach, French Pass.—The erection of a new wharf to replace the existing decayed structure was completed under contract. The structure is built of hardwood timber throughout, and comprises eleven 12 ft. approach spans, 8 ft. roadway carried on two pile piers, and an enlarged end 72 ft. by 30 ft. carried on hardwood piles, with steps for launch passengers and davits for the handling of light cargo.

A shed 24 ft. by 12 ft. has been erected on the wharf for storage of cargo. The approach filling is protected from wave action by curved concrete retaining-walls. The wharf serves D'Urville Island and the whole of the French Pass area.

Marlborough Sounds.—Repairs to wharves in the Sounds area are in hand at Torea Bay, Portage, and Onahau Bay in Queen Charlotte Sound, and Waitaria Bay in Kenepuru Sound. The work consists of generally renovating and repairing the existing structures.

Te Hapua Wharf.—Tenders were called for the proposed new concrete wharf at Te Hapua, an isolated Native village in the far North. On account of the locality of the structure it was very difficult to get a satisfactory tender, but the contract has recently been let and work will shortly be put in hand.

Whangapara Wharf.—The approach to this wharf has been completed in stone to a length of 45 ft. and a width of 15 ft. Steps are being taken to have plans prepared for the new wharf.

Thames Harbour Berthage at Thames Wharf.—The dredging of the berthage at the above wharf has been carried out by the Public Works Department for the Thames Harbour Board over a length of 277 ft. to a width of 60 ft. and a depth of 9 ft. at low water extending to the seaward end of the wharf. A shallow channel has also been extended for a distance of 226 ft., to a width of 50 ft., and a depth of 7 ft. at low water. Dredging operations are still in progress. When completed this work will considerably improve the channel leading to the wharf and enable vessels to work the wharf with much greater facility.

Lighthouses.

Baring Head.—This lighthouse was erected at the entrance to the Wellington Heads towards the end of last year, and was officially opened on the 17th June, 1935. It has been operating successfully since that date. Additional oil storage was provided at the power-house, and the approach road to the station was cleaned up generally. A telephone-line eight miles in length was erected in order to connect the lighthouse with the exchange at Eastbourne.

Akaroa Lighthouse.—Repairs to the landing-stage and erection of a new stairway were completed during the financial year. Renovations were also carried out to the keeper's cottage.

Godley Head Lighthouse.—Alterations were carried out to the lubricating-system of the engines and compressors.

French Pass Beacon.—About the end of last year the concrete beacon at the entrance to the pass was damaged and partly unseated from the rock foundation. Repairs, consisting of the placing of a concrete band around the base, are at present in hand, but the work is rendered difficult owing to the fact that the base of the beacon is practically at the low spring-tide level, and if bad weather is experienced during the spring-tide period the work is very much hampered.

Taiaroa Fog Signal.—Repairs to the engines were carried out during the year.

Tiritiri Fog Signal.—A reinforced concrete building 20 ft. by 21 ft. was erected on the above island to house the fog-signal apparatus. In addition to this work the main lighthouse tower was painted both internally and externally and a lightning-conductor installed.

General.

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

Foreshore Licenses.—Westhaven Inlet; Kawarau Rapids, Lake Wakatipu; Tryphena Harbour, Great Barrier Island; Akaroa Harbour.

Breakwater.—Extension at Oamaru.

Wharves and Jetties.—Napier; Te Hapua, Parengarenga; Westhaven Inlet; Tauranga; Quarryman's Bay; Kauri Point, Auckland; Bluff Harbour; Motukaraka, Wairupe Creek; Hokianga; Ravensbourne, Dunedin; Motuihi Island.

Boat Sheds and Skids.—St. Mary's Bay, Auckland; Vauxhall, Otago Harbour; Evans Bay, Wellington (2); Anderson's Bay, Otago; Rocky Point, Otago Harbour; Mechanics Bay, Auckland Harbour.

Bridges.—Port Ahuriri; Pukapuka Stream, Mahurangi; Waitotara River; Puhinui Creek, Manukau Harbour; Long Bay Bridges, Auckland Harbour; Hoteo River Bridge, Whangarei Harbour.

Training Walls.—Motueka Harbour; Protective groyne, Patea River.

Reclamations.—Evans Bay, Wellington; Putiki Bay, Waikeke Island; Hobsonville, Auckland; Okarito Harbour.

Sewerage Outfalls.—East Clive, Hastings.

Harbour Board Legislation.

The following legislation affecting Harbour Boards was passed during the year:—

Auckland Harbour Board Empowering Act.—This Act authorized the Board to procure a second tug for use in the Port of Auckland, to be paid for out of the loan authorized by the Auckland Harbour Board Empowering Act, 1924, as amended by the Auckland Harbour Board Empowering Act, 1926.

Greymouth Harbour Board Amendment Act.—The purpose of this Act was to give effect to the Government's decision to assume direct liability for the loans raised by the Greymouth Harbour Board. The loans were already guaranteed by the Government, and for many years past the Board has received from the Government a substantial subsidy towards interest and sinking fund on the loans. Under the new arrangement, which makes very little difference to the Consolidated Fund, the Government pays the interest and sinking fund and retains the special coal rate of 3d. per ton, while the annual subsidy to the Board is cancelled. The financial relationship between the Government and the Board is now stabilized, which is of definite advantage to both parties.

Napier Foreshore Expansion Act.—This Act authorized the Board to lease to the Napier Borough Council for improvement and recreation purposes a further area of foreshore endowment land vested in the Board on the same conditions as those imposed by the Napier Foreshore Act, 1927.

Napier Airport Act.—This Act authorized the Harbour Board to lease an area of some 245 acres of its endowment reserve to the Napier Borough Council as a site for an airport.

Wanganui Harbour District and Empowering Act.—This Act authorized the Board to expend on the raising of the moles the sum of £5,400, being money authorized to be borrowed by the Board's Act of 1929, for payment of cost of plant and equipment and engineering and other expenses, but not now required for those purposes.

Lighthouse Tender.

The s.s. "Matai" has been engaged throughout the year in her ordinary work of tendering the coastal lighthouses, and of overhauling the buoys and beacons under the control of the Department.

Adjustment and Inspection of Ships' Compasses.

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

Admiralty Charts.

The Department, acting as sub-agent for J. D. Potter and Co., London, maintains a stock of Admiralty charts at Head Office, and at the Mercantile Marine Offices in Auckland, Wellington, Lyttelton, and Dunedin. The stock includes all charts of the Dominion, and also a considerable portion of the globe, which practically includes all ports 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 information issued subsequent to the date of correction, a list of Notices to Mariners affecting the charts is maintained at each office for inspection. This procedure has been in operation in the Dominion for some years, and is now a condition in agreements between sub-agents and Mr. J. D. Potter.

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.

Seventy-four examinations were held during the year. The percentages for foreign-going and home-trade certificates are as follows: Foreign-going—Full pass, 38·9; partial pass, 27·8; failure, 33·3. Home-trade—Full pass, 40; partial pass, 32; failure, 28. One candidate passed for sail endorsement.

Examination in Form and Colour Vision.

These examinations continue to be held at Auckland, Wellington, Lyttelton, and Dunedin. During the year forty-six candidates were examined, three of whom failed in the lantern test and two in the letter test. No special examination was held during the year.

Marine Casualties.

During the year the number of casualties on or near our coasts was normal, and all were, fortunately, free from loss of life. The casualties varied considerably in their nature, and, with a few exceptions, were of comparatively slight importance. Preliminary inquiries respecting the majority of them were held by the Superintendents of Mercantile Marine.

The most serious casualties were the collision near Timaru between m.v. "Breeze" and the fishing-boat "Bessie," the s.s. "Waipahi" striking a rock near Pencarrow Head, and the stranding of s.s. "Rangatira" near Tom's Rock. In each case it was deemed necessary to hold a formal investigation, and, in the case of the "Rangatira," to further hold a rehearing by the Supreme Court.

New Zealand Nautical Almanac and Tide-tables.

This publication for 1936 (31th edition) was issued about two weeks later than usual, the delay being due to pressure of work at the Government Printing Office. It provides seamen and other parties with much necessary and useful information in addition to that for the various ports in the Dominion. The port information is corrected by the various Boards, and, at the time of going to press, is the latest available. A new plan of Auckland has been included in this year's edition.

Notices to Mariners.

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

In conformity with a scheme developed by the International Hydrographic Bureau, Monaco, the Auckland, Wellington, Lyttelton, and Dunedin Mercantile Marine Offices have been established as "Centralization Offices for Notices to Mariners," and now exhibit notices received from United States of America, Norway, Sweden, Germany, Singapore, India, Japan, Dutch East Indies, France, Canada, and Phillipine Islands. In addition to the foregoing, notices received from the Admiralty, Australia, and Suva are available for inspection at all ports visited by foreign-going ships.

Radio Beacons.

During the year it was decided to delay the erection of beacons pending the receipt of information from the Post and Telegraph Department concerning the latest types of beacons. This information, which is expected shortly, will enable the Department to proceed with the Baring Head beacon.

A small experimental beacon has been established at Tiritiri for use in and about Hauraki Gulf. The beacon was constructed and erected by the Post and Telegraph Department to the order of this Department, and, after satisfactory running tests had been made, was handed over to the Auckland Harbour Board for operation and maintenance.

Arrangements have been made for direction-finding signals to be sent from Portland Island Lighthouse Radio-station on request.

Certificates of Efficiency as Lifeboatmen.

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

The shipping companies are required to provide the necessary lifeboat and gear, and are responsible for getting the men together at the time appointed for the examination.

Since the examination was introduced, 786 certificates have been issued.

International Maritime Conventions.

Legislation to give effect in New Zealand to the International Convention for Safety of Life at Sea and the International Load Line Convention was passed during last session, and has now received His Majesty's assent. Comprehensive regulations governing the various provisions of the Conventions are now being finalized, and will be issued at an early date.

Registration of Shipping.

On the 31st December, 1935, there were on the Register of Vessels in the Dominion 52 sailing-vessels of 4,726 tons register, 188 steamers of 80,763 tons register, and 255 motor-vessels of 10,518 tons register, as compared with 55 sailing-vessels of 4,789 tons register, 199 steamers of 87,478 tons register, and 242 motor-vessels of 9,092 tons register at the end of the previous year.

The number of seamen employed on board was 2,887, as compared with 3,063 for the year 1934.

Government Shipping Offices.

In the Government Shipping Offices the administration of the Shipping and Seamen Act has been efficiently carried out. Appended is a statement showing the number of seamen engaged and discharged at the various ports during the year, and the fees received for such transactions. The total number engaged and discharged was 10,283 and 10,070 respectively, as compared with 9,549 and 9,509 respectively during the previous year. The transactions at the four main ports were as follows, the figures in parentheses being those of the previous year.

Port.	Engagements.	Discharges.	Fees.
			£ s. d. £ s. d.
Auckland	2,808 (2,720)	2,659 (2,854)	501 9 0 (514 18 0)
Wellington	5,062 (4,332)	5,069 (4,367)	865 9 0 (774 17 0)
Lyttelton	509 (516)	500 (513)	85 2 0 (82 2 0)
Dunedin	372 (602)	400 (484)	73 0 0 (101 5 0)

Engagement of Seamen.

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

Sick and Injured Seamen.

The total amount paid by shipowners to sick and injured seamen, under the provisions of the Shipping and Seamen Act, 1908, and its amendments, was £14,619 7s. 9d., as against £12,357 2s. 6d. for the previous year, an increase of £2,262 5s. 3d.

Survey of Ships.

The following statement 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	159	(145)
Sea-going sailing-ships	4	(4)
Restricted-limits steam and motor ships	382	(370)
Total	545	(519)

Two sea-going vessels, the steamship "Kalingo" and the motor-ship "Karu" were surveyed in the Dominion for the first time during the year. The s.s. "Kalingo" is a vessel of 2,047 tons gross and 1,153 tons register, built in 1927, and she is engaged in the intercolonial and the New Zealand coasting trades. She has hitherto been surveyed in Australia, but this year the owners decided to carry out the survey in New Zealand, and she was duly surveyed and certificated. The motor-ship "Karu" is a new vessel built in Glasgow in July, 1935. She has a tonnage of 1,044 tons gross and 529 tons register, and is propelled by a single set of Stephen-Sulzer two-stroke cycle single-acting oil-engines of 810 B.h.p. The auxiliary machinery, including steering-gear, is electrically driven.

Sixteen restricted-limits motor-vessels were surveyed for the first time during the year for the issue of certificates. Seven of these vessels were new and the remainder were of various ages. One vessel, the auxiliary motor-ship "Isabel," was built at Prince Edward Island, Canada, as long ago as 1867. She is a wooden vessel of 117 tons gross and 52 tons net, and, after seeing service in many parts of the world, is now engaged in the cargo trade in the sheltered waters of Kaipara Harbour. The sailing vessel "Combine" was converted to an auxiliary-powered vessel, further depleting the small number of sailing-vessels plying for commercial purposes on the New Zealand coast. The "Pahiki," "Rewa," and "Rangi" are the only sailing-vessels remaining in service.

The s.s. "Kawatiri," which has been laid up at Dunedin since August, 1930, was sold to Eastern buyers, and after reconditioning to the Department's satisfaction was allowed to clear at Port Chalmers in February of this year for a voyage to Japan.

The intercolonial mail steamships "Monowai" and "Marama" were surveyed for passenger certificates at Wellington in 1935. The surveys were carried out in accordance with the requirements of the International Convention for the Safety of Life at Sea.

The steamer "Waipu" was converted to oil-engine propulsion by the installation of two sets of British Crossley two-stroke cycle single-acting Diesel engines. The "Waipu" is 101 ft. long, 205 tons gross and 81 tons register, and is one of the few steel vessels designed and built in New Zealand. She was built at Dunedin in 1916 by J. McGregor and Co. for passenger and cargo trade out of Auckland, and was engaged in this service until laid up during the depression in 1931. Extensive alterations in accordance with plans and specifications approved by the Department were carried out during the conversion. The hull-bottom was strengthened by the renewal of a large number of plates, bilge keels, and a new and larger rudder were fitted, and storage-tanks were installed for oil fuel. The passenger accommodation was removed and the internal structure rearranged to provide the maximum carrying-capacity for timber cargoes. The name of the vessel was changed to "Hokitika," and she is now engaged in the West Coast timber trade.

The s.s. "Gunbar," of 501 tons gross, was sold during the year to Australian buyers and received an extensive overhaul and reconditioning before proceeding to Australia after a long period of idleness in New Zealand waters. The Department's foreign-going certificate was issued to the vessel on completion of the repairs.

In addition to surveys made by the Department for the issue of certificates, two hundred and twelve seaworthiness, efficiency, and tonnage surveys were made during the year. Twenty-two seaworthiness and efficiency surveys were made to overseas vessels not registered or normally surveyed in the Dominion. Five of these were made in connection with life-boat damage sustained by vessels on passages to New Zealand. In one case the s.s. "Niagara" had two life-boats smashed beyond repair during a hurricane met with on 4th January, 1936, shortly after the vessel's departure from British Columbia.

A major mishap to the machinery of an overseas vessel occurred in July, 1935, when a connecting-rod bolt in the main air-compressor of the oil-engined vessel "Binta" carried away and wrecked the compressor. The vessel was able to make the Port of Wellington on the auxiliary compressor and a repair satisfactory to the Department's surveyors was made in Wellington in a period of a little less than three weeks.

The largest repair completed during the year to a vessel holding a New Zealand certificate was occasioned by the stranding of the s.s. "Waipahi" at Pencarrow Heads, Wellington, on the 30th October, 1935. The bottom was badly damaged, but fortunately the shell plating in way of double-bottom tanks only was pierced, and the loss of buoyancy was not sufficient to sink the vessel. The "Waipahi" put back to Wellington after the mishap, and extensive repairs were carried out to hull-plating and double-bottom structure. The repairs occupied a period of six weeks.

In July last the single-screw motor-ship "Margaret W" was disabled at sea through the fracture of the main engine crankshaft. The vessel was picked up by the motor-ship "Pukeko" and towed 140 miles to Auckland, where repairs were carried out. The fracture occurred near the end of the shaft immediately aft of a cam-shaft gear-wheel.

The defective portion was cut away and a new piece of shaft with a flange coupling was bolted to the gear-wheel after suitable drilling and keying. The repair was very efficient, and the vessel was able to continue in service during the time required to obtain a new crankshaft from England.

The extensive damage done to the s.s. "Rangatira" on the 2nd February, 1936, when she struck a rock in the vicinity of the entrance to Wellington Harbour is receiving the attention of the Department's surveyors. A complete report of the repairs will be included in next year's annual report. The vessel was most severely damaged forward, but considerable damage was also done to the bottom shell plating under the engine-room. Largely due to the efficiency of her construction and the subdivision arrangements and the amount of her reserve buoyancy, the vessel was enabled to survive foundering and to reach port drawing 27 ft. 6 in. forward and 11 ft. 6 in. aft, and with the fore peak and Nos. 1 and 2 cargo-holds open to the sea. The stem in way of the bow rudder was fractured, the top of No. 2 double bottom and the port side of the bulkhead dividing Nos. 1 and 2 holds were badly buckled, and No. 8 starboard tank top was set up sufficiently to cause overheating of the after propelling motor bearing. The vessel's freeboard is 12 ft. 0½ in. at her mean load-line draft of 17 ft. 0½ in. She has nine main watertight compartments, a fore peak and an after peak, a watertight double bottom 38½ in. high extending from fore peak aft to within a few feet of the after peak. It is estimated that 1,500 tons of water entered the flooded compartments, and that the deadweight of the vessel as loaded was approximately 70 per cent. in excess of her designed deadweight.

The repairs which it will be necessary to do consist of seven keel-plates to remove and renew, two to remove, fair, and replace, and one to fair in place. On the port side fourteen plates will be removed and renewed, three will be removed, faired, and replaced, and six will be faired in place. On the starboard side, twelve plates will require removal and renewing, two to be removed, faired, and replaced, and nine require fairing in place. In addition considerable repairs to stem, bow rudder, keelson, tank-tops, frames, floors, and intercostals in way of the damaged shell-plates, and to the bulkhead between the forward cargo-holds will be necessary. The repairs will restore the vessel to her original condition.

Plans and specifications of new vessels examined and approved by the Department during the year included those for a passenger launch for tourist service in Milford Sound, a passenger and fishing vessel for Akaroa, and four trawlers for service in the fishing industry out of the Port of Auckland. Two of the latter vessels are still under construction. The completed trawlers, the "Joan" and "Margaret," were built of wood of susbtantial construction, and are propelled by modern types of Diesel engines. The vessels are a little under 10 tons register, and are exempt from annual survey while engaged in fishing. They were built at Auckland shipyards under the supervision of the Department's surveyors, and the life-saving appliances, anchors and cables, fire-extinguishers, and other safety equipment placed on board complied fully with the Department's requirements for sea-going vessels.

A proposed new vessel of relatively high speed for the Defence Department was designed, and plans and specifications were prepared by the Department's staff during the year.

Safe Working Loads.

During the year the Safe Working Loads Regulations were revised. These regulations are designed for the prevention of accidents to persons engaged in working cargo on board ship arising from failure of cargo gear due to unsuitability of material, insufficient scantling, lack of proper maintenance, and overloading of the components of the gear. The opportunity was taken to bring the requirements for short-link chain and galvanized-wire ropes into line with British Standard Specifications, which were not in existence when the previous edition of the regulations was published. Other modifications were made to the regulations as experience showed to be desirable and necessary. The Department is indebted to the Standing Committee, consisting of representatives of the shipowners, waterside workers, and Harbour Boards, for their assistance and advice in the revision.

A considerable number of the regulations have already been sold to those parties whose duty it is to comply with the regulations. Several copies have also been sold in various parts of the world to parties not directly interested in the publication as regulations. This is taken as an indication that the value of the technical data in the regulations is appreciated.

Inspection of Boilers and Machinery.

Boilers and Pressure Vessels.

The total number of boilers inspected was 9,009, an increase of 1,009 over the number inspected last year (8,000), and an increase of 865 over the previous peak year of 1931, when a total number of 8,144 was inspected: 4,997 of the boilers are fired boilers, 3,251 are unfired steam-pressure vessels, and 761 are air-receivers. The inspections include sixty-three new power boilers, aggregating 1,064 horse-power, manufactured in the Dominion, and twenty-four new power boilers, aggregating 530 horse-power, imported from abroad. They also include 168 new steam-pressure vessels, and twenty-six new air-receivers manufactured in the Dominion, and 123 new steam-pressure vessels, and twenty-six new air-receivers imported from abroad.

An air-receiver used for garage purposes exploded in December, 1935. The explosion was a violent one and did a fair amount of damage, but fortunately no one was injured. The receiver was 11 in. diameter and 72 in. long, and carried a working-pressure of 150 lb. per square inch. The steel plates used in construction were $\frac{1}{8}$ in. thick, and were fabricated by welding. The capacity of the receiver was less than 5 cubic feet, and it was not therefore required to comply with the regulations governing the design and construction of air-receivers issued by the Department or to be certificated for a working-pressure.

The cause of the explosion was fully investigated, and it was found to be due to defective welding of the longitudinal seam. The effective weld was only $\frac{1}{32}$ in. deep. Below this depth there was no fusion between weld metal and the plate. In view of the fact that this was the third receiver made by the firm and known to have been imperfectly welded, the class of welding carried out by the manufacturers was inquired into. It was clear that the welding operators had been incompetent and that the supervision over their work was inefficient. The operators have since been changed, and it has been required that the work of the present welders engaged by the firm shall be tested. For this purpose welded specimens have been prepared by the welding operators and submitted to the School of Engineering, Auckland University, for physical tests. The scantlings of small receivers which may be constructed in future by this firm have been checked and brought up to a standard which will provide an adequate margin of safety. A list of other receivers welded by the firm has been obtained, and these are now being hydraulically tested and carefully examined by the Department's inspecting staff.

Machinery.

The following statement shows the number of inspections of machinery, plants, lifts, cranes, and hoists during the year:—

Machinery plants not driven by steam power	9,473
Machinery plants driven by steam power	2,638
(The machines inspected in the above machinery plants amounted to a total number of 72,582.)	
Lifts	3,116
Cranes	395
Hoists	1,308
Electric-power stations—	
Water power	112
Oil or gas power	55
Total inspections	17,097

Included in these numbers of machinery are forty-two new lifts and fifteen new cranes.

The year ending 31st March, 1936, is the first complete year under which a new system of reporting and certificating machinery plants has operated. Prior to this year, one report and one certificate covered only each prime mover and the machines driven by it, with the result that in many instances a large number of certificates were issued for one plant. Under the new system one report and one certificate covers, generally, the whole of the machinery in a works. Consequently, no comparative study of the number of inspections made this year and in previous years can be made from this report. It is estimated, however, that the amount of machinery inspected during the year has increased considerably.

Four fatal and sixty-two non-fatal accidents were reported during the year, and in each case a full investigation was made into the cause of the accident. Where it was possible, additional safeguards were erected or the safety equipment improved in order to prevent further accidents with the machine or with similar machines.

Two of the fatal accidents were connected with lifts, one with a telpher, and one with sawmill-belting. Brief summaries of the accidents taken from the Department's reports are as follows:—

(1) On the 13th July, 1935, an assistant lift-maintenance mechanic was fatally crushed between the car of a goods-lift and the lintel of the ground-floor opening. The lift was under repair at the time, and, after the renewal of a blown fuse, was being tested by an electrician from the machine-room overhead. His assistant was stationed at the ground floor. On receipt of the assistant's signal that all was clear, the lift was first lowered to the ground floor and then reversed for the ascent. Immediately it left the ground a cry was heard and the machine was stopped. The assistant was found fatally crushed between the floor of the car and the lintel. No one witnessed the accident, but it is assumed that deceased attempted to board the moving car and was caught and thrown across the edge of the car-platform by a descending rise-and-fall gate operated by the movement of the car at the ground floor landing. The lift was certificated as a goods-lift to be worked by an attendant in the car, and under normal operation this accident would not have happened. As a precaution against a repetition of a similar accident, the landing-gate has been fitted with an electro-mechanical lock which requires that the gate must be closed manually before the lift can be operated.

(2) In September, 1935, an operator of a telpher-machine was fatally injured. A telpher is an electric travelling hoist hung from overhead rails and operated from a cab which travels with the hoisting-machinery. The operator was found crushed between the top of the cab and a fixed bracket, and it is apparent that the injuries from which he died were due to the accidental starting of the machine. Failing to start the telpher by moving the controller handle, the operator climbed to the top of the telpher, and was in the act of adjusting the motor brushes when the motor functioned and caused the telpher to move towards the bracket. The controller lever had evidently either not been placed in the "off" position or had been accidentally moved from the "off" to the "on" position by the

operator as he was climbing out of the cab. The " off " position on the controller face-plate was notched and engaged a catch on the underside of the lever so that the control lever could only be normally moved by depressing a button in the control handle against the action of a spring. The accident would not have occurred had the instructions exhibited in the telpher-cab to the effect that the main switch in the cab should be opened before leaving the cab been carried out. As a further precaution against accidental starting of the motor, the trolley-pole could have been pulled away from the overhead wires.

(3) The second fatal lift accident occurred at Wellington on the 14th January, 1936, with an automatic passenger lift. Late in the afternoon of that date a lock on a landing-door at the ground floor of the lift well was found defective and was repaired. In the evening of the following day a person whose office was in the building was found dead at the bottom of the lift-well. He had been missing since 2 p.m. the previous day, and there is no doubt that he fell down the lift-well from the ground floor during the time the landing-door lock was defective. It is assumed that he opened the landing-door, and, not noticing that the lift-car was not there, walked into the lift-well. Normally it is impossible to open the landing-door of an automatic lift when the car is away from that landing. The defect in the lock was due to a missing screw which had worked out or had been deliberately removed by some unauthorized person. The lift had been thoroughly inspected the day before the accident, when the locks and other safety equipment were found in good condition. A contributory cause of the accident was that the light in the lift-car was not burning.

(4) The remaining fatal accident occurred at the factory of the King Box Co., Ltd., Taumarunui, on the 3rd March, 1936. Shortly after work started in the morning a workman was found in a pit beneath shafting driving a large circular saw. He was unconscious, and had received head injuries from which he died four weeks later without regaining consciousness. No one witnessed the accident, and it is assumed that the victim was cleaning sawdust from the pit, as a rake used for this purpose was found with him. The pit was only about 3 ft. deep. The wounds were probably caused by his head coming in contact with clamp-fasteners used for joining a belt driving the saw shafting. The coroner's verdict stated that it was difficult to determine how the injuries were received.

Sixty-five non-fatal accidents were reported during the year, and in thirty-three cases the inspectors who investigated the accidents could not suggest any improvement in safeguarding. In each of these cases the guarding was adequate, and the accident was due to factors over which the Department had no control. In many cases thoughtlessness of the operators and carelessness on the part of those responsible for replacement or adjustment of guards were contributing causes. In this connection it is observed that the experience of the Department is common with that of other safety authorities—that is, that the majority of industrial accidents are due to failure of the human element. A case in point occurred in Otago in March of this year. A butcher removed the guard from the hopper of a mincing-machine for cleaning purposes. The machine was left running. He turned to speak to some one in the factory and inadvertently placed his right hand in the hopper instead of in a bowl of water nearby. Four fingers were instantly caught by the mincer knives and severed, and the man is now maimed for life.

Power presses (16), saws (10), belts and shafting (8), lifts (6), guillotines (3), power mangles (2), planers (3), and printing-machines (2) were responsible for the majority of the non-fatal accidents. In forty-three cases, 66 per cent. of the total, the injuries received were to fingers and hands.

It is difficult for the Department to control completely the human factor in accident-prevention work, but employers could give valuable assistance in reducing their accident rate by ensuring that workers are instructed in the proper working of machines before they are engaged to operate them, and by adopting a system of supervision and discipline that will promote safe behaviour. This is particularly essential in the case of young or new workers during the early period of their training. Of the sixty-five persons reported injured during the year, nineteen were persons of eighteen years of age and under. Some of these had been working the machines at which they were injured for very short periods. It may be inferred, therefore, that their youth and lack of experience were factors contributing to the accidents. Recognition of the fact that young people meet with more industrial accidents than older people is found in the enactments of the Inspection of Machinery Act, which require that a person under the age of fourteen years shall not be employed in working or assisting to work at, or with, any machinery; that a person under the age of fifteen years shall not be allowed to clean certain machinery whilst it is in motion; and that no male person under eighteen years of age and no female person under twenty years of age shall be left in charge or control of a steam boiler, steam, gas, or oil engine, nor shall work any power-driven lift, except lifts specially exempted. Consideration might be given to the extension of these enactments to cover other dangerous machinery.

Staff.

It is with regret that I have to record the serious illness of Mr. H. G. L. Noy, Senior Surveyor of Ships and Inspector of Machinery, Auckland. Mr. Noy has been on sick-leave since August last. He has a very creditable record in the Department, which he joined in 1912.

Arrangements have been made for the transfer to Auckland of Mr. J. W. Townsend, Senior Surveyor and Inspector, Christchurch. Mr. S. N. Johnston, Wellington, has been promoted to succeed Mr. Townsend. Other consequential transfers provided for are Mr. Dawson, of Invercargill, to Wellington; Mr. Mowatt, of Greymouth, to Invercargill. Mr. Lockie, of Auckland, will be promoted to have charge of the Greymouth district.

Owing to the pending retirement of Mr. Noy and the increase in the work, three new appointments of Engineer-Surveyors of Ships and Inspectors of Machinery were made. Mr. J. S. Kerr was appointed to Auckland and Mr. A. T. Wall and Mr. F. S. Parker to Wellington.

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

These examinations were held at the various offices of the Inspectors of Machinery throughout the Dominion on the dates prescribed in the regulations. In addition, a few examinations were held at other times at the request of candidates who would have been seriously inconvenienced had they been required to await the scheduled date of examination. These special examinations can be held only when they do not upset the arrangements made by an Inspector in connection with his field work.

The full list of places where the examinations were held is shown in an appended return, as also is the number of candidates examined at each place. The classes of certificates for which examinations were held were—

Extra First-class Stationary Engineer.
First-class Engine-driver.
Second-class Engine-driver.
Steam-winding-engine Driver.
Electric-winding-engine Driver.
Locomotive-engine Driver.
Traction-engine Driver.
Locomotive and Traction Engine Driver.
Electric-tram Driver.

The total number of candidates examined was 408. Of this number 274 were successful, and 134 failed in their examinations. Three hundred and eight certificates were issued, which includes 274 to successful candidates in their examinations, the remainder being replacements and issues under the provisions of sections 53, 59, and 62 of the Inspection of Machinery Act, 1928. The percentage of failures in the examinations for first-class engine-drivers appears to be greater than usual. The figures given represent numbers of examinations. The total number of examinations held was 63, but the total number of candidates was 40 only. Of this number, 16 candidates passed and 24 failed; twelve of the failures made more than one attempt to pass the examination.

Marine Engineers' Examinations.

In the course of the year, 172 candidates were examined for Marine Engineers' Certificates of Competency at the various centres throughout the Dominion.

Of these, eighty-four candidates were examined for Third-class, Second-class, and First-class Ordinary and Motor Certificates, all of Imperial validity; of the fifty-nine third-class candidates who presented themselves for examination, forty were successful and nineteen were unsuccessful; of the ten second-class ordinary motor and motor endorsement candidates examined, five were successful and five unsuccessful; of the fifteen candidates examined for first-class ordinary, motor, and motor endorsement, ten were successful and five unsuccessful in the examination.

Of the first-class candidates above-mentioned, four sat for ordinary certificates, three of whom were successful, four for motor certificate, of whom one was successful, and seven for motor endorsement, of whom six were successful.

Of the second-class candidates four sat for ordinary certificate, one passing and three failing; five for motor certificates, three passing and two failing; and one, who was successful, for motor endorsement.

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

Of the five successful candidates for second-class examination, four passed at the first attempt and one at the third attempt.

Of the forty successful candidates for third-class examination, twenty-one passed at the first attempt, sixteen at the second attempt, and three at the third attempt, the summary for third-, second-, and first-class examinations, being 65·5 per cent. passes and 34·5 per cent. failures, which represent an increase of 16 per cent. successful candidates over the previous year.

The remaining eighty-eight candidates were examined for certificates of competency which are valid in New Zealand only. Of these, fifty—thirty-five of whom were successful—were examined for sea-going vessels propelled by some motive-power other than steam; thirty-three, thirty of whom were successful, for service in vessels propelled by some motive-power other than steam plying within restricted limits; five, two of whom were successful, for steam-driven vessels plying within restricted limits.

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

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

Prosecutions.

During the year proceedings for offences under the various statutes administered by the Department were instituted in sixty-two cases. Prosecutions under each Act were as follows: Shipping and Seamen Act, 1; Harbours Act, 5; Fisheries Act, 45; Inspection of Machinery Act, 11.

Fisheries.

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

The sale of rock oysters showed a substantial decrease for the season, for the reason set out in the Chief Inspector's report; the number of sacks marketed was 3,037, and the proceeds of sales £3,762 6s. 8d., as compared with 5,267 and £5,925 7s. 5d. for the previous season. The quality of the oysters was generally most satisfactory.

Whaling.

Legislation to give effect to the International Whaling Convention signed at Geneva in 1931, the objects of which Convention are set out in my report of last year, has been passed in New Zealand, and the necessary regulations have been prepared.

The whaling-station at Tory Channel, the only one in operation in New Zealand at the present time, took fifty-seven whales during the 1935 season, giving a yield of 258 tons of oil, as compared with fifty-two whales with a yield of 260 tons during the previous season.

The station at Whangamumu is still closed down.

The market for oil has, both in the matter of demand and price, maintained the improved position shown during the previous year.

I have, &c.,
L. B. Campbell, Secretary.

REPORT ON FISHERIES.

Sir,—

I have the honour to submit the following report on fisheries for the year ended 31st March, 1936.

From the annual returns which have been forwarded by local inspectors of fisheries the following summary has been compiled to show the estimated total quantity and value of the various classes of sea-products marketed during the year:—

	Quantity.	Value. £
Wet fish	363,448 cwt.	313,106
Whitebait	3,251 cwt.	24,267
Oysters (dredged)	49,712 sacks	31,070
Oysters (rock)	3,037 sacks	3,762
Mussels	10,092 sacks	2,643
Crayfish	6,580 cwt.	5,242
Toheroa (canned products)	72,288 lb.	3,109
Whale-oil	258 tons	3,830
Quinnat salmon (netted fish only)	2,733 lb.	103
Total value		£387,132

The detailed returns are summarized in Tables I to IV (pp. 40–43).

Some increase is shown in the total landings and value of wet fish and of mussels in comparison with the returns for the previous year. Diminished yields are shown for the oyster—especially the rock oyster—industry and for the quinnat-salmon netting operations on the Waimakariri River. The crayfish returns show a slight fall, the total whitebait catch and the pack of toheroas a slight rise, and the production of whale-oil remains at very much the same figure as last year.

With regard to the returns from individual fishing ports, Auckland shows the most marked increase in fish-landings, a total of 129,209 cwt. for 1935–36, compared with 102,313 cwt. for 1934–35.

The total landings at Auckland of wet fish and of the two principal commercial kinds, snapper and flounder, for the last six years have been as follows:—

	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	1935–36.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	104,098	83,753	82,758	91,512	102,313	129,209
Snapper	59,223	43,102	49,657	60,540	68,432	88,374
Flounder (including dabs)	2,549	4,201	10,452	6,607	6,550	7,560

This year's total represents the second highest on record, having been exceeded only by the total for 1927–28, which was 134,040 cwt. In that year there were four steam trawlers working; in 1935–36 there were three steam trawlers engaged, two during ten months and one during seven months out of the twelve. The outer grounds of the Hauraki Gulf were worked in every month except June; the Bay of Plenty was visited in every month except November; and the West Coast grounds were visited by an Auckland trawler during five months of the year now under review. This represents about twice the amount of trawling that was carried on last year.

There has also been a further increase in Danish-seining operations, eight new boats, of greater tonnage and superior power to most of the older fishing craft of this type, having entered the industry during the year. These vessels now operate beyond the confines of the Hauraki Gulf to an increasing extent. The old type of benzine-engined fishing-launch working with lines and set nets is a very small factor in contributing to Auckland's fish-supplies at the present time.

The returns for the neighbouring port of Thames also indicate a slight increase. For the last six years the returns for total quantity and value and for the two principal kinds of marketable fish have been as follows:—

	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	1935–36.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total wet fish	26,991	21,291	18,078	17,412	17,614	19,134
Snapper	10,811	10,257	9,750	10,429	11,163	14,053
Flounder (including dabs)	6,899	7,228	6,516	4,869	4,769	3,305
Total value	£30,247	£21,116	£14,029	£13,595	£13,957	£14,593

The general trend is decidedly downward over the last six years, more especially in regard to flounders. Snapper landings show an increase, but this is a less valuable fish than flounder. The value of the total landings of fish at Thames has declined to less than half what it was in 1930–31. This decline is ascribed to the deterioration of the flounder fisheries which have always been of primary importance to this port. While at certain times bad weather and the abundance of jelly-fish have hindered the operations of the Thames set-net fishermen, and while their earnings have been depressed by the low market prices for both flounders and snapper, it is considered locally, and apparently with a good deal of justification, that the decline of the Thames fishing industry is due mainly to the development of the Danish-seine method of fishing, which has caused a general diminution in the flounder stocks of the area. Though the Thames Firth (south of the line from Deadman Point to Ponui Passage Light) has been closed to Danish-seining since the year 1924, these vessels operate on the lower grounds to which both flounders and dabs migrate, and the result of intensive Danish-seining operations during the last ten years, and especially during the last three years, has been a considerable reduction in the general stock of flatfish in the whole area. In 1934 the area closed to Danish-seining was extended for one month and in 1935 for two months (August and September), so as to prevent the operations of Danish-seiners on the grounds that are frequented at this time of year by spawning flounders and dabs. Observations made by Mr. E. W. Gilliver, Inspector of Fisheries, Coromandel, on the fish and on the floating eggs of dabs and flounders indicated that though some flounders were spawning in July, 1935, the general spawning of both species occurred during the period of the closure. On 1st January, 1936, a regulation, gazetted on 8th August, 1935, came into force, by which the minimum size of the mesh in the cod-end of Danish-seines was limited to 5 in. instead of the former 4½ in. This was designed to prevent the capture of any fish in undue quantities until they have reached a reasonable size.

The restricted areas available for Danish-seine fishing in the Hauraki Gulf and the increased numbers and power of the vessels using this method of fishing have led to an augmented exploitation of the fishing-grounds in the Bay of Plenty, from which some very substantial catches have been brought to the Auckland markets. In consequence of this there have been many protests from residents along the coast of the Bay of Plenty who complain that the inshore fishing-grounds have been impoverished. The coastal grounds between Takatu Point and Bream Head to the north have been the field of similar actions and reactions. To what extent these complaints would justify measures of restriction that would increase the difficulties with which the Auckland fishermen pursue their calling is a question which cannot be decided with any confidence on the basis of the evidence at present available. The problem is not merely that of preserving for the row-boat fisherman the good and easy fishing that he enjoyed in former years—it is doubtful whether that could or should be done in any case—but rather that of conserving the stock of fish to be available without diminishing returns for commercial purposes in the future. If measures to this end are to be taken on a sound basis and in a manner that will be just to all the interests concerned, it will be necessary for the Department to be equipped for acquiring more precise and more comprehensive information on the fish and on the practices and results of the fishing operations than has hitherto been the case. It must be recognized that with the exception of the snapper and flounder fisheries of the Hauraki Gulf, on which a certain amount of practical knowledge has been acquired, and, to a less extent, the flounder fisheries of the Tasman Bay area, where belated investigations have recently been made, the exploitation of our sea fisheries has been going on without any real surveillance on the part of the Department that is responsible for their conservation.

The Hawke's Bay area was worked during the year by ten Napier trawlers and two Danish-seiners, but here no controversy with inshore fishermen has been voiced, probably because the deep-sea fishing grounds are more extensive in relation to the number of vessels operating, and rival fishing methods do not jostle each other to the same extent. Compared with the 1934–35 figures, the returns of fish landed at Napier show a slight increase; but if a comparison is made with the last year before the earthquake the decline in the Napier fishing industry is very evident:—

	Quantity. Cwt.	Value. £
1929–30	16,908	25,922
1934–35	14,887	12,196
1935–36	16,421	13,782

Flatfish have formerly been an important part of the Napier fish supply. During the last year the catches of this class of fish have been very poor, and consequently the market value of the landings has declined. The scarcity of these fish on the usually very productive Napier grounds has been such

that the steam-trawler owners have made very little if any profit from their operations, especially since they suffer most from the unsatisfactory post-earthquake harbour facilities, while their working-expenses, and particularly the harbour charges, are higher than when fishing, port facilities, and markets were good. The Diesel-engined trawlers and Danish seiners, on account of their lower working-expenses, have been better able to hold on against the difficulties caused by poor fishing and poor prices. Among the factors which have been indicated as responsible for the recent scarcity of fish on the Napier trawling grounds are the unfavourable weather conditions arising from the abnormal prevalence of easterly winds, the occurrence of a slime in the water (which was of organic origin—apparently a lowly organized plant form), and the presence, on the area that had formerly been the best flatfish ground, of material deposited from the dredger employed in connection with the harbour-works. The trawlers have consequently been obliged to concentrate more on the pursuit of the " round " fish which frequent the deeper and more off-shore waters; the market value of their catches has thus been reduced, and the continuity of their operations has been subject to more than the normal amount of interference.

In the Wellington area there are numerous small craft engaged in line and set-net fishing which operate very sporadically, and it is difficult to get information about their fishing. The bulk of Wellington's fish supply comes from the two steam trawlers and the fleet of longliners working from Island Bay. The two steam trawlers operated steadily throughout the year, fishing mainly on the Cape Campbell and Kapiti grounds, and occasionally extending their range to the neighbourhood of Kaikoura on the east coast and to abreast of Westport on the west coast of the South Island. Rather more fish has been landed from the trawlers than during 1934–35, but their catches of groper, hake, and barracouta show a diminution. More than half of the total landings consisted of tarakihi. The data available regarding the long-line fishing show a slight increase for groper, hake, and ling in the average landings, which may be due to the employment of more intensive catching methods.

During the year the " South Seas " has brought to Wellington eight cargoes of fish caught by the Chatham Island line boats, consisting principally of blue cod, with smaller amounts of groper, warehou, and tarakihi.

Thanks to the energy and interest shown by the local inspector and to the helpful co-operation of the fishermen, a fairly complete record of fish caught in the French Pass and lower Pelorus Sound areas has been obtained for this year. Most of this is sent to Wellington by steamer from French Pass. From eighteen fishing boats a total of 1,919 cwt. of fish, consisting of about 45 per cent. blue cod and about 32 per cent. groper was shipped from French Pass during the year. The returns indicate that the fishing in this area is too intermittent to be satisfactory from a producer's or from a distributor's point of view. The causes of this are mainly difficulties of transport and interference by bad weather. Most of the fishermen use small launches and cannot venture far from their harbourage. The low market prices that have prevailed have tended to keep the fishermen ashore, except when conditions were favourable for good results.

In my last two reports references were made to the impoverishment of the flatfish grounds in Tasman Bay, which had been worked by Danish seiners from Nelson during the past few years. It has not been possible to keep in sufficiently close touch with the commercial operations to obtain comprehensive information about the prevailing conditions from time to time. It may, however, be said that, following a diminution in the intensity of fishing operations, the grounds appear to have improved somewhat in 1935 and 1936. From October, 1934, to August, 1935, observations, with analyses of Danish-seine catches, were made in each month by the Marine Biologist, Mr. M. W. Young, or by Mr. A. M. Rapson, B.Sc., with a view to getting an understanding of the character of the fish-stocks and of the fishing-grounds. Some valuable preliminary results have been obtained with regard to size, distribution, growth, food, and spawning habits of the principal flatfish species in the area. As in the two previous years, the lower portion of Pelorus Sound was thrown open to the operations of Danish seiners for the months of April, May, June, and July, 1935. The catches were reported to be of moderate dimensions, and, presumably on this account, and also because of the difficulties of transport to markets, the grounds in the Sounds were fished only occasionally during the open season.

It has been possible to obtain only a general impression of the conditions off the east coast of the South Island, but it would appear that the fishing has been below average standard, and rather more than usually checked by bad weather. Generally speaking, flatfish as well as groper supplies have been below requirements. As might be expected, the small-boat and inshore fishermen have been most seriously affected and some of the Otago men have abandoned the fishing.

Between August and October, 1935, the trawling-grounds in the Wellington District were worked by the Sydney steam-trawler " Alfie Cam," which called at Wellington for coal and ice. It is understood that she worked the off-shore grounds, and, so far as the catches of fish were concerned, obtained good results. A second trawler (" Olive Cam "), belonging to the same firm, fished off the Otago coast in December, 1935, and January, 1936, under a New Zealand license and made fairly good catches, which were landed at Port Chalmers, where the owners had acquired a temporary depot. Further visitations by Australian trawlers in the future have been foreshadowed. If New Zealand trawler-owners and fish-exporters wish successfully to meet this threatened competition on their own grounds, it will be necessary for them to do everything that is possible in the direction of improving the quality of their exported fish by utilizing the best methods of handling, freezing, storage, and transport. There is evidence that, with Government encouragement and assistance, fishing-vessel owners in Australia are getting abreast of the most modern practices in the storage and transport of frozen fish. There is presumably no legal obstacle to an Australian firm establishing a depot in the Dominion, taking out licenses for trawlers here, and working the same grounds that are open to New Zealand trawlers. If the developments that are foreshadowed should take place, it will behove the Department to keep in close touch with the realities of the situation (which cannot be done by reading press cuttings) and to be in a position to prevent the possibility of depletion of fish-stocks by over-intensive or wasteful fishery operations. All that is definitely known about the New Zealand trawling-grounds points to the conclusion that they are not of very considerable extent.

Statistics.

For several years efforts have been made to obtain records of the catches of different types of fishing-boats as a basis for statistical study, but this has only been possible to a limited extent. A scheme for obtaining monthly returns of fish landed from every licensed fishing-boat in the Dominion was commenced in January, 1936. The object is to enable the Department to be in possession of records that will show approximately the quantities of various kinds of fish taken by different methods and with reference to the time occupied in fishing. In the absence of such data, as I have previously pointed out, there can be no proper understanding of the changing conditions of available fish-stocks nor of the effects of fishery operations. In connection with schemes for industrial developments, or such questions as transport arrangements, it is also essential that the quantity and the seasonal or other periodic aspect of the availability of supplies should be known. Our present method of collecting official returns, perfunctorily set up twenty years ago, with reference only to the port of landing and for a whole year at a time, has for long been recognized as inadequate and unsatisfactory; but there has been no fisheries staff available either in the provinces or at headquarters for the collection and collation of truly statistical data.

The institution of the scheme for the final three months of the year ended 31st March, 1936, was decided upon, in the first place because licenses for fishing-boats become due on 1st January in each year and it was convenient to issue the necessary instructions regarding fishing returns at the same time, and in the second place because it was an advantage to have a three-months period of trial so as to be able to remedy defects and make necessary adjustments before the commencement of the official year on 1st April. The launching of this scheme has been deplorably belated in view of the urgent importance of various administrative and other problems that can only be elucidated on a statistical basis, but it has nevertheless been commenced before any additional assistance has been made available in the Fisheries Branch to deal with the extra work involved both at the ports and at Head Office. For this reason only a small proportion of the data obtained for the last quarter of the year could be utilized in this report. It is hoped that it will be possible to incorporate all the material in next year's report. The majority of the fishermen have responded very well and have co-operated satisfactorily with the Department in forwarding returns. The data received, though not yet fully representative, throw light on the character and results of fishing operations round the coasts that has not hitherto been obtainable, and will give a significance to our published figures that will for the first time render them worthy of being described as fishery statistics.

Exports.

Statistics of both imports and exports of fishery-products, for which we are indebted to the Customs Department, are given in detail in Table V (p.p. 43–44). The strong rising tendency for our exports shown last year has continued; the total value of exports of New Zealand fish and shell-fish for the year 1935–36 was £153,322, compared with £121,903 for the previous year, which was the highest figure that had hitherto been reached. About 14 per cent. of the total wet-fish supplies were exported during 1935–36.

The quantities in the principal classes of exports for the last six years have been as follows:—

—	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	1935–36.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Frozen fish	17,678	14,098	19,584	34,738	46,714	54,267
Fish smoked, dried, pickled, or salted	1,128	638	521	1,243	1,968	2,519
Fish, potted or preserved in tins—	lb.	lb.	lb.	lb.	lb.	lb.
Oysters	15,079	69,479	51,620	128,028	95,270	172,855
Other kinds	97,063	112,186	103,186	384,282	184,148	174,438

In comparison with last year the exports of frozen blue cod have increased by 12·5 per cent. in quantity and 19·5 per cent. in value; frozen snapper 56 per cent. in quantity and 84·5 per cent. in value; flounders 4·5 per cent. in quantity and 14 per cent. in value: other kinds of frozen fish 11 per cent. in quantity and 15 per cent. in value. Total exports of frozen fish have increased by 16 per cent. in quantity and 26 per cent. in value. Of canned sea-products oysters show a substantial increase and crayfish a moderate increase, while toheroas and whitebait have slightly declined in comparison with the exports for the previous year.

Rock Oysters.

There was some difficulty about deciding upon the policy to be adopted for the 1935 oyster-picking season, more especially with regard to the Kaipara and Bay of Islands areas, upon which we depend for a substantial proportion of our supplies. In both of these areas the beds contained an abundance of young oysters that were too young to be picked economically. The older and marketable oysters were usually so surrounded by half-grown ones that an undue amount of waste would be caused in getting them off. The same conditions obtained in some parts of other areas. It was therefore decided that a light and carefully controlled harvesting of oysters should be made.

Picking was begun in all areas on 6th June. Sales at the oyster-depot in Auckland commenced on 20th June and closed on 24th August.

The inclement weather that prevailed throughout the season added considerably to the difficulty of gathering and shipping the supplies, and much credit is due to pickers and overseers, and especially to the Senior Inspector of Fisheries, in charge of the general organization, for the smooth and efficient working of the operations.

The numbers of sacks marketed from each area were as follows: Bay of Islands, 800; Whangarei, 219; Kaipara, 400; Hauraki Gulf, 914; (Takatu - Gull Point, 72; Kawau, 48; Rakino, 60; Motutapu, 120; Waiheke, 578; Ponui, 36); Coromandel, 300; Great Barrier Island, 404: total, 3037 sacks.* The gross proceeds from sales amounted to £3,762 6s. 8d.

In endeavouring to meet fairly the demands that were always in excess of supplies and in handling difficulties arising from shipping delays caused by bad weather, the men in charge of sales at the depot had a particularly harassing season, but performed their duties to the complete satisfaction of the Department. The oysters marketed were generally of very good quality—one uniform grade of quality is of course impossible—and would probably have sold just as readily had the price been substantially higher. As has happened previously when the rock-oyster output was sub-normal, a great deal of criticism appeared in the local press concerning the shortcomings of departmental control of the oyster-beds and oyster trade: private enterprise under a leasehold system was advocated, and, once again the New South Wales oyster industry was pointed to as an example of what should be done in New Zealand. The practical points upon which these propositions all turn have been discussed in previous reports, and more especially in the comprehensive memorandum on the oyster industry of New South Wales by Mr. M. W. Young which appeared as an Appendix to the Report on Fisheries (reprinted from the Annual Report of the Marine Department) in 1929. The additional understanding of oyster conditions gained since that date has not contributed any new point in favour of individual enterprise on the Australian system. Without retraversing the whole question, it may be said that the reason the Australian system is not copied here is that the natural conditions for oyster-growth and oyster-reproduction are decidedly less favourable here, while the market price of our rock oysters is lower.

In considering the economics of the Auckland rock-oyster industry it is essential to bear in mind that we are dealing with "wild life" and not with primary products like wheat or potatoes the supply of which can be varied by the cultivator at relatively short notice in response to the stimulus of increased demand. What has been conveniently termed "oyster cultivation" has been carried on by the Department since 1911; but, of the oysters marketed annually, only a small proportion have been derived from "cultivation work" that has consisted of creating new oyster-beds on ground that did not previously contain oysters. A fundamental difference between the oyster-farmer and the agriculturist is that, while the latter prepares the land and sows the seed he has procured, the oyster-farmer has to leave the sowing of the seed to Nature. A successful setting depends on two main factors—(1) There must be an adequate supply of "seed," which in this case consists of the minute eggs liberated from spawning oysters and the microscopic embryos that develop from the fertilized eggs, and therefore implies an adequate supply of parents; and (2) the conditions must be favourable for the survival (as well as the production) of embryos and their successful fixation on a suitable resting-place. That is only the beginning. The "crop," under New Zealand conditions, may have to remain for a period of six or seven years before it can be harvested. We cannot control Nature: we can only adjust our operations to harmonize as much as possible with the conditions she imposes. That is why research is essential—to enlighten our understanding of those conditions. Such research has been conducted for many years by scientists in other countries, but only recently has appreciable progress been made in the elucidation of some of the factors involved. The researches are still being prosecuted, and progressively light is being thrown upon conditions not previously elucidated and about which the question of control could not even be considered. Only as a result of such scientific elucidation can cultural operations become more specialized and more intensive in practice or more extensive in effect. In New Zealand our understanding of the biology of our oysters is at the elementary and superficial stage, and must remain so until a specialist can concentrate on the investigation of the subject; for the oyster must be studied in relation to the environment in which it is actually living. That oyster-culture has produced very valuable results, even on the basis of a partial understanding of the biological factors, may be seen in New South Wales to-day, and might have been seen in France a century ago or in China a thousand years ago. Such cultural methods have been the result of a system of trial and error; and many have been the failures and financial losses where the methods have been tried under the wrong conditions. The lesson to be learnt from the history of the world's oyster fisheries is that the conservation of natural supplies was universally neglected till it was too late, and then artificial, or rather semi-artificial, culture was developed in order to restore, or partially restore, deficiencies brought about by depletion from over-exploitation. And with that change came a substantial rise in the price of oysters everywhere; for whereas "wild life" is cheap, cultivation costs money. In New Zealand the demand for oysters has been such that sales were always easy and production was thus stimulated. It was production to the markets, however, not production to the stocks. Every thousand sacks of oysters that are taken from the beds reduces by about a million the stock of parent oysters from which the next generation is to be derived.

The all-important fact to be recognized is that, where "wild life" is concerned, demand does not stimulate production: it stimulates reduction. And that is what happened with our rock oysters: the reserve of breeding stock, which determines the quantity of "seed" available for the propagation of the species, has been subject to too great abstractions in order to turn oysters into cash. The old natural beds had been greatly depleted before departmental control was introduced, and in places where this control has not been in operation they are now annihilated. The depletion continued

* One sack = three bushels.

during the system of picking under license (with no limit to the number of licenses) prior to 1908, being stimulated by the market demand. It continued when the Marine Department took over the picking of rock oysters as a State monopoly in 1908, because the Department had no means of gauging the rate at which natural reproduction took place and regulating reduction by picking accordingly. The most obvious factor in the situation was that there was a demand in the market for all the oysters that could be brought to it. This is the conclusion drawn from consideration of the general downward trend in the quantities of oysters sold each year during the last twenty-eight years. Conditions for propagation have varied. Taking the rock-oyster region as a whole they have apparently been mostly poor or indifferent—good in some places at times and good in general at very infrequent intervals. During the eleven-years period of my own experience there have been only two seasons when oyster-spawning was good for the greater part of the region as a whole. That was in the season of 1926–27 and the season of 1934–35, when the early summer weather was warm and fine for several weeks without a break. Whether conditions for spawning and setting are good or bad, the numerical abundance of the new generation is directly dependent upon the numerical abundance of parent oysters. The oysters from a crowded bed in a good spawning-area do not commend themselves to the buyers because they are small and scraggy, and this tends to restrict picking on areas where the oysters could well be spared without harm to the reserve of brood-stock and provides a strong inducement to over-picking from beds where the growth is good but the reproductive factor relatively small and uncertain. A more detailed and comprehensive discussion of all the factors involved will be published when a report, upon which the Marine Biologist is now engaged, is available and can be printed. My present object is to point to the essential necessity of guarding against picking to satisfy to-day's market demand, because this can only be done at the sacrifice of to-morrow's seed-time and the harvests of future years. The general aim should be to build up and protect a sufficient reserve of brood-stock—though this may never reach the abundance of the virgin conditions of by-gone years—and then maintain a fairly uniform annual output, avoiding the alternating ups and downs that have been shown in the annual totals over the last twenty-five years, and picking in accordance with what the stock can spare rather than with what the market can take.

Oyster-cultivation.

In my last report I mentioned the advisability of extending this work, which had been reduced to a minimum through lack of funds during the period of straitened finances.

A much larger appropriation was made available for oyster-cultivation during the year under review, and it was thus possible, in addition to the tasks that are carried on as a general routine, to provide for a considerable extension of the artificial beds that had previously given satisfactory results in Kaipara Harbour. In previous reports reference has been made to the well-established fact that the spawning of oysters and the survival and subsequent fixation of the free-swimming larval stages are vitally affected by the temperature of the water. For our rock oysters it is evident that the water must reach a temperature of at least 20° C. (or 68° Fahrenheit) before the oysters can spawn, and this high temperature must be maintained throughout the life period of the larval oyster to enable it to live and feed and ultimately settle down on the platform (usually of stone) to which it adheres for the rest of its life. Subsequent growth and "fattening" are also facilitated by a rise and retarded by a fall in temperature; but it is propagation that is most critically affected by these conditions. It is this factor that determines the natural distribution of the Auckland rock oyster in New Zealand waters. Provided no inimical conditions prevail, one will always find the biggest abundance of oysters where the water temperatures in summer are consistently high. The Kaipara Harbour affords a good example of this. Its waters warm up earlier and remain warm more consistently than in any other important oyster area that we have. In consequence of this one finds an abundant covering of oysters wherever there is a foreshore consisting of clean and otherwise suitable rock. Unfortunately such clean foreshores are not extensive in this harbour, but by placing stone boulders on suitable areas between high- and low-water marks an artificial addition to the natural beds can be made. This work can be done on a large scale with more efficiency and with more economy in the Kaipara than elsewhere, because a good "fixation" or "spat-fall" of young oysters can be relied on to a degree that is not possible in any other area. An artificial oyster-bed of this kind having an area of 29,260 square yards was laid down in November and December, 1935. Unfortunately there followed the coldest and most inclement summer that had been experienced in the North for many years, which was not conducive to the most successful reproduction of oysters. In spite of this, however, the new stone is now occupied by a colony of young oysters that will be marketable in about six years—a long time to wait for a return, which is a point that tends to be overlooked by the oyster culturist of the Chamber of Commerce and the newspaper article.

What I have mentioned as routine work consisted principally of the destruction of the oyster enemies—borers and pupus—the cleaning of "grape-weed" and dead shell from oyster-rocks, work carried out by the inspectors in the course of their every-day duties. There is also a transplantation experiment to be recorded which was carried out by Captain Daniel, Senior Inspector of Fisheries at Auckland, who had a hundred slabs of concrete made which he stacked in tiers at suitable places in Bon Accord and North Harbour, Kawau. These are harbours which rival the Kaipara in their reliability as good oyster-fixing waters. The slabs received a copious covering of young oysters in the 1935 summer, and after growing to a size at which they could be safely transported were taken across to Manaia on the Coromandel side, where there are comparatively few oysters, but what oysters there are make very good growth. This is one of the areas where fixation of young is very uncertain, and only sparse when it does happen. It is considered that the only possibility of producing a population of oysters in Manaia Harbour is by transplantation from a good spawning-area. The question is whether

it can be done at a sufficiently low cost to be a profitable line of oyster-cultivation. An answer will be provided to this question in due course.

The following statement shows the amount of the several classes of cultivation work carried out during the year and the cost of the same.

OYSTER-CULTIVATION.

Area, Work done, and Cost:—

I. Bay of Islands: 727,000 borers and 1,460 pupus destroyed; 1,450 square yards of rock cleared of weed, and 50 square yards cleared of dead shell; 67 square yards of rock-face blasted to expose additional clean surface. Cost, £50.

III. Kaipara: 29,260 square yards of clean stone laid down; 143,600 borers destroyed. Cost, £482 9s. 4d. (stone work only).

IV. Takatu to Gull Point: 244,800 borers and 329 pupus destroyed; 402 square yards of rock cleared of weed. Cost, nil.

V. South Shore, Tamaki Strait: 70,200 borers and 50 pupus destroyed. Cost, nil.

VI. Coromandel: 313,200 borers and 2,240 pupus destroyed; 350 square yards of rock cleared of weeds; 115 boulder-tops cleaned; 100 concrete slabs, with transplanted young oysters, erected. Cost, £14 19s. 2d.

VII. Kawau: 360 capstones removed and relaid; 125,900 borers and 134 pupus destroyed; 185 square yards of rock cleaned of weeds and 62 square yards of dead shell; 200 pumice-concrete posts erected. Cost (of posts), £39 7s. 6d.

X. Motutapu: 145,100 borers and 165 pupus destroyed. Cost, nil.

XII. Motuihi: 32,000 borers and 19 pupus destroyed. Cost, nil.

XIII. Waiheke: 1,016,600 borers and 894 pupus destroyed; 4,976 square yards of rock cleared of weed; 885 square yards of rock cleared of dead shell. Cost, £42 2s. 11d.

XIV. Ponui: 597,000 borers and 303 pupus destroyed. Cost, nil.

XVI. Great Barrier: 391 square yards oyster-bearing rock shifted to better position; 39,000 borers destroyed; 668 yards of rock cleared of weed. Cost, £10 8s.

All areas: 391 square yards of oyster-bearing rock shifted to better position; 29,260 square yards of clean rock laid down; 360 capstones removed and relaid; 3,454,400 borers and 5,534 pupus destroyed; 7,639 square yards of rock cleared of weeds; 1,399 square yards of rock cleared of dead shell; 67 square yards of rock-face blasted; 200 pumice concrete posts erected; 100 seed-oyster slabs transplanted from Kawau to Coromandel; 115 rock-tops cleaned. Cost of labour and material, £639 6s. 11d.

DREDGE OYSTERS.

During the Foveaux Strait oyster season (February to September inclusive) for 1935 a total of 49,712 sacks of oysters was landed—a slight decrease compared with the total of 52,254 sacks for the previous season. The returns of individual landings indicate no decline in the productivity of the beds, and the difference is probably connected with the factor of demand which hinges upon questions relating to price and transport conditions. A discussion of these questions is scarcely relevant in this report; but it may perhaps be mentioned that our method of transporting oysters of this kind for long distances by land and sea in sacks is one that has been superseded many years ago in most, if not all, other countries. The commercial reason for using sacks is that they are cheap, while barrels or boxes as used for live oysters in other parts of the world would be dear; and oysters are a relatively cheap commodity in New Zealand. The long-distance transport of "shucked" oysters in cans kept at low temperature would also be attended by difficulties arising out of our primitive methods of conveying perishable foodstuffs. Here again it may be said that, if it paid to provide better conditions, it would be done. However, it would appear that the problems at least call for more comprehensive and expert consideration than they have hitherto received, which might be given in connection with a critical and constructive review of the oyster industry in all its aspects. The scientific and technical light that it is possible at the present time to throw on the subject might very well enable more profitable use to be made of the products of this industry to the benefit of both producers and consumers or would-be consumers. An estimate of the extent of our oyster resources based on a scientific survey of the beds and the exploration of potential oyster-grounds by means of biological observations and experiments are matters that call for attention before the question of the substantial development of the oyster industry can be dealt with rationally.

Exports of fresh oysters from the Bluff show a slight decline in quantity but a slight rise in value:—

	Quality. Doz.	Value. £
1934–35	206,660	1,853
1935–36	196,114	2,043

This is equivalent to a little over 3,000 sacks which is about 6 per cent. of the total landings. There are indications of a substantial increase in the oyster-canning industry in the Dominion, 172,855 lb. of canned oysters (value, £6,444) being exported during the year, as against 95,270 lb. (value £3,818) for the previous year.

TOHEROAS.

During the year 75,288 lb. of toheroas were packed at the two northern canneries, and the export statistics show that 24,836 lb. of toheroas, preserved in tins, were exported during the same period.

It has not been possible to give so much attention as is desirable to the inspection of the various toheroa-beds, but it would appear that, with the reasonable restrictions on digging imposed by the

present regulations, the stocks are being maintained in satisfactory abundance on the West Coast beds. The relatively small beds on the Ohope Beach (Bay of Plenty), which in the absence of any official surveillance had been over-exploited and depleted, were closed by regulation for the period 1st February to 30th November, 1936.

The toheroa-beds on the Waitarere Beach (Levin district) have been examined by the Marine Biologist on three occasions during the year. He reports that the stocks have improved considerably since the restrictive regulations of 10th September, 1931, came into force, thanks largely to the services of the honorary local inspector.

Owing to limited facilities for making the necessary observations and collecting the required data, we still lack that understanding of the vital statistics of this species that would enable its economic utilization to be developed to the maximum that may be possible with due regard to the prevention of depletion. It is the inevitable dilemma of deciding between withholding restrictions and risking depletion or applying restrictions and restraining utilization to an extent that may possibly be uncalled for. With a better grip of fundamental facts and closer contact with the material conditions, a system of more flexible and rational control would be possible. There are present indications of a growing demand for toheroas in the future, but, in view of the known examples of the permanent impoverishment of similar resources by exploitation upon which a check has been applied too late, we should not risk remaining in a state of ignorance as to the extent of our toheroa reserves and their average rate of recruitment, or as to the extent to which depleting agencies may be operating.

Whitebait.

The tabulated statement below gives a general view of the principal waters fished and the productivity of the fishery for the 1935 season.

Whitebait Fishery.

Inspector's Centre.	Rivers fished.	Method of Fishing.	Fishing began	Best Month.	Number of Fishermen. (Approximate.)		Total Quantity caught. (Approximate.)
					Whole Time.	Part Time.	
							Cwt.
Auckland ..	Waikato	Hand-nets ..	1st July ..	September ..	70	50	804
Auckland ..	Kaituna and Maketu	Hand-nets ..	1st July ..	September ..	30	20	91
Auckland ..	Matata and Tarawera (Bay of Plenty)	Hand-nets ..	1st July ..	August–November	30	24	125
Napier ..	Tukutuki, Ngarururo, Wairoa	Set-nets ..	1st July ..	October ..	25	55	32
New Plymouth and Waitara	Mimi, Urenui, Mokau, Waitara, Waiwakaiho, &c.	Set and hand nets	August ..	November ..	Nil	100	15
Foxton ..	Manawatu, Waimea, and Waikanae	Set and hand nets	July ..	October ..	6	24	8
Blenheim ..	Wairau, Opawa, Tuamarina, and Rose's Overflow	Hand-nets ..	September	November ..	20	200	80
Karamea ..	Karamea and Little Wanganui	Hand-nets ..	August ..	September ..	..	50	45
Westport ..	Buller, Orawaiti, Mokihinui	Hand-nets ..	September	October ..	15	30	426
Greymouth ..	Teremakau, Grey, and New River ..	Set and hand nets	August ..	October–November	60	250	646
Hokitika ..	Hokitika, Teremakau, Arahura, Mahinapua Creek, Waimea, Totara, Waitaha	Set and hand nets	August ..	November ..	98	..	580
Matainui ..	Maori, Jacobs, Waitangi, Wanganui, Okuru, &c.	Set and hand nets	Late August	October ..	30	..	294
Christchurch	Ashley, Waimakariri, Salt Water Creek, Avon, Styx, Heathcote	Set and hand nets	August ..	October ..	Nil	82	35
Dunedin ..	Mataura, Orcti, Clutha, Jacobs, Taieri, Waikouaiti	Hand-sets ..	September	October ..	(?)	(?)	27
Invercargill ..	Mataura, Oreti, Aparima, Makarewa	Set and hand nets	August ..	September–October	..	200	43
Total ..	..	..	..	..	..	..	3,251

The total given above does not include catches from all those who fish for whitebait nor from every whitebait river, but the returns are fairly comparable with those given in former reports. Some improvement is shown for the fishery as a whole in comparison with the 1934 season. A notable rise is shown for the Waikato, where the increase of approximately 25 per cent. on last year's total has been ascribed by a local observer to the fact that the river conditions prevented the Maoris from successfully fishing for the adult inanga as they came down to spawn the previous autumn. There are various factors which may affect the success of a whitebait fishery, and it is obvious that any action that would appreciably diminish the numbers of parent fish must be one of them. Meteorological conditions, not affected directly by human agencies, but frequently controlling them, play a dominant

part. The whitebait-fishing in the Grey River and in South Westland also showed a marked improvement this season, and this was ascribed to the favourable conditions of weather, and consequently of water in the rivers, which did not interfere as much as usual with the fishing operations. Subnormal catches in the Manawatu, Marlborough, Hokitika, and Southland districts are said to have been influenced by the prevalence of floods during the fishing-season; but the unprecedentedly poor results obtained from the North Canterbury rivers were due, it is suggested, to the long period of drought which afflicted that district between January and May, 1935, in which period practically all the spawning takes place. The herbage on the banks of the rivers was nibbled short to the water's edge by hungry stock, which would thus wipe out possible spawning-places, and the drying-up of drains and side-streams would check or prevent the usual migration of adults. The injurious effects of heavy floods while the spawn is on the banks, by which the eggs are killed through the deposit on them of silt, have been observed at the time of the great flood in the Hokitika River in February, 1935. The systematic study of all the factors that have a bearing on the propagation of this still important but progressively diminishing species is a special branch of fishery investigation for which provision needs to be made; and it is still more urgently necessary to put to practical use the information already made available by the discoveries of Captain L. Hayes in 1930 and 1931, which have been described in previous reports. The riparian areas used by the spawning inanga have been located in several localities. The protection of known spawning-areas and the location of those still unknown are tasks which have a very obvious and direct bearing on the maintenance of these fisheries.

Quinnat Salmon.

The 1935 run of salmon into the Waitaki River was the first to encounter the obstruction imposed by the completed dam at Awakino. The occurrence of this obstacle, and the failure of the fish to make use of the fish-pass which had been provided, held back the fish that would otherwise have continued their migration to spawn in the upper tributaries of this river system as in earlier years. The result, so far as the Hakataramea was concerned, was that a succession of runs of unprecedented numbers entered this river, and there was no difficulty in securing in a short time all the parent fish required to yield the ova needed for the hatchery. The construction of the usual rack was commenced on the 8th April under favourable conditions, the Waitaki being in flood and the Hakataramea 3½ in. above its normal level, with a good deep channel at its mouth. Prior to the completion of the rack on the 15th April a few pairs of fish had been seen spawning in the Hakataramea about two miles above its mouth. The first fish came up to the rack on the 18th April, and from then onwards there was a steady run which reached its maximum on the 29th of the month. The numbers of fish and eggs taken each month were as follows:—

——	Males.	Females.	Ova.
April (20th to 31st)	156	115	392,000
May (1st to 15th)	85	72	308,000
	241	187	700,000

During the period (20th April to 15th May) 100 males and 127 unripe females, besides approximately 300 other fish were lifted over the rack to spawn naturally in the Hakataramea River. On 17th May the rack was pulled out, and on this date about 400 salmon were seen to move up. By this time the river-bed below the rack had been very extensively "dug" by spawning salmon, and subsequently every yard of suitable shingle in the lower course of the Hakataramea was used, the earlier "redds" in some cases being disturbed by later spawners. Salmon continued to run into the Hakataramea much later this season than normally, appreciable numbers of newcomers being noticed early in July.

With the exception of 100,000 ova sent to the Westland Acclimatization Society and 10,000 retained for the ponds, all the quinnat fry incubated in the hatchery were planted in the upper waters of the Hakataramea River. It will be interesting to see what will be the outcome of this concentration into one relatively small tributary (about 40 miles long) and the lowest part of the main river's course (about 46 miles) of the spawning runs of salmon which formerly spread themselves over many scores of miles in the headwaters of the Waitaki river system. Past records show that owing to the difficult fishing-conditions in the lower part of the Waitaki, there has never been a very appreciable harvest of fresh-run salmon to the angler, and the possibilities of commercial fishing have never attracted any one to seek to make a trial of them. The principal economic value of the Waitaki salmon has been as a source of supply of ova for the hatchery. That being the case, it is not difficult to be philosophical about the effects of the dam at Awakino in cutting off access to the headwaters. There is, moreover, a growing tendency on the part of Waitaki anglers to consider that the prospects for better trout-fishing will be much improved by the absence of quinnat salmon in the waters above the dam. To what extent the trout-stock of the Hakataramea may be affected by the probable increase of salmon in that river in the future is another question that presents itself. It is desirable that provision should be made for definite biological observations on these points.

With regard to the extent of the spawning runs in other salmon rivers there is little information to record. It is reported that Deep Creek, which is regarded as the best spawning tributary of the Rangitata, received a good run of early fish but very few afterwards. There was a notable lack of small males this season.

Pond-reared quinnat salmon parr to the number of 4,720 were marked by fin-clipping before being liberated in the Hakataramea River between 25th June and 4th July, 1935. These fish at the age

of eleven months were from 5 in. to 8½ in. in length. It was recorded that fifty-three males, or 1·1 per cent. of the total, had become sexually ripe at this age. The same phenomenon has been observed among the pond-reared parr every year for the last six years. This is not unknown in America, but it would appear that New Zealand conditions tend to induce an earlier maturity in this and other species of salmonidæ.

The 1936 quinnat-salmon fishing-season was characterized by unusually good runs of fish, which in some cases brought no benefit to the fishermen because the flooded condition of the rivers prevented successful fishing.

In the Waitaki River salmon were reported by the local Inspector of Fisheries, Constable E. T. Berry who is a competent observer, to have made their appearance at the mouth as early as the end of November. Other odd fish were observed rising in December and January, but the first date on which the capture of a salmon by an angler was recorded was 5th February. Some fish had run up as far as the dam by the beginning of March. The middle of this month saw the first big run into the river. Up to this time the Waitaki had been swollen and discoloured almost continuously, but the river became fairly low and fishable towards the end of March, and by the middle of April about 250 salmon had been caught by anglers in the lower reaches of the river, the majority being taken in the second half of March. Samples of scales for age-determination were sent by Constable Berry from fifty-three fish, caught by rod and line between 2nd February and 3rd April, ranging in size from 8 lb. to 28 lb., with an average weight of 17·7 lb.

The salmon-fishing in the Rangitata River was the best that had been experienced for several years, although considerably interrupted by flood conditions. The first fish was caught in January, and the biggest catches were made on 20th March. Up to 29th March 210 salmon had been caught by anglers at the mouth of the river, and for the whole season it is estimated that between four and five hundred fish were taken from the Rangitata River. The Opihi River was less affected by high and turbid water conditions than the big snow rivers, and yielded good sport to anglers fishing at its mouth, where 21 fish were recorded for February, 84 for March, and 14 for April, a total of 119, ranging from 6 lb. to 30 lb., and averaging 19·2 lb. in weight. Fishing in the more northerly rivers (Rakaia and Waimakariri) was subject to very considerable interference from heavy floods, and the total catches were only moderate, though good runs came in. The Waimakariri netting operations produced the lowest yield on record. As is usual when the salmon run in more than average abundance, this year provided records of a wide dispersion of the species. Quinnat have been reported to be running in the Rangitikei River on the west coast of the North Island, and several have been taken in Otago Harbour. The usual runs appeared in the Clutha River and Lake Wanaka as well as in the Orari, one of the small rivers of Mid-Canterbury. Doubtless in consequence of the falling-off in catches during recent years, fewer licenses for selling quinnat were taken out by rod fishermen. The returns sent in by these license-holders have been summarized in the usual way, and the results are shown in the following table, together with the return from net fishing :—

Quinnat Salmon, 1936.

——	Males.	Females.	Sex not given.	Totals.
Return from Rods.				
Waimakariri River, 29/1/36 to 4/36 (one rod)—				
Number of fish caught	..	..	17	17
Total weight of fish	..	..	204 lb.	204 lb.
Average weight	..	..	12·0 lb.	12·0 lb.
Rakaia River, 10/2/36 to 22/4/36 (three rods)—				
Number of fish caught	33	37	76	146
Total weight of fish	513 lb.	497 lb.	1,090 lb.	2,100 lb.
Average weight	15·6 lb.	13·4 lb.	14·3 lb.	14·4 lb.
Rangitata River, 11/2/36 to 4/4/36 (seven rods)—				
Number of fish caught	50	48	22	120
Total weight of fish	853 lb.	800 lb.	438 lb.	2,071 lb.
Average weight	16·6 lb.	16·7 lb.	19·9 lb.	17·2 lb.
Combined rivers, 29/1/36 to 22/4/36 (eleven rods)—				
Number of fish caught	83	85	115	283
Total weight of fish	1,346 lb.	1,297 lb.	1,732 lb.	4,375 lb.
Average weight	16·2 lb.	15·2 lb.	15·1 lb.	15·5 lb.
Return from Net Fishing.				
Waimakariri River, 28/1/36 to 8/4/36 (four nets)—				
Number of fish caught	117	129	..	246
Weight of fish	1,251 lb.	1,482 lb.	..	2,733 lb.
Average weight	10·7 lb.	11·5 lb.	..	11·1 lb.

The rod-fishing returns show improved catches—an average of 25·7 fish, or a weight of 397·7 lb. per rod, compared with 21·4 fish, or 292 lb. per rod for the 1935 season. The average size of the fish, as usual, is greater for the southern than for the northern rivers. Owing to the exceptionally difficult fishing-conditions, due to the frequency of very heavy floods, the net catches in the Waimakariri were the poorest on record.

Atlantic Salmon.

The Fish Culturist, Mr. J. S. Main, reported a fairly successful trapping-season on the Upokororo River in the winter of 1935 in spite of three floods which submerged the rack and allowed numerous salmon to get upstream. One of these, the highest flood known in that river for eighteen years, brought the river level 3 ft. above the top of the rack on 25th March. For the solid construction of this contrivance, and for the early date at which it was available for fishing, the Department was indebted to the valuable help rendered by the staff of the Southland Acclimatization Society.

The numbers of salmon taken each month were as follows :—

——	Males.	Females.	Totals.
March	3	1	4
April	18	11	29
May	99	76	175
June	28	17	45
July	19	29	48
August	3	3	6
	170	137	307

One male salmon of 13½ lb. was taken, but there were comparatively few above 6 lb. The average size of the fish used was about 4 lb. Many small males, but sexually ripe, from ½ lb. to 1¼ lb. were taken and lifted over the rack, not being used for hatchery purposes. Eighty-nine females were used for stripping, from which 271,000 ova were hatched. One hundred and forty-one thousand of the fry were liberated in the Upokororo River and 130,000 in the Eglinton.

The Atlantic-salmon fishing in the Waiau River was better in the 1935–36 season than it had been for several years. The prevailing sizes are still small for the species, ranging from 3½ lb. to 5 lb.; but the capture of one 11 lb. fish in the Waiau below the Monowai was reported. During the previous fishing-season it appeared that rainbow trout had multiplied so as to definitely outnumber the salmon: but this season a reversal in the proportion has taken place, and for every rainbow trout caught about three Atlantic salmon have been taken.

Fresh-water Fishery Research.

The investigations carried on under the direction of the Fresh-water Research Committee of the New Zealand Acclimatization Societies' Association have made satisfactory progress along the general lines previously laid down. The Biologist, Mr. A. W. Parrott, has continued his examinations of trout-scale samples and other data for the determination of age, growth, and condition variation in different waters. Material from the following rivers and lakes has been studied :—

North Island.—Waikato, Tamaki, Pokaewhenua, Waimiha, Wanganui, Waipa, Manawatu, Rangitikei, Otaki, and Hutt Rivers, and Lake Taupo.

South Island.—Styx, Selwyn, and other tributary streams of Lake Ellesmere, Rangitata, Ashburton, Kakanui, Waikouaiti, Oreti, Aparima, and Waiau Rivers, Lake Sumner system, Lake Poerua system, Lake Coleridge, Lake Heron, Lake Alexandrina, Tomahawk Lagoon, and Waipori Dam.

In addition to simple age and growth analyses of samples of trout-stocks, the data have been studied with reference to such questions as local, seasonal, and annual fluctuations in age composition, sex variations, periods of maximum and declining growth, sexual and seasonal variations in condition, and age and size at which maturity is attained.

As an example of a simple age analysis, the following table shows the relation between age and length of brown trout in the Oreti River, Southland.

Length of Fish.	Age of Fish (in Completed Years).					Totals.
	Two Years.	Three Years.	Four Years.	Five Years.	Six Years.	
Inches.	No. of Fish.	No. of Fish.	No. of Fish.	No. of Fish.	No. of Fish.	No. of Fish.
8	23	..	..	..	..	23
9	31	4	..	..	..	35
10	41	30	..	..	..	71
11	2	55	1	..	..	58
12	1	61	2	..	..	64
13	..	37	14	..	..	51
14	..	19	10	1	..	30
15	..	2	15	..	..	17
16	..	..	6	1	..	7
17	..	..	2	1	..	3
18	..	..	1	1	1	3
19	..	..	..	1	..	1
20	..	..	..	..	1	1
21	..	..	..	..	..	..
22	..	..	..	..	..	..
23	..	..	..	..	1	1
24	..	..	..	..	1	1
Totals ..	98	208	51	5	4	366

The analysis of the scale sample thus shows that, of the ninety-eight fish in their third year, twenty-three were 8 in. long, thirty-one were 9 in. long, and so on.

Besides the general investigation of the age composition and growth variation of trout-stocks in different waters, Mr. Parrott has commenced the study of the formation of the characteristic growth-lines on scales in relation to the development of the reproductive organs in the two sexes, and has worked out a method for a standardized classification of fishing-waters based on the growth-rate of brown trout, and has made preliminary field observations in connection with the liberation of trout-fry in Canterbury streams. A substantial quantity of data has now been worked up by Mr. Parrott as material for a comprehensive report on the growth, &c., of New Zealand trout, which it is hoped to publish in the near future.

The Field Biologist, Mr. D. F. Hobbs, after observing the conditions under which trout and quinnat salmon spawned, and studying the mortality occurring during the incubation and alevin stages under natural conditions in certain streams in Canterbury and Westland during the winters of 1933 and 1934, extended this line of investigation, at the request of the Councils of the Acclimatization Societies concerned, to rivers in the Southland, Waitaki, and Auckland Acclimatization Districts in the winter and spring of 1935. Owing to the extent of country to be covered in a limited time his examinations were necessarily of a cursory nature in many cases, and his tours were actually preliminary surveys as preparations for more detailed and quantitative work in the future. Among the problems of practical importance upon which attention was focused were such questions as the relative extent of suitable spawning-ground available in different river systems and the possible factors inimical to the safety of ova after deposit in the "redds" (nests for ova made in the shingle or gravel on the river-bottom), among which, in Southland, the most probable appeared to be disturbance and silt deposit by floods, and in certain waters disturbance by later spawners. A report by Mr. Hobbs has been submitted to the Southland Acclimatization Society and published in their annual report for the year ended 31st March, 1936. A preliminary examination of the Kakanui River has been the subject of a report to the Waitaki Acclimatization Society dealing with the extent of spawning-areas, the character of the trout "redds" examined, the observed losses in the embryonic stages and in the "alevin" stage when the newly hatched fry, not having yet assimilated all their egg-yolk, remain among the stones below the surface of the river-beds. The report made to the Auckland Acclimatization Society, besides covering the observations made during a seven-weeks tour of the district, gives a comprehensive review of the problems involved in the practical management of trout-waters by an acclimatization society. The key-note of Mr. Hobbs' report, which also indicates the essential relationship of research to the functions of acclimatization societies or other fishery-controlling authorities, may be indicated by the following quotation:—

> "The district contains many miles of water providing angling of varying quality. The need, of course, is to maintain and if possible improve the sport offering where it is now moderately satisfactory and to improve the yield of the allegedly poorer waters, especially those nearest to where the numbers of potential anglers are greatest. As the limitation is one of finance, it is necessary to add that resources must be used to this end to the best economic advantage. Your latest annual report indicates that you are relying largely on an increased hatchery output to achieve the results desired. There is a very general tendency on the part of anglers to believe that almost any fisheries problem can be remedied simply by increasing liberations. While there is no doubt that in many waters an increase in number of takable fish will result from increased liberations, such increases are at present of absolutely unknown extent, and virtually nothing is known of the economics of maintaining stocks by hatchery liberations or by other means. As it is essential that your anglers, who, under your democratic system of fisheries control, really determine your policy, should have a broader knowledge of the principles involved in stock-maintenance, I have in this report endeavoured to provide some basis of intelligent approach to the whole question. The broad issue that will require consideration is how can your society exercise most intelligently its power to draft conservational regulations and how use, to the best advantage, its income to obtain the maximum yield from its waters."

There follows a discussion of food resources and the physical conditions affecting them, factors limiting fish-stocks, propagation (natural and artificial), past measures taken to conserve and maintain stocks of trout, migratory habits of trout, and angling intensity in their bearing upon the conditions occurring in the waters of the Auckland Acclimatization District, concluding with an indication of the directions in which an acclimatization society may by the organized activities of its executive staff co-operate in research work and so lead to an understanding of the factors involved that will place future fishery-management on a more rational and practical foundation. The report has been published in the society's annual report for 1935–36, and, in my opinion, constitutes a distinctly valuable contribution to our literature on fresh-water-fisheries management in New Zealand.

Professor E. Percival, Honorary Director of Research to the Committee, besides making observations of the trout-redds in the Selwyn River in continuation of the investigation of the incidence and effects of superimposition of later upon earlier redds commenced by Mr. Hobbs, has continued his personal investigation of the plankton of Lake Brunner. The object of these studies is to ascertain the nature and seasonal abundance of the more minute forms of life in the water of this lake. The results so far obtained indicate that Lake Brunner possesses a richer fauna of minute crustaceans than is the case in any other lake in New Zealand that Professor Percival has sampled. These organisms are of especial interest as constituting a valuable source of food for certain fishes. This branch of aquatic biology has been studied in Europe and

North America for a great many years, but is practically an untouched field for research in New Zealand. Its practical importance in connection with fresh-water-fish culture will be appreciated if one recalls that in the past several vain attemps have been made to introduce into New Zealand the whitefish (*Coregonus clupeiformis*), the most valuable food fish of the Great Lakes of North America. The last attempts to acclimatize this species were made by the Marine Department when from 1904 to 1907 two million eggs were imported from America each year. "Each shipment of eggs," it was reported, "arrived in first-rate condition, was successfully hatched out (at hatcheries situated at Lake Tekapo in the Mackenzie Country and at Lake Kanieri, Westland), and the fry liberated in the lakes mentioned." Why did not these fry grow up and produce a stock of fish? The answer has been provided by Professor Percival's examination of the plankton (the minute forms of life) in our lakes. Generally speaking (though of course his investigations have not been exhaustive) he has found in New Zealand lakes (including Lake Tekapo) a remarkable dearth of animal plankton, the principal constituents of which in lakes are the minute crustaceans belonging to the sub-order Cladocera and the order Copepoda. This is the class of food that the whitefish principally depends upon in the early part of its life, its habits and requirements in this respect being somewhat similar to those of the marine herring. In its later life it feeds upon insect larvæ, small crustacea and other bottom fauna. Without an understanding of the food-requirements of the fish to be acclimatized, and of the possibilities of satisfying them in the environment into which they are to be introduced, any attempt at acclimatizing a new species of fish is pure guesswork—which explains the various failures of past acclimatization enterprises and also indicates the importance of a scientific basis for future policies. Apart from its bearing on the problem of whitefish acclimatization this subject of the investigation of the life in New Zealand lakes has a direct and practical interest in connection with our fresh-water fisheries. It is well known that the trout caught in practically all our lakes at the present time are of smaller average size and sometimes otherwise inferior to those formerly obtained. Without concluding, as some anglers have, that this is always and entirely a a matter of food-supply, one must recognize that for the maintenance of a good stock of big trout the presence of a sufficient and suitable supply of food is essential. It is frequently urged that a lake should be stocked with some kind of small fish to serve as food for the trout. This has sometimes been done; but rarely, if ever, does the practical fisherman who advocates or practises such an expedient stop to consider how the small fish themselves are going to be fed or whether the conditions will be suitable for their propagation. To be of real benefit to the trout it is necessary that the fodder-fishes should live on organisms that would not otherwise be available, or of which a smaller equivalent would be available, for the nourishment of the trout. They must also be able to maintain their numbers by reproduction and growth in spite of the toll taken by the trout and other predators. Every lake in the country has a potential capacity to provide for the nourishment of a certain amount of fish, the kinds and quantities possible being dependent upon certain fundamental factors which are capable of being ascertained. The basic essential is the presence of the right kind and sufficient quantity of material in solution in the water to provide a fertilizing or nutrient medium for the production of plant-life. The "feed" in water that is analogous to the herbage of the land exists mainly in microscopic form and may be a constituent of the plankton invisible to the human eye or may form a sort of slime on the bottom or on water-weeds. Such microscopic algæ provide the nourishment for minute animals and for insect larvæ, crustaceans, and molluscs which are preyed upon by larger animals, and thus directly or indirectly may contribute to the nourishment of trout and ultimately feed or otherwise entertain a successful fisherman. The point to be noted is that the trout is the last stage in a succession of steps from food that has been feeder to feeder that will be food. The general problem of this aspect of fish-culture is to ensure that the successive steps are present and correct, so that they may lead with the minimum of loss or deviation to the production of trout or other fish that are desired. Big trout cannot flourish on a diet of microscopic algæ nor on the smallest crustacean species, but if there is present an abundance of Copepoda or Cladocera it is possible to introduce small fish that will make use of them and that will themselves be available as trout-food. If the Copepoda and Cladoeera are not there it is obviously futile to introduce a species of fish that is dependent on them for food. This sketchy reference to the "fish-food chain" of a lake may serve to illustrate the necessity for the investigation of the minute forms of life in the water and of the dissolved contents and other qualities of the water itself in order that the maintenance of a fish-stock may be considered on a scientific and therefore on a soundly practical basis. Professor Percival's spare-time investigations, which are at present a relatively small side-line in the work carried out under the auspices of the Committee, represent only the beginning of the exploration in New Zealand of a very vast field for research that is as essential a basis for progress in fish-culture as the chemistry and microbiology of soils has now proved to be for pointing the way to modern agricultural developments.

The expenditure of the Research Committee during the year amounted to £800 14s. 8d., of which £624 represents payments for salaries and wages to three whole-time and one temporary worker. The ground covered by the investigations would have been more restricted but for the co-operation of acclimatization societies, to whose executives and members the Committee is indebted for assistance to the Field Biologist and for data sent to the laboratory at Canterbury College. It must be recorded with regret that insufficiency of funds has prevented the publication of detailed reports on the work for which a substantial amount of material has now been prepared.

A. E. Hefford,
Chief Inspector of Fisheries.

MARINE FISH HATCHERY AND BIOLOGICAL STATION, PORTOBELLO.

SIR,—

I have the honour to present the report of the Portobello Marine Biological Station for the year ending March, 1936.

The regular routine of work has been steadily carried on at the Portobello Marine Station. Daily records of water temperature have been made and weather records kept. The tanks have been constantly cleaned and well supplied with an attractive variety of fish and other marine life, the outer ponds freed from weed and the valves and screens painted and renewed when necessary. The buildings, paths, grass plots, and fences have been kept in order. Large numbers of visitors have been received and shown over the hatchery. The launch and dinghy were placed on the slip and painted, and repaired when necessary. The small launch " Oi " with which we replaced the " Karoro " has needed a lot of adjustment, but is now in quite good order and is running satisfactorily. Where necessary, ropes and nets have been replaced, but sea conditions are hard on such gear, and replacements are again due in this connection.

The set-net has been used occasionally, and a few greenbone and moki have been secured by its use. Dogfish were numerous in December, and, as usual, severely damaged the set net. Setting the seine net for mullet has been only moderately successful, large mullet being rather scarce this year. Using the seine net on the sandbanks was not very productive, the harbour in the vicinity of the station appearing to be depleted of its normal supply of flatfish. Fish-life has not been abundant, and the red cod, which is so useful as a food-supply for the hatchery fish, has not been obtainable in any numbers either in 1935 or 1936 : we have only secured odd specimens.

We have made and constantly used fish-traps, and these have proved most valuable. Set either off the jetty on a sandy bottom or amongst weed between the rocks below the station, they have provided a steady supply of fish, and the spotty (*Pseudolabrus celidotus*), wrasse (*Pseudolabrus coccineus*), pigfish (*Congiopodus leucopoecilus*), and an occasional red cod (*Physiculus bachus*) secured in this way have helped to maintain the food-supply, especially in rough weather, when the nets could not be used. They have also produced a really interesting list of specimen fish, including greenbone (*Coridodax pullus*) ; kelpfish (*Odax vittatus*) ; weedfish (*Tripterygion*), two species ; taumaka (*Acanthoclinus quadridactylus*) ; rock-cod (*Lotella rachinus*) ; and one rockling (*Motella novae-zelandiae*), which is new to our records ; mullet (*Agonostomus forsteri*) ; small tarakihi (*Dactylopagrus macropterus*), bullies (*Gobiomorphus gobioides*) ; and a variety of crabs ; also sea-horses (*Hippocampus abdominalis*) ; and one large sea-hare ; flathead (*Kathetostoma giganteum*) ; thornfish (*Bovichthys variegatus*) ; suckerfish (*Diplocrepis puniceus*) ; triggerfish (*Cantherinus scaber*).

Using a 200 c.p. light off the jetty close to the hatchery has produced some interesting results. Suitable nights are not usual, the ideal conditions being a cloudy calm night with a rising tide. In the late spring months shoals of garfish (*Hemirhamphus intermedius*) came to the light, swimming along the top of the water, stopping, and then swimming again to stop and start again. They formed an interesting sight when they arrived in numbers, each fish at an interval from its neighbour. They occasionally swam up against some obstacle and this invariably led to a wild flurry in which they often jumped clear of the water, and when one was alarmed the whole shoal went into a panic. We used a large net like a whitebait net on a long pole, and often if this was dropped into the water ahead of the garfish their frightened leap carried them right into it, but, unless the net was quickly raised, they leapt as instantaneously out again. A large number were from 4 in. to 6 in. long, but large gravid females 12 in. to 14 in. were also taken ; the mature males were 8 in. to 9 in. long. When placed in the glass-sided observation-tanks they soon died, never learning to avoid dashing themselves against the glass, this being soon fatal on account of the projecting under jaw. We found they survived in the outer ponds and in a large inside concrete tank. The large females when first taken had a strong peculiar smell—almost as powerful as that of the cucumber smelt. Garfish, whilst most plentiful in November and December, still come to the light, but recently only small specimens have been seen.

We also get shoals of cucumber smelt (*Retropinna retropinna*), pilchards (*Sardinia neopilcharda*), and mullet (*Agonostomus forsteri*), at all times of the year. Occasional red cod (*Physiculus bachus*), tarakihi (*Dactylopagrus macropterus*), and moki (*Latridopsis ciliaris*), have been attracted, and two small species of squid and an unidentified sand-eel (*Gonorhynchus* species). This last was rather extraordinary in colouring, the body being amber-coloured, the pectoral and anal fins saxe blue, and the dorsal and tail fins barred black and white. Quite a number of pipe-fish (*Stigmatophora longirostris*), Idotea, prawns, shrimps, fish-lice, crab zooæ, swimming-crabs, and various fish-fry, as well as a variety of sea-worms, commonly appeared. A resident research worker would find this gathering of sea life to the light a fascinating field of work.

When the whalefeed (*Munida gregaria*) were in the harbour they simply swarmed to the light and made collecting impossible, as they formed a churning mass below the light extending for many yards and effectively shutting out all other life. Attempts to clear them away were futile, as additional thousands arrived every minute. Whalefeed were present over a long period—from November to March. One large *Squilla* was taken from amongst the swimming whalefeed.

The clear shrimp (*Nyctiphanes*) was not as common as in former years, only appearing on the surface in October. Shore collecting was carried on during suitable tides, although frequently these were spoiled by unsuitable weather.

Most of the fish in the aquarium tanks survived the winter, but as a matter of economy the heating-apparatus was not used very largely, and intense cold killed off a number of specimens. We have several species of fish which have been in captivity for years. One of these is the blind eel or sea-hag. It is generally reputed to be very destructive to other fish, but this particular specimen has been in various tanks with all sorts of fish and has never attacked any of them.

We secured a number of pilchards, and these were placed in the aquarium tank devoted to anemones. It was found that the pilchards were biting off the tentacles of the anemones. They were then shifted into a tank containing the blind eel and a small carpet-shark, and with them we held a number of cucumber smelt. Strangely enough, this odd assortment lived in harmony. Both pilchards and smelt became full of spawn and eventually succeeded in passing this and recovered. Considerable growth has followed their first introduction into the tank. All through the year we note that mullet, pilchards, and smelt occur in all sizes, and it is apparent that their breeding-season covers a considerable period. As late as March a cucumber smelt in the whitebait stage was netted at the light.

The list of fish held in the hatchery is quite a good one, about thirty species being represented, and all are in excellent healthy condition, this being due mainly to Mr. Adams's care and constant attention. The tanks are daily cleaned out, all waste matter and uneaten food is removed.

A large octopus (*Octopus maorum*) was secured in November, and proved to be a female. Shortly after capture it began to deposit eggs on the side of the tank. These were shaped like tiny Indian clubs and were attached in pairs to the glass by means of a flat green plate secreted by the animal. The octopus watched over them, directing constant streams of water over them from the exhalent tube and occasionally sweeping them with her tentacles; although the greater number were pulled or fell off, the balance hatched in eighty days. We understand this is the first record of the egg-laying of this giant species of octopus in captivity, and it is to be regretted that no continuous study could be made owing to the lack of a biologist on the staff, but we preserved batches each week for future reference.

Last year we successfully reared skate from eggs laid in the hatchery: one of these young skate is still alive and is growing rapidly. The large golden sea-slug (*Doris Wellingtonensis*) produced masses of brilliantly coloured egg ribbons, from which the young eventually hatched. A large sea-hare taken in the fish-trap has produced a complicated tangled gelatinous string of orange-coloured eggs, which are still unhatched.

Fishermen have brought a number of fish to the station to be identified, and one or two welcome living specimens have been also brought in, including a fine marble-fish (*Haplodactylus meandratus*) and a medium-sized toad-fish (*Neophrynichthys latus*).

Mr. Maxwell Young, of the Marine Department, has made a visit of inspection. Professor Percival, Professor of Biology, Canterbury College, also spent two weeks at the hatchery, and was greatly pleased with the facilities for collecting and studying. He has helped us considerably by explaining the latest methods of preserving specimens. He later wrote to the Board expressing great appreciation of the usefulness of the station.

We have sent a number of Doris to the Sydney Museum, and have followed these with several fish for identification. At the request of Mr. Hefford, Chief Inspector of Fisheries, Mr. Adams collected a supply of fish-livers for special research work that is being carried out by Mr. Shorland of the Agricultural Department, Wellington. The supply was needed urgently, and unfortunately the request came at a time when there was a scarcity of all fish, so that no great quantity could be secured. Mr. Adams arranged to go out with the trawlers, and we have been able to forward in sealed tins a supply of livers of red cod, common sole, flounders, brill, skate, dogfish, and gurnard. At the same time some interesting specimens, such as large Doris and large anemones, were secured for the aquarium, as well as a supply of fish for food for the fish in the hatchery.

The use of the seine net and the use of the launch on trips to the heads has been restricted by the fact that we have only one employee, but the honorary secretary, Mr. G. Howes, has given as much help as possible in this direction, and has also helped considerably in securing fish by line-fishing around the station, both as specimens and for fish-food.

During the year a large number of visitors have availed themselves of the opportunity to visit the station, and all appeared to be greatly impressed by the fine display in the tanks. English tourists who have found their way down were particularly interested, and expressed themselves as amazed that the attractiveness of the aquarium was not advertised. One gentleman stated that he had a keen interest in such matters and had visited a number of British aquaria, and he considered we had, despite the small size of the buildings, as good and varied a display as he had yet seen.

Mr. Adams is the only employee which finance enables the Board to have, and his time is fully occupied in the maintaining and care of the aquarium and the necessary work about the station, its buildings, and grounds. It has been impossible to do the scientific work we would like to see done and which could be carried out if we had a larger staff. Our funds are now exhausted, and we appeal for further subsidies sufficient to allow us to maintain a research station as it should be maintained with trained workers, not only doing scientific work, but also concentrating on the improvement of our New Zealand fisheries. The station could be made directly beneficial to the fish-export industry.

I have, &c.,
W. B. Benham, F.R.S.,
Chairman of the Board.

TABLE SHOWING THE NUMBER OF SEAMEN ENGAGED AND DISCHARGED IN NEW ZEALAND, AND THE FEES RECEIVED, FOR THE YEAR ENDED 31ST MARCH, 1936.

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	1,591	147 19 0	1,526	141 19 0	1,217	107 11 0	1,133	104 0 0	2,808	255 10 0	2,659	245 19 0	5,467	501 9 0
Dunedin	274	26 10 0	315	30 7 0	98	8 12 0	85	7 11 0	372	35 2 0	400	37 18 0	772	73 0 0
Gisborne	3	0 6 0	1	0 2 0	232	19 17 0	218	19 15 0	235	20 3 0	219	19 17 0	454	40 0 0
Greymouth	50	5 1 0	48	4 17 0	25	2 0 0	28	2 6 0	75	7 1 0	76	7 3 0	151	14 4 0
Hokitika	..	..	..	..	13	0 16 0	12	0 14 0	13	0 16 0	12	0 14 0	25	1 10 0
Invercargill	49	4 18 0	16	1 12 0	100	9 5 0	60	4 18 0	149	14 3 0	76	6 10 0	225	20 13 0
Lyttelton	260	23 12 0	245	23 6 0	249	18 19 0	255	19 5 0	509	42 11 0	500	42 11 0	1,009	85 2 0
Napier	48	4 16 0	43	4 10 0	165	13 15 0	177	15 10 0	213	18 11 0	220	20 0 0	433	38 11 0
Nelson	1	0 2 0	1	0 2 0	405	29 13 0	412	29 14 0	406	29 15 0	413	29 16 0	819	59 11 0
New Plymouth	22	2 4 0	27	2 2 0	11	1 2 0	13	1 6 0	33	3 6 0	40	3 8 0	73	6 14 0
Oamaru	1	0 2 0	..	..	20	1 18 0	20	1 18 0	21	2 0 0	20	1 18 0	41	3 18 0
Onehunga	15	1 5 0	15	1 5 0	125	10 9 0	114	9 7 0	140	11 14 0	129	10 12 0	269	22 6 0
Patea	..	..	..	..	51	2 15 0	42	2 8 0	51	2 15 0	42	2 8 0	93	5 3 0
Picton	..	..	..	..	20	1 12 0	22	1 14 0	20	1 12 0	22	1 14 0	42	3 6 0
Tauranga	..	..	..	..	..	..	1	0 2 0	..	..	1	0 2 0	1	0 2 0
Te Kopuru	..	..	..	..	..	..	5	0 10 0	..	..	5	0 10 0	5	0 10 0
Timaru	9	0 18 0	3	0 6 0	22	2 4 0	36	3 12 0	31	3 2 0	39	3 18 0	70	7 0 0
Wairau	..	..	..	..	38	1 5 0	19	0 11 0	38	1 5 0	19	0 11 0	57	1 16 0
Wanganui	5	0 10 0	1	0 2 0	36	2 5 0	35	2 18 0	41	2 15 0	36	3 0 0	77	5 15 0
Wellington	3,181	278 18 0	3,036	266 5 0	1,881	155 11 0	2,033	164 15 0	5,062	434 9 0	5,069	431 0 0	10,131	865 9 0
Westport	23	2 6 0	25	2 10 0	26	2 2 0	30	2 8 0	49	4 8 0	55	4 18 0	104	9 6 0
Foxton P.O.	..	..	..	..	17	1 14 0	18	1 16 0	17	1 14 0	18	1 16 0	35	3 10 0
	5,532	499 7 0	5,302	479 5 0	4,751	393 5 0	4,768	396 18 0	10,283	892 12 0	10,070	876 3 0	20,353	1,768 15 0

TABLE SHOWING TOTAL COST OF MAINTENANCE (EXCLUDING INTEREST ON CAPITAL AND DEPRECIATION) OF NEW ZEALAND COASTAL LIGHTHOUSES FOR THE YEAR ENDED 31ST MARCH, 1936.

Name of Lighthouse.	Salaries and Wages.	Fuel.	General Maintenance.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Akaroa Head	425 12 1	44 18 6	435 11 10	906 2 5
Baring Head(*a*) *	608 10 9	15 16 4	461 9 10	1,085 16 11
Brothers	641 3 1	45 3 2	222 10 1	908 16 4
Cape Brett	683 1 9	39 0 3	208 1 4	930 3 4
Cape Campbell	427 2 7	44 10 7	152 14 10	624 8 0
Cape Egmont*	230 1 8	31 12 5	93 2 6	354 16 7
Cape Maria	656 7 6	53 16 8	340 16 5	1,051 0 7
Cape Palliser	429 15 7	42 2 1	176 16 2	648 13 10
Cape Saunders	408 12 0	54 5 5	175 4 11	638 2 4
Castlepoint	478 10 7	42 6 1	124 2 7	644 19 3
Centre Island	670 3 8	45 2 8	283 10 11	998 17 3
Culvier Island	695 17 2	46 8 6	200 6 7	942 12 3
Dog Island	512 2 8	46 15 7	287 11 0	846 9 3
East Cape	441 3 7	43 13 5	142 18 3	627 15 3
Farewell Spit	664 13 6	60 15 0	157 6 8	882 15 2
French Pass	186 16 8	6 17 6	46 5 10	240 0 0
Godley Head*	247 0 5	29 10 6	270 3 3	546 14 2
Kahurangi Point*	220 1 8	18 4 4	90 19 0	329 5 0
Kaipara Heads	691 19 3	52 7 1	143 9 9	887 16 1
Manukau South Head*	220 1 8	10 19 7	40 15 2	271 16 5
Moeraki	423 9 0	41 18 3	100 17 0	566 4 3
Moko Hinou	648 4 11	44 0 1	189 3 2	881 8 2
Nugget Point	423 9 2	46 17 11	115 14 5	586 1 6
Pencarrow Head(*a*)	111 9 6	12 2 1	2 5 7	125 17 2
Portland Island	701 6 11	49 9 6	292 11 8	1,043 8 1
Puysegur Point	744 12 3	54 0 9	244 3 2	1,042 16 2
Stephens Island	745 8 9	47 1 7	219 1 11	1,011 12 3
Waipapapa Point	485 0 6	51 14 6	100 2 3	636 17 3
Marine Store	646 1 9	..	78 17 3	724 19 0
Automatic lights (unwatched)	..	293 9 11	530 10 5	824 0 4
Fog signals	422 14 6	111 1 4	40 10 6	574 6 4
Government steamer	10,560 16 11	3,663 17 11	7,142 12 2	21,367 7 0
Totals	25,451 12 0	5,189 19 6	13,110 6 5	43,751 17 11

* Watched automatic lights.

(*a*) Baring Head Lighthouse substituted for Pencarrow Head Lighthouse on 17th June, 1935.

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, 1936.

Name of Seaman.	Balance to Credit of the Estate on 1st April, 1935.	Amount received.	Amount paid.	Balance to Credit of the Estate on 31st March, 1936.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Banks, G.	..	6 16 6	..	6 16 6
Bickerton, J. W.	..	13 12 2	13 12 2	..
Blaney, F.	..	22 0 4	..	22 0 4
Blomquist, O. I.	..	1 18 2	1 18 2	..
Frost, T.	..	21 18 2	21 18 2	..
Johansen, C. W.	..	0 15 11	0 15 11	..
Johnston, J.	16 19 9	2 6 0	19 5 9	..
Kavander, K...	..	4 15 11	4 15 11	..
Larsen, A.	..	7 16 0	7 16 0	..
Malmberg, E.	..	4 0 8	4 0 8	..
Marks, J.	..	0 2 2	0 2 2	..
McLean, D.	3 12 5	1 18 6	5 10 11	..
Nelson, R.	1 1 7	..	1 1 7	..
Nilsson, O. W.	..	7 7 4	7 7 4	..
Osterlund, E.	..	16 1 6	16 1 6	..
Osterman, K.	..	8 14 6	8 14 6	..
Smillie, R.	..	19 2 7	19 2 7	..
Tronson, J. A.	0 1 3	6 8 7	6 9 10	..
Wildman, E. M.	..	3 1 6	3 1 6	..
	21 15 0	148 16 6	141 14 8	28 16 10

RETURN SHOWING AMOUNTS RECEIVED PRIOR TO 1ST APRIL, 1935, STANDING TO CREDIT OF ESTATES OF DECEASED SEAMEN AND FOR WHICH CLAIMS HAVE NOT BEEN PROVED.

	Balance to Credit of Estate on 31st March, 1936.
	£ s. d.
Carle, W. H., late fireman, s.s. "Rata"	3 0 7
Gillies, J., late assistant steward, s.s. "Monowai"	20 10 11
Linton, P. A., late seaman, s.s. "Koonya"	0 1 0
McEvoy, J., late trimmer, s.s. "Koromiko"	0 1 3
Stevens, F. G., late fireman, s.s. "Kaitangata"	4 5 9
Wareline, F., late seaman, s.s. "Koromiko"	0 1 2
Wassel, R., late seaman, s.s. "Elsie Mary"	0 1 3
	£28 1 11

Summary of Examinations for Certificates of Competency as Masters and Mates for the Year ended 31st March, 1936.

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	7	5	..	5	..	..	1	..	7	5	1	5	18
Home-trade, masters and mates	8	7	3	2	2	1	..	2	10	8	3	4	25
Master, river (steam)	2	..	..	..	1	..	..	..	3	..	..	..	3
Yacht-master, foreign	1	..	..	..	..	..	..	..	1	..	..	..	1
Yacht-master, home-trade	1	..	..	..	..	..	1	..	1	..	1	..	2
Certificate of efficiency, R.N.V.R.	1	..	..	..	..	..	..	..	1	..	..	..	1
Voluntary examination, compass deviation	..	..	3	..	..	..	2	..	..	..	5	..	5
Voluntary examination, signals	2	..	..	..	..	..	..	..	2	..	..	..	2
Sailing-ship, endorsement	1	..	..	..	..	..	..	..	1	..	..	..	1
Signals only	7	..	..	..	..	..	..	..	7	..	..	..	7
Sub-Lieutenant, R.N.V.R.	1	..	1	..	5	..	2	..	6	..	3	..	9
Totals	31	12	7	7	8	1	6	2	39	13	13	9	74

Summary of Examinations for Certificates of Competency as Marine Engineer for the Year ended 31st March, 1936.

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.
Higher-grade Certificate.																		
Foreign-going engineer—																		
First and second class (steam)	..	1	1	4	3	7	..	..	..	..	..	..	..	..	..	4	4	8
First and second class (motor)	1	2	3	3	3	6	..	..	..	..	..	..	..	..	..	4	5	9
First and second class (motor, endorsement)	1	1	2	6	..	6	..	..	..	..	..	..	..	..	..	7	1	8
Third class (steam)	10	7	17	15	5	20	10	4	14	5	3	8	..	..	..	40	19	59
Totals	12	11	23	28	11	39	10	4	14	5	3	8	..	..	..	55	29	84
Lower-grade Certificates.																		
Sea-going engineer, P.V.O.S.	16	4	20	10	5	15	..	1	1	..	..	..	9	5	14	35	15	50
Restricted-limits engineer, P.V.O.S.	12	1	13	1	..	1	1	..	1	1	..	1	15	2	17	30	3	33
River engineer (steam)	1	..	1	..	..	..	..	2	2	..	1	1	1	..	1	2	3	5
Totals	29	5	34	11	5	16	1	3	4	1	1	2	25	7	32	67	21	88
Grand totals	41	16	57	39	16	55	11	7	18	6	4	10	25	7	32	122	50	172

Return of Wrecks and Casualties to Shipping reported to the Marine Department from 1st April, 1935, to 31st March, 1936.

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.		Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1935. April 4	Fiscus, s.s.; 7 years ..	Schooner ..	2,948	32	Nil	Newsprint	Touched mole	Nil	Wanganui	W.	Moderate to fresh	When entering port the vessel touched the mole, denting her port side	E. Williams.
,, 7	Wahine, s.s.; 22 years ..	Fore and aft	1,798	91	164	General—74 tons measure	Lost propeller	Nil	Lyttelton Harbour ..	N.E.	1	When about to enter the Inner Harbour the vessel cast her port propeller; a spare one was fitted	G. B. Morgan.
,, 9	Fife, s.s.; 6 years ..	Schooner ..	2,626	27	Nil	4,200 tons phosphate ..	Rivets, bolts, angle-irons, &c., damaged	Nil	Nauru Island ..	..	Light	During loading operations upper two-thirds bulkhead and athwart beams carried away, bolts broken, angle-irons and rivets damaged, &c.	William Howey.
,, 14	Hurunui, s.s.; 15 years..	Schooner ..	5,804	71	Nil	600 tons general ..	Starboard anchor and 60 fathoms cable lost	Nil	Napier Harbour ..	S.E.	6	Whilst at anchor vessel pitched and rode heavily, and, taking heavy sheer, parted cable, 60 fathoms of which, together with starboard anchor, were lost	F. C. Pretty.
,, 16	James Cook, s.s.; 14 years	Schooner ..	1,289	29	Nil	83,000 ft. timber and 313 bales of wool	Stranded	Nil	Wanganui Harbour ..	..	..	When leaving port the vessel grounded in the river between the Gas Wharf and Imlay Works, but got off easily next day and proceeded to sea, having sustained no damage	C. G. Turner.
,, 17	Canadian Highlander, s.s.; 15 years	Schooner ..	3,260	34	Nil	1,200 tons general ..	Windlass and anchor-shank damaged	Nil	Napier Harbour ..	S.W.	3	When heaving up anchor—vessel jumping considerably—the starboard frame of windlass carried away and the shank of the anchor was bent	P. S. A. Robertson.
,, 29	Taupata, m.v.; 5 years	Schooner ..	143	12	Nil	100 tons general ..	Stranded	Nil	French Pass	..	Calm	When proceeding through French Pass the vessel took a sudden sheer to starboard and then to port, resulting in her being washed on to the rocks adjacent to western beacon, from which she was almost immediately swept off again	W. MacMillan.
May 8	Cornwallis, s.s.; 14 years	Schooner ..	3,352	33	Nil	Approximately 1,100 tons motor-cars	Propeller-blade missing ..	Nil	Lat. 37° 26′ S.; Long. 156° 13′ W.	W.N.W.	8	During strong gale, with high head sea, vessel pitching, labouring, and engines racing heavily, vessel failed to steer, and, on investigation, one blade of propeller found missing and one damaged	R. Forbes.
,, 10	Kent, s.s.; 17 years ..	Schooner ..	5,452	50	Nil	General	Bearing-keep on main drum of windlass broken	Nil	Gisborne Roadstead ..	Not known	..	After vessel had anchored the port inside bearing-keep on the main drum of windlass was found to be broken	J. V. Williams.
,, 14	Orewa, s.s.; 25 years ..	Cutter ..	31	4	Nil	Nil	Collision	Nil	Auckland Harbour ..	N.E.	4	Whilst berthing, the "Orewa" failed to round to a strong wind, and, on going full speed astern to avoid damage, she fouled the fishing-boat "Tamure," which was moored at the wharf	F. C. Bradney.
	Tamure, fishing-launch	..	0·3	1	..	Nil						..	J. Gundlock.
	Peregrine, s.s.; 23 years	Barge ..	162	4	200 (approx.)	Nil						The "Peregrine" was heading for her berth and the "Odin" was going up the harbour towards Princes Wharf, when the vessels collided, the "Odin" sustaining damage to belting and one plank	T. A. Lynch.
,, 18	Odin, m.v.; 18 years ..	Schooner ..	3	2	Nil	Nil	Collision	Nil	Auckland Harbour ..	N.W.	3	..	J. Multrus.
,, 22	Tamahine, s.s.; 10 years	Schooner ..	802	42	39	32 tons measure (approx.)	Damaged doors, fittings, &c.	Nil	Cook Strait	S.	10	On vessel's trip to Picton heavy overfalling sea crashed on board, damaging saloon-doors, breaking ports, and damaging rails and bulwarks, &c.	R. M. Kane.
,, 23	Albatros, s.s.; 23 years..	..	111	Nil	Nil	Nil	Fire	Nil	Auckland Harbour ..	S.	Light	Whilst vessel was under survey a fire was discovered, which charred two frames, some planks, and lining	..
,, 24	Echo, o.e.v.; 30 years ..	Schooner ..	99	10	Nil	70 tons general ..	Crank-shafts carried away	Nil	Cook Strait	W.	4	Whilst vessel was off Karori Rock on way to Blenheim crank-shafts of starboard engine carried away	P. A. Miles

,,	31	Makora, s.s.; 15 years ..	..	194	4	8	Nil	Stranding	Nil	Auckland Harbour ..	..	Calm	When vessel near her berth the Master gave order to reverse, but engines failed to act, resulting in vessel striking wharf and sustaining £75 worth of damage to stem, &c.	M. Scott.
June	1	Combine, sail; 25 years	Schooner ..	24	3	Nil	Nil	Collision	Nil	Auckland Harbour ..	S.S.W.	Light	Owing to confusion of shore lights and reflections in the harbour the vessels came into collision, resulting in the railing, port side of forward rigging, and some of the bulwarks of the "Combine" being carried away, but no damage was done to the "Otimai"	S. Hakanson.
		Otimai, aux.; 14 years	Fore and aft	111	10	Nil	Nil						..	E. H. Cathcart.
,,	6	Thistle, o.e.v.; 37 years	No sails ..	77	11	Nil	Nil	Stranded	Nil	Wanganui River ..	..	Calm	Owing to haziness some of the river lights were temporarily obscured and vessel went on to the wall, but came off again in about an hour	James Irvine.
,,	9	Kiwitea, s.s.; 10 years ..	Schooner ..	1,165	33	Nil	2,958 tons of coal and timber	Stranded	Nil	Grey River	S.W.	Moderate	The leading mooring-lines of "Kiwitea" were carried away by the "Omana," which broke away, resulting in the former vessel grounding when manœuvring to the north-west bank, but was refloated with apparently no damage sustained	John Bruce.
,,	9	Omana, s.s.; 20 years ..	Schooner ..	1,513	33	Nil	1,250,000 ft. timber ..	Stranded	Nil	Grey River	S.W.	Moderate	Owing to excessive strain caused by flood-waters, one cable snapped, and ship broke away from wharf and was grounded on north-west bank to prevent her going over the bar	Joseph L. Brisco.
,,	17	Gael, m.v.; 16 years ..	Schooner ..	46	7	Nil	Nil	Collision	Nil	Wellington Harbour ..	..	Calm	The "Echo" was lying at Queen's Wharf when the "Gael," which was leaving for sea stern first, swung round, and her bow struck the "Gael" a glancing blow on starboard bow but did not inflict material damage	A. M. Nalder.
		Echo, o.e.v.; 25 years..	Schooner ..	99	10	Nil	65 tons general ..						..	P. A. Miles.
,,	20	Hokianga, m.v.; 6 years	Ketch ..	75	9	Nil	5 tons general	Damaged port side ..	Nil	Hokianga Bar ..	S.	Light	Vessel encountered successive heavy seas when crossing the bar, causing her to "pile-drive" heavily, and on arrival at Onehunga several timbers on port side of hull were found to be slightly started	William Wright.
,,	20	Alma, scow; 33 years	Ketch ..	21	4	Nil	Nil	Collision	Nil	Auckland Harbour ..	..	Calm	The "Combine" was at anchor off King's Wharf when the "Alma" in crossing the bow of the "Combine" fouled the latter, carrying away her jib-boom	E. P. Brown.
		Combine, scow; 25 years	Schooner ..	24	2	Nil	Nil						..	S. Hakanson.
,,	22	Abel Tasman, s.s.; 19 years	Schooner ..	1,176	29	Nil	Timber	Stranding	Nil	Kaipara Harbour ..	Not stated	..	When proceeding down the harbour, after passing Poutu Point, vessel touched ground twice, and, sheering to starboard and carrying away for a considerable distance, fouled the black buoy, which, parting from its moorings, was carried downstream with the tide	William Archibald.
,,	25	Kaimai, s.s.; 11 years ..	Schooner ..	784	25	Nil	Nil	Damaged piston ..	Nil	Lat. 43° 40′ S.; Long. 178° 11′ E.	S.W.	2	Owing to bolt in junk-ring in I.P. piston breaking, the I.P. cylinder was put out of action, but the engines were kept going by adjusting the rings, &c.	John Ritchie.
July	8	Kartigi, s.s.; 11 years ..	Fore and aft	1,166	32	Nil	1,600 tons coal.. ..	Starboard anchor and 15 fathoms chain lost	Nil	Auckland Harbour ..	S.W.	3	When vessel was approaching Chelsea Wharf starboard anchor and 15 fathoms of cable were dropped to snub vessel to position, but cable parted in hawse-pipe	Samuel Hewitt.
,,	10	Pakeha, s.s.; 25 years ..	Schooner ..	5,029	79	Nil	2,400 tons frozen and general	Plate dented and fractured, and ballast tank No. 2 damaged	Nil	Oamaru	S.	..	When being pumped out ballast-tank No. 2 failed to empty, and, on vessel being docked at Wellington, one plate was found dented and fractured under the tank, although vessel not known to have touched bottom anywhere	E. T. Grayston.
,,	13	Margaret W., m.v.; 16 years	Schooner ..	290	12	Nil	100 tons general ..	Broken crank-shaft ..	Nil	Bay of Plenty ..	..	Calm	When the vessel was crossing the Bay of Plenty the crank-shaft of the main engine broke in the thrust from some unknown cause	John R. Owen.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT FROM 1ST APRIL, 1935, TO 31ST MARCH, 1936—*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.		Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1935.													
July 13	Binta, m.v.; 7 years ..	Schooner ..	3,421	33	Nil	6,170 tons gasoline, kerosene, &c.	Compressor of main engine damaged	Nil	Off Castle Point ..	W.N.W.	6	A heavy bang was heard in the engine-room, and, on investigation, a bolt of the cross-pin had broken and fallen, causing damage to the compressor, which was repaired at Wellington	A. W. Norvalls.
,, 15	Makura, s.s.; 27 years ..	Schooner ..	4,920	134	140	2,000 tons general ..	Port anchor and 50 fathoms cable lost	Nil	Rarotonga	E.	6–7	Whilst at anchor vessel encountered strong easterly wind, causing her to drag and lose anchor and 50 fathoms of cable	D. Macdonald.
,, 26	Huntingdon, s.s.; 17 years	Schooner ..	6,881	56	Nil	Nil	Main steam-pipe fractured	Nil	Lat. 47° 00′ S.; Long. 153° 20′ E.	S.W.	5	A small fracture was discovered in the starboard forward boiler's main steam-pipe, the cause of which was unknown	H. E. Reilly.
Aug. 5	Lancia, o.e.v.; 15 years	Cutter ..	6	1	1	Nil	Collision	Nil	Auckland Harbour ..	N.W.	6	The "Lancia" was towing the barge "Rover," and, on passing between some yachts at anchor, the tow-rope caught the "Glady" and dragged her against the barge, splitting the jib-boom of the "Glady" for a distance of 5 ft.	E. C. Lannam.
	Glady, yacht	..	..	..	..	.. ..				..		..	H. K. Allen.
,, 6	Motu, m.v.; 15 years ..	Schooner ..	109	10	Nil	50 tons general ..	Damaged starboard propeller	Nil	Awanui River ..	N.W.	9	Whilst the vessel was proceeding down the river, which was in flood, the starboard propeller fouled an unseen sunken log and was damaged	F. G. Shirley.
,, 15	Breeze, m.v.; 2 years ..	..	316	15	Nil	200 tons general ..	Collision	Nil	Off Paeroa (near Timaru)	..	Calm	The Court found that the collision was due to the "Bessie" crossing ahead of the "Breeze" owing to lack of knowledge of regulations by the person steering the "Bessie," and recommended that a copy of regulations be supplied free of charge to each licensee on registration of fishing-boat, and that persons in charge of launches be required to have working knowledge of regulations, and ordered the owner of "Bessie" to pay £17 12s. 6d. towards costs of inquiry	Robert T. Stewart.
	Bessie, fishing-boat ..	..	7	3	Nil	Cases of petrol and fishing-gear						..	Ronald F. Latimer.
,, 16	Fordsdale, s.s.; 11 years	Schooner ..	5,647	65	1	7,500 tons general ..	Damaged boats, ventilators, &c.	Nil	Lat. 35° 24′ S.; Long. 179° 20′ E.	W.	9	The vessel shipped a heavy sea on the starboard side, damaging weather boats, ventilators, and wrecking horse-box	Douglas Christie.
,, 28	Natone, s.s.; 35 years ..	Cutter ..	50	4	Nil	Nil	Damaged hull, &c. ..	Nil	Wellington Patent Slip	..	Calm	The vessel was on the cradle, and, on being hauled up on the slip, a chock failed to hold, resulting in vessel being thrown on her side, breaking several planks and frames and damaging bulwarks	H. W. Hargraves.
Sept. 5	Huanui, m.v.; 25 years	Ketch ..	56	7	Nil	120 tons coal	Stranded	Nil	Manawatu River ..	..	Calm	The vessel was drawing 7 ft., and, as there was only 6 ft. 6 in. of water in river-channel, she stranded on a sandbank, and, after being lightered, was refloated	T. C. Thomsen.
,, 9	Fairburn, m.v.; 29 years	Schooner ..	60	6	Nil	42,000 ft. timber ..	Broken crank-shaft ..	Nil	Cook Strait	S.	4–5	When vessel was one mile east of Jackson Head the engineer reported that crank-shaft of starboard engine was broken; vessel proceeded to Wellington to have a new shaft installed	T. C. Sawyers.
,, 20	Endeavour, aux.; 31 years	Ketch ..	42	6	Nil	100 tons cement ..	Port propeller lost ..	Nil	Auckland Harbour ..	..	Calm	When the vessel was going to anchor in Shoal Bay the port propeller was lost, but no damage was sustained by the vessel or her cargo	W. E. Aspden.
Oct. 5	Echo, m.v.; 30 years ..	Schooner ..	99	10	Nil	Approximately 56 tons general	Shackle carried away and damaged sail	Nil	Cook Strait	N.W.	8	During strong northerly gale and rough sea peak-halyard shackle carried away, the peak of the gaff penetrating the sail, necessitating vessel being towed to Wellington, where a new sail was placed on board	P. A. Miles.

,, 16	Coronation, m.v.; 33 years	Ketch ..	59	7	Nil	40 tons general ..	Cylinder and water-jacket fractured	Nil	Off Cavelle Islands ..	S.W.	Light	Owing to water in lubricating-oil pipe two main bearings ran out, and No. 4 cylinder and water-jacket fractured — H. Parker.
,, 21	South Sea, s.s.; 22 years	Schooner ..	127	21	6	Fish	Stranded	Nil	Chatham Islands ..	S.W.	8	Whilst proceeding at full speed to Tupuangi anchorage vessel grazed bottom with her keel, and, on examination by diver, no damage was found — A. T. Dowell.
,, 30	Thomas Currell, s.s.; 16 years	Schooner ..	84	10	Nil	Nil	Boiler-tube burst ..	Nil	Auckland Harbour ..	N.W.	4	Engineer reported that a tube in the boiler had burst, which necessitated vessel's returning to port — A. J. Nilsson.
,, 30	Waipahi, s.s.; 10 years ..	Schooner ..	1,019	30	Nil	Approximately 700 tons general	Stranding	Nil	Wellington Harbour (Pencarrow Head)	S.	6–7	The Court found that two causes contributed to casualty, one being the unusual state of weather, which caused leading lights in harbour to be obscured at a little distance and thus rendered navigation difficult, and the second cause being an extraordinary flood in the Hutt River, creating a set in a south-easterly direction towards the harbour-entrance, and, if this prevailed, would have taken ship off her course without the ship's officer being aware of the fact, as weather conditions prevented the ship's course being checked. The Court further found that the master and officers took every precaution to ensure safe navigation of ship, and that casualty was not caused by any wrongful act or default of master, officers, or crew, and, accordingly, master's certificate was returned and no order made as to costs — J. E. Warwick.
Nov. 1	Doris, m.v.; 25 years ..	Lug ..	3	1	1	Nil	Collision	Nil	Russell Harbour ..	W.	Light	The "Moana" was towing a barge from Matawhi to Paihia and the "Doris" was going from Paihia to Russell when she struck the "Moana" amidships, damaging her — Norman Fuller.
	Moana, m.v.; 21 years	Lug ..	4	2	Nil	Nil						J. B. Williams.
	Port Waikato, m.v.; 6 years	Schooner ..	342	15	Nil	400 tons general ..						The "Port Waikato" was leaving Central Wharf when the Chief Engineer put engine ahead in error, although she had been going slowly astern, the result being that she struck the "Coronation," which was leaving the wharf, damaging her bulwarks, &c. — J. W. H. Holmes.
,, 11	Coronation, m.v.; 33 years	Ketch ..	59	7	Nil	Nil	Collision	Nil	Auckland Harbour ..	S.W.	4	.. — H. Parker.
,, 17	King Malcolm, m.v.; 10 years	Schooner ..	3,127	28	Nil	3,200 tons bitumen (approx.)	Damaged auxiliary compressor, &c.	Nil	New Plymouth ..	S.E.	7	Whilst vessel was lying at berth the bottom end bolt of auxiliary compressor-engine broke, damaging compressor-engine plating and slackening rivets — D. A. Utting.
,, 21	Holmglen, m.v.; 7 years	Schooner ..	290	12	Nil	350 tons general ..	Stranding	Nil	Wellington Harbour ..	S.	4	Whilst berthing at Miramar Wharf the vessel collided with the wharf, bending her stem-bar and the plate adjoining same — M. M. McArthur.
,, 27	Waipiata, s.s.; 9 years ..	Schooner ..	1,063	31	Nil	Nil	Damaged anchor ..	Nil	Auckland Harbour ..	S.W.	Strong	The anchor was found to be cracked across the crown, so was taken ashore to be repaired, and a spare anchor was shackled to the port cable for use meantime — S. H. Chatfield.
Dec. 3	Abel Tasman, s.s.; 19 years	Schooner ..	1,175	29	Nil	Timber and general ..	Stranding	Nil	Wanganui River ..	E.	Slight	When going down the river the vessel took the ground, where she remained until next tide, when she was assisted off by the Harbour Board's tug, having apparently sustained no damage — W. D. Archibald.
,, 10	Pukeko, m.v.; 8 years ..	Schooner ..	388	17	Nil	Nil	Leaking	Nil	Auckland Harbour ..	S.W.	..	On arrival at port vessel, which had been leaking, was examined, when a small weeping was found just forward of amidship fuel-tank on starboard side near heel-plate; repairs effected — S. Jones.
,, 19	Canadian Victor, s.s.; 15 years	Schooner ..	3,340	43	Nil	2,000 tons general ..	Leaking condenser-tubes ..	Nil	Off Australian south-east coast	S.W.	4	Whilst vessel on a voyage from Melbourne to Auckland a slight leak was discovered in the main condenser-tubes, which was repaired after vessel's arrival at Auckland — W. Wyman.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT FROM 1ST APRIL, 1935, TO 31ST MARCH, 1936—*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.		Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1935. Dec. 21	Otimai, m.v.; 24 years ..	Schooner ..	111	10	Nil	120 tons general ..	Damaged rudder ..	Nil	Off Whakatane entrance	N.E.	Light	Whilst the vessel was anchored off the bar in 8 fathoms of water the blade of the rudder dropped off	F. G. Shirley.
,, 30	Whareatea, launch; 00 years	..	6	..	2	..	Collision	Nil	Kenepuru Sound ..	S.E.	Calm	The "Nanette," being under sail only, was becalmed when she was struck amidships by the "Whareatea," causing her to sink within two minutes ..	Wallace J. Orchard.
	Nanette, o.e.v. yacht; 22 years	Cutter ..	9	4	10	Nil							J. C. Maddever.
1936. Jan. 1	Hananui II, s.s.; 25 years	Schooner ..	44	9	Nil	Nil (fishing)	Damaged lower manhole boiler-door	Nil	Auckland Harbour ..	..	Calm	Whilst vessel was proceeding to fishing-grounds, and when off Islington Bay, the packing of the lower manhole-door of the boiler blew out, necessitating vessel being towed back to Auckland	J. Holt.
,, 5	Arahina, o.e.v.; 11 years	Nil ..	12	3	1	Nil	Collision	Nil	Wellington Harbour ..	S.	2	The vessels were proceeding in opposite directions, when they were required to draw near each other to enable the pilots to communicate. "Uta" sheered over to "Arahina" to pass clear of her stern, but, getting too close, struck "Arahina" abaft amidships on starboard side, necessitating her being beached at Balena Bay ..	P. Mackey.
	Uta, o.e.v.; 36 years ..	One mast ..	23	3	1	Nil							W. H. Campbell.
,, 20	Fordsdale, s.s.; 12 years	Schooner ..	5,646	68	Nil	Nil	Boiler mishap	Nil	Lat. 10° 22′ S.; Long. 119° 04′ W.	..	Calm	The starboard lower furnace in centre boiler and low furnace in after port boiler were found to have collapsed	D. Christie.
,, 24	Echo, o.e.v.; 31 years ..	Schooner ..	99	10	Nil	120 tons general ..	Stranding	Nil	Wairau Bar	S.E.	2	On a voyage to Wellington the vessel stranded on the bar owing to insufficient water, and she remained fast until the tide was sufficient, when she refloated and proceeded to Wellington apparently undamaged	P. A. Miles.
,, 24	Kapiti, m.v.; 34 years ..	Schooner ..	122	11	Nil	420 bales of wool ..	Port boat damaged ..	Nil	Wanganui River ..	..	Calm	When the vessel was lying at the Town Wharf a railway truck which was being shunted left the rails and ran on board, smashing the stern of the port boat	V. E. Johansen.
,, 31	Hokianga, m.v.; 7 years	Ketch ..	76	9	Nil	80 tons general ..	Compass and fittings, &c., carried away	Nil	Hokianga Bar ..	..	Calm	The vessel encountered a succession of heavy seas, one of which broke over her stern, carrying away portion of poop-railing, after-grating, and standard compass	W. Wright.
Feb. 2	John, s.s.; 37 years ..	Schooner ..	134	1	Nil	Nil	Stranding	Nil	Wellington Harbour ..	S.	9	Vessel was laid up in harbour, and during heavy gale dragged her anchors and went ashore stern first between Kaiwarra and Ngahauranga, but was refloated three days later	Watchman in charge.
,, 2	Rewa, sail; 23 years ..	Cutter ..	7	2	..	Nil	Stranding	Nil	Buckland's Beach, Auckland	N.E.	10	During north-east gale the vessel was beached for safety, but six hours afterwards, owing to loss of anchors, was caught by a south-west gale, resulting in a butt being started on the port side, the vessel, however, making very little water	Alex. E. Petersen.
,, 2	Thistle, aux.; 42 years ..	Ketch ..	6	2	..	Nil	Stranding	Nil	Kawau Island, Hauraki Gulf	N.W.	9 (gale)	Vessel was anchored close in under land, hence when wind changed suddenly and without warning vessel could not pay out enough cable to hold, so she was beached without damage	Carl W. Kasper.
,, 2	Ionoto, m.v.; 15 years ..	Cutter ..	6	..	..	Nil	Foundering	Nil	Auckland Harbour ..	N.N.E. to N.W.	12 (hurricane)	The vessel was moored off the Viaduct, Quay Street, when owing to the heavy seas pounding over her she swamped, and her cabin-top was blown off	Edward B. Howe.

,,	2	Hananui II, s.s.; 26 years	Schooner ..	44	9	Nil	Nil	Plates dented	Nil	Auckland Harbour ..	N.N.E.	10	Whilst moored to wharf during cyclonic storm the vessel bumped the wharf, denting several of her plates on her port side	J. Holt.
,,	2	Canadian Conqueror, s.s.; 16 years	Schooner ..	3,336	42	Nil	4,000 tons general ..	Leaky rivets	Nil	Off Australian coast ..	S.W.	9–10	After leaving Sydney, well in hold found to be leaking, and, after discharge of cargo in Melbourne, some rivets in gusset-angle on port side found leaking, which were caulked but subsequently leaked, hence, on vessel's arrival at Lyttelton, final repairs were effected in dry dock	W. H. Millar.
,,	2	Rangatira, turbo-electric; 5 years	Schooner ..	2,629	100	693	General	Stranding	Nil	Cook Strait	S.	5	At rehearing the Court found that the Master was not justified in the conclusion that the land he saw was Taurakirae Head and in proceeding at a speed of 16 knots at 6.2 a.m. Even at an earlier stage, 5.35 a.m., when he came on deck the Master should have taken way off his ship and obtained D.F. bearing to check his position. This not having been done, vessel should have been stopped until conditions improved to enable position to be ascertained with certainty. In fact, it was not until after vessel was off the rock that the Master ascertained by three D.F. bearings that the ship was in vicinity of Sinclair Head, and not, as he thought, off Taurakirae Head. The Court found that the Master committed an error of judgment in proceeding as he did at 6.2 a.m., but, in view of his unblemished record of over thirty-five years, and the superb seamanship displayed after the disaster, and of abnormal tide which caused the vessel to set west so far out of course, the Master's certificate would not be affected, nor did the Court consider that the Wireless Operator's certificate should be prejudicially affected	W. D. Cameron.
,,	10	Middlesex, s.s.; 15 years	Schooner ..	5,460	51	Nil	9,990 tons general ..	Damaged lifeboat ..	Nil	Lat. 51° 35′ N.; Long. 7° 22′ W. (South Irish Sea)	S.E.	12	Vessel shipped heavy sea over the port side of boat-deck, carrying away grips and irons of No. 4 boat, holing it and damaging chocks	H. J. Wilde.
,,	19	Te Aroha, m.v.; 26 years	Schooner ..	56	7	Nil	43,400 ft. timber ..	Damaged ship's boat ..	Nil	Hokitika Wharf ..	..	Calm	After swinging ship her stern swung into the wharf, damaging her boat, which was in the davits over her stern	N. A. Olson.
,,	26	Kapuni, m.v.; 26 years	Schooner ..	95	10	Nil	132 tons butter ..	Damaged compass and wheel-house	Nil	Between Patea and Wellington	S.	8	In a heavy southerly gale and heavy head seas the vessel shipped a heavy sea, which damaged the front of the wheel-house and the steering-compass	W. McKinnon.
Feb.–Mar.		Tongariro, s.s.; 11 years	Schooner ..	5,472	51	Nil	5,500 tons general ..	Damaged shell-plating ..	Nil	At sea (position unknown)	..	..	On vessel's arrival at Auckland a leak was discovered in No. 1 'tween-deck, and, on examination, shell-plating was found to be damaged, but when and where it occurred is unknown	P. B. Clarke.
Mar.	..	Triona, s.s.; 5 years ..	Schooner ..	2,590	63	4	2,300 tons phosphates ..	Damaged rudder-post ..	Nil	Between Nauru Island and Auckland	Not known	..	The welding holding the plate-edge to the rudder-post was found to have started, and the plating laid open from the 15 ft. to the 20 ft. mark on the port side	A. Rhodes.
,,	2	Fairburn, aux.; 31 years	Ketch ..	60	6	Nil	20 tons general ..	Stranding; total loss ..	Nil	Westport	N.N.E.	Gale	Whilst proceeding down Buller River the vessel encountered a heavy north-north-east squall, losing steerage-way, and vessel failing to come round, and engines being out of action, was abandoned, eventually became a total wreck on the eastern breakwater	T. C. Sawyers.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT FROM 1ST APRIL, 1935, TO 31ST MARCH, 1936—*continued*.

Date of Casualty.	Vessel's Name, Class, of Age.	Rig.	Register Tonnage.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1936. Mar. 11	Te Aroha, m.v.; 26 years	Schooner ..	56	7	Nil	52,500 sup. ft. timber ..	Two rudder-bands carried away	Nil	Off Ohuri Point ..	W.S.W.	6	On passage from Hokitika to Wellington the vessel encountered strong winds and heavy sea, resulting in two rudder-bands being carried away	N. A. Olsen.
,, 25	Kaiaia, m.v.; 27 years ..	Ketch ..	24	5	Nil	50 tons general ..	Foundered	Nil	Off Castle Rock, Mercury Bay	E.	6	The Court found that the vessel suddenly sprang a leak at 4 a.m. and took water so rapidly that the pumps were unable to save her, despite desperate efforts of the crew, and she sank in two hours, becoming a complete loss; that the vessel probably struck a submerged or partly submerged log or heavy piece of timber, which stove or sprung some of her fore planks; and that she was fully manned and equipped as required by law. The Court further found that the loss of the ship was not in any manner attributable to any wrongful act or default by or of any person or persons, and that the Master and crew behaved in every way in a proper manner under the circumstances. The Court ordered that the expenses of the witnesses at the investigation, together with a sum of £10 10s. as the solicitor's costs of the Master, be paid by the Minister of Marine	H. S. Aspden.

SUMMARY OF CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT DURING THE FINANCIAL YEAR ENDED 31ST MARCH, 1936.

Nature of Casualty.	On or near the Coasts of the Dominion.			Outside the Dominion.			Total Number of Casualties reported.		
	Number of Vessels.	Tonnage.	Number of Lives lost.	Number of Vessels.	Tonnage.	Number of Lives lost.	Number of Vessels.	Tonnage.	Number of Lives lost.
Strandings—									
Total loss	2	84	..	..	..	..	2	84	..
Damaged	9	7,370	..	..	..	..	9	7,370	..
Undamaged	9	6,556	..	1	127	..	10	6,683	..
Total strandings	20	14,010	..	1	127	..	21	14,137	..
Fires—									
Total loss	..	..	..	..	..	..	..	..	..
Damaged	1	111	..	..	..	..	1	111	..
Undamaged	..	..	..	..	..	..	..	..	..
Total fires	1	111	..	..	..	..	1	111	..
Collisions—									
Total loss	..	..	..	..	..	..	..	..	..
Damaged	18	736	..	..	..	..	18	736	..
Undamaged	4	572	..	..	..	..	4	572	..
Total collisions	22	1,308	..	..	..	..	22	1,308	..
Miscellaneous, including damage by heavy seas to hull and cargo, breakdown of machinery, &c.	30	33,665	..	11	49,270	..	41	82,935	..
Total number of casualties reported	73	49,094	..	12	49,397	..	85	98,491	..

RETURN OF LAND BOILER AND MACHINERY INSPECTIONS DURING THE YEAR ENDED 31ST MARCH, 1936.

Boiler inspections—	
Stationary, portable, and traction boilers	4,997
Steam-pressure vessels	3,251
Air-receivers	761
Total boilers	9,009
Machinery inspections—	
Lifts	3,116
Cranes	395
Hoists	1,308
Machines driven by steam power	12,329
Machines not driven by steam power	60,253
Electric-power supply station units	167
Total machinery	77,568
Grand total	86,577

Return of New Boilers inspected for the Year ended 31st March, 1936.

Class.	Made in Dominion.		Imported.		Total.	
	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.
Stationary, portable, and traction	63	1,064	24	530	87	1,594
Digesters, jacketed pans, sterilizers, vulcanizers, and other steam-receivers	168	..	123	..	291	..
Air-receivers	21	..	26	..	47	..
	252	1,064	173	530	425	1,594

Return of the Number of Certificates issued to Land Engine-drivers and Electric tram Drivers during the Year ended 31st March, 1936.

Class.	Number.	Class.	Number.
Service—		Competency—*continued.*	
First-class engine-driver	3	Electric-winding-engine driver	2
Steam-winding-engine driver	1	Locomotive and traction engine driver ..	27
Competency—		Locomotive engine driver	7
Extra first-class stationary engineer ..	3	Traction-engine driver	25
First-class engine-driver	18	Electric-tram driver	7
Second-class engine-driver	211		
Steam-winding-engine driver	4	Total	308

Return of Land Engineers', Engine-drivers', and Electric-tram Drivers' Examinations held throughout New Zealand during the Year ended 31st March, 1936, showing the Number of Successful and Unsuccessful Candidates.

Place.	Extra First Class.		First Class.		Second Class.		Locomotive and Traction.		Locomotive.		Traction.		Winding.				Electric-tram Driver.		Total.		Grand Total.
													Steam.		Electric.						
	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	
Auckland ..	..	..	5	5	31	5	1	..	1	1	..	..	..	..	..	..	..	..	38	11	49
Blenheim ..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	2
Christchurch ..	..	..	1	15	4	8	1	1	..	..	12	..	..	..	..	..	6	1	24	25	49
Collingwood ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Dunedin ..	..	..	1	3	12	7	1	1	..	..	1	1	2	..	..	..	..	..	17	12	29
Gisborne ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Greymouth ..	..	..	2	5	10	7	3	..	1	1	..	..	1	..	..	..	..	..	17	13	30
Hamilton ..	..	..	1	7	20	4	2	1	1	..	1	..	..	..	1	..	..	..	26	12	38
Invercargill ..	..	..	2	6	20	8	1	..	1	..	2	1	..	1	..	..	..	..	26	16	42
Kaitaia ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Napier ..	..	..	..	..	7	..	..	..	2	..	1	..	..	..	..	..	..	..	10	..	10
Nelson ..	..	1	2	..	4	3	..	..	..	..	1	..	..	..	1	..	..	..	8	4	12
New Plymouth	..	..	..	2	57	16	..	..	..	1	..	..	..	..	..	..	..	..	57	19	76
Palmerston N.	..	..	1	..	7	1	..	..	..	..	1	..	..	..	..	..	..	..	9	1	10
Picton ..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1
Timaru ..	..	..	..	..	2	1	..	..	..	..	3	..	..	..	..	..	..	..	5	1	6
Wanganui ..	..	..	..	..	3	3	1	..	..	1	..	..	..	..	..	..	..	..	4	4	8
Wellington ..	3	3	1	2	17	5	1	..	..	..	..	..	..	..	..	..	..	..	22	10	32
Westport ..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Whangarei ..	..	..	..	2	6	1	..	..	..	..	..	..	..	..	..	..	..	..	6	3	9
	3	4	16	47	204	71	11	4	6	4	23	2	3	1	2	..	6	1	274	134	408

TABLE I.—SHOWING THE NUMBER OF FISHING-VESSELS AND THE NUMBER OF FISHERMEN AND OTHER PERSONS ENGAGED IN THE FISHING INDUSTRY AT EACH PORT FOR THE YEAR ENDED 31ST MARCH, 1936.

Name of Port.	Vessels engaged in Fishing for Wet Fish.										Vessels engaged in Shell-fishery.						Number of Persons employed.					
	Steamers Trawling.		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.	
	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.
Russell	..	..	..	..	1	8	15	..	17	..	..	..	..	..	3	16	33	..	3	16	36
Kaipara	..	..	..	..	..	32	..	..	2	..	..	..	..	..	..	41	2	..	..	41	2
Whangarei	..	..	..	..	..	3	12	..	5	..	..	..	..	..	..	6	29	3	2	9	31
*Auckland	1	2	..	..	34	6	47	41	14	50	..	..	1	..	4	4	260	190	95	45	355	235
Thames	..	..	..	..	1	2	19	5	2	1	..	..	2	..	..	2	46	19	21	..	67	19
Mercury Bay	..	..	..	..	..	..	8	1	..	..	..	..	..	..	1	..	10	4	2	..	12	4
Tauranga	..	..	..	..	..	3	15	17	..	2	..	..	..	..	..	..	30	20	4	..	34	20
Opotiki	..	..	..	..	..	..	..	2	..	4	..	..	..	..	..	..	..	8	..	..	..	8
Gisborne	..	..	..	..	..	..	9	4	..	10	..	..	..	..	..	2	20	30	3	1	23	31
Napier	7	..	2	..	2	..	3	11	..	7	..	..	..	..	..	1	45	32	7	3	52	35
New Plymouth	..	..	..	..	..	..	10	11	..	9	..	..	..	..	..	..	24	45	..	6	24	51
Wanganui	..	..	..	..	..	..	..	22	..	3	..	..	..	..	..	..	..	47	..	..	..	47
Wellington and district	2	..	..	..	..	..	59	11	20	28	..	..	..	..	..	60	184	134	43	14	227	148
Picton	..	..	..	..	..	..	30	13	..	3	..	..	..	..	..	..	54	29	..	..	54	29
Blenheim (Wairau)	..	..	3	1	..	..	..	4	..	3	..	..	..	..	..	1	7	12	..	..	7	12
Nelson	..	..	..	..	5	2	14	6	..	2	..	..	..	..	..	..	36	22	8	4	44	26
French Pass	..	..	..	..	..	2	9	13	..	..	..	..	..	..	..	..	20	30	..	..	20	30
Westport	2	1	..	5	..	..	..	..	..	..	..	..	..	..	..	..	6	12	3	..	9	12
†Greymouth	2	..	..	..	1†	..	3	7	..	10	..	..	..	..	..	..	17	35	..	..	17	35
Kaikoura	..	..	..	..	..	..	12	..	1	..	..	..	..	..	..	7	23	7	1	..	24	7
Lyttelton	2	1	8	2	2	..	46	6	19	5	..	..	..	..	..	..	144	20	12	1	156	21
Akaroa	..	..	5	..	..	2	4	5	..	11	..	..	..	..	..	7	30	10	2	10	32	20
Timaru	..	..	6	9	2	2	8	8	1	..	..	..	..	..	..	..	33	19	3	..	36	19
Oamaru and Moeraki	..	..	..	..	..	..	27	10	..	1	..	..	..	..	..	8	40	20	5	5	45	25
Dunedin and Otago district	1	1	14	20	1	1	35	35	7	11	..	..	..	..	..	15	173	24	36	..	209	24
Bluff and Invercargill and district	..	..	..	1	..	..	85	5	..	..	7	1	..	..	..	..	232	17	59	28	291	45
Stewart Island (Half-moon Bay)	..	..	..	..	..	..	37	..	..	..	..	..	..	..	..	..	85	..	14	..	99	..
Chatham Islands	..	..	..	..	..	..	18	..	..	..	..	..	..	..	..	..	80	..	15	..	95	..
Totals	17	5	38	38	48	21	541	264	64	184	7	1	3	..	5	110	1,662	850	336	122	1,998	972

* Includes Coromandel. † Steamer.

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, 1936.

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.	£	£	£
Russell	Snapper, mullet, flounder, groper, crayfish, kingfish, tarakihi, gurnard, maomao	2,621	1,223	..	..	..	..	60	124	124	1,347
Kaipara	Flounder, snapper, mullet	4,334	5,910	..	..	..	..	..	..	..	5,910
Whangarei	Snapper, groper, mullet, blue cod, flounder	1,254	1,827	..	..	..	..	..	..	..	1,827
Auckland (including Manakau and Coromandel)	Snapper, flounder, tarakihi, groper, gurnard, pioke, dory, mullet, crayfish, blue cod, kingfish, trevally, frost-fish, barracouta, piper, oysters (rock), mussels, sardines	129,209	92,622	3,037	3,762	6,378	1,595	2,091	1,984	7,341	99,963
Thames	Snapper, flounder, dab, mullet, gurnard, dory, pioke, mussels	19,134	14,593	..	..	3,714	1,048	7	7	1,055	15,648
Mercury Bay	Snapper, tarakihi, groper, gurnard, blue cod, flounder, kingfish, crayfish	2,532	1,498	..	..	..	..	220	243	243	1,741
Tauranga	Snapper, tarakihi, groper, mullet, blue cod, kingfish, trevally, pioke	4,252	2,850	..	..	..	..	..	..	..	2,850
Opotiki	Snapper, flat fish, groper, gurnard, tarakihi	185	410	..	..	..	..	..	..	..	410
Gisborne	Tarakihi, gurnard, snapper, groper, sole, flounder, kahawai, crayfish	2,190	1,920	..	..	..	..	60	42	42	1,962
Napier	Tarakihi, gurnard, sole, snapper, groper, flounder, barracouta, crayfish	16,421	13,782	..	..	..	..	70	61	61	13,843
New Plymouth	Snapper, groper, crayfish, tarakihi, cod, gurnard, kingfish, kahawai	1,750	1,890	..	..	..	..	40	40	40	1,930
Wanganui	Snapper, groper, blue cod, flounder, kahawai	134	192	..	..	..	..	..	..	..	192
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	46,619†	47,394	..	..	..	..	1,750	1,300	1,300	48,694
Picton	Flounder, butterfish, moki, blue cod, groper, crayfish	4,720	4,605	..	..	..	..	..	..	..	4,605
Blenheim (Wairau)	Sole, flounder, moki, tarakihi, red cod, snapper, butterfish, groper, gurnard, crayfish	3,000	2,720	..	..	..	..	100	100	100	2,820
Nelson	Snapper, flounder, dab, groper	2,914	3,497	..	..	..	..	..	..	..	3,497
French Pass	Blue cod, groper, sole, flounder, snapper, butterfish, gurnard	2,171	2,639	..	..	..	..	..	..	..	2,639
Westport	Sole, snapper, groper, ling, flounder, crayfish, gurnard, turbot, red cod	394	450	..	..	..	..	15	15	15	465
Greymouth	Sole, groper, snapper, flounder, turbot, tarakihi, kingfish, red cod, ling	3,434	3,190	..	..	..	..	..	..	..	3,190
Kaikoura	Groper, trumpeter, hake, ling, tarakihi, bass, blue cod, crayfish	4,364	5,019	..	..	..	..	..	..	..	5,019
Akaroa	Flounder, sole, groper, brill, red cod, blue cod, crayfish, barracouta, kingfish, kahawai, moki, butterfish	4,703	7,575	..	..	..	..	150	75	75	7,650
Lyttelton	Flounder, dab, groper, tarakihi, ling, gurnard, red cod, elephant-fish	12,440	11,534	..	..	..	..	..	..	..	11,534
Timaru	Flounder, sole, groper, ling, red cod, blue cod, kingfish, elephant-fish, gurnard, brill, barracouta	14,046	14,820	..	..	..	..	..	..	..	14,820
Oamaru and Moeraki	Groper, blue cod, red cod, ling, barracouta, crayfish	4,505	5,150	..	..	..	..	400	200	200	5,350
Dunedin and Otago districts	Sole, groper, flounder, snapper, red cod, blue cod, trevally, ling, moki, brill, barracouta, crayfish, gurnard, mullet, garfish, tarakihi, red perch, kingfish, trumpeter, skate, kahawai	43,391	44,114	..	..	..	..	1,617	1,051	1,051	45,165
Invercargill, Bluff, and district	Blue cod, groper, flounder, sole, green-bone, trevally, ling, kingfish, crayfish	6,082	5,633	49,712	31,070	..	..	..	..	31,070	36,703
Stewart Island	Blue cod, groper, trumpeter, green-bone, moki	9,370	8,822	..	..	..	..	..	..	..	8,822
Chatham Islands	Blue cod, groper	17,279‡	7,227	..	..	..	..	..	..	..	7,227
	Totals	363,448	313,106	52,749	34,832	10,092	2,643	6,580	5,242	42,717	355,823

* Not including whitebait.

† Includes 7,629 cwt. blue cod, 304 cwt. groper, 13 cwt. warehou, and 5 cwt. tarakihi 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, 1936.

—	Russell.	Kaipara.	Whangarei.	Auckland.*	Thames.	Mercury Bay.	Tauranga.	Opotiki.	Napier.	New Plymouth.	Wellington.	Blenheim.	French Pass.	Westport.	Greymouth.	Lyttelton.	Oamaru-Moeraki.	Bluff-Invercargill.	Chatham Islands.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Barracouta	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	30	..	..
Blue-cod	..	..	10	215	3	82	50	..	..	40	8,089	..	865	10	..	..	750	5,515	15,926
Butterfish	..	..	..	..	..	..	..	..	..	..	..	..	181	..	..	..	..	..	..
Flounders, dabs, and soles	..	2,573	30	7,560	3,305	5	..	25	2,329	..	..	900	226	214	2,797	1,070	25	..	..
Groper (Hapuku)	..	..	105	2,943	8	194	191	20	..	140	5,873	..	629	71	402	..	3,200	335	1,067
Gurnard	..	..	..	766	660	14	..	10	2,895	30	..	..	..	29	19	360	..	..	..
John-dory	..	..	..	1,723	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hake	..	..	..	..	..	..	..	..	..	..	1,942	..	..	..	12	..	..	..	..
Kahawai	..	..	..	..	..	..	..	..	..	..	..	..	..	5	2	..	..	..	..
Ling	..	..	..	..	..	..	..	..	..	..	4,106	..	..	22	46	2,210	250	..	..
Moki	..	..	..	..	..	..	..	..	..	..	1,377	..	..	..	..	..	..	..	..
Mullet	..	1,000	980	154	688	22	3	45	..	..	..	..	..	..	..	..	..	..	..
Pioke	..	..	..	..	..	605	..	..	..	..	..	..	..	..	..	..	..	..	..
Red Cod	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	250	..	..
Snapper	..	1,321	671	820	88,374	14,053	2,029	3,583	120	1,576	1,460	1,351	..	94	43	51	..	..	..
Tarakihi	..	..	..	..	18,100	14	185	342	10	7,927	40	18,620	..	..	..	49	5,600	..	..
Mixed or kind not specified		300	110	135	8,840	381	20	41	..	1,694	..	5,261	2,100	171	..	50	3,200	..	232	..
Totals	..	2,621	4,334	1,254	129,209	19,134	2,532	4,252	185	16,421	1,710	46,619†	3,000	2,171	394	3,437	12,440	4,505	6,082	16,993

* Includes Coromandel.

† Total includes the following fish landed at Wellington by fish-carrier "South Sea" from Chatham Islands: Blue cod, 7,629 cwt.; groper, 304 cwt.; warehou, 13 cwt.; tarakihi, 5 cwt.

TABLE III.—SHOWING THE NUMBER OF SACKS AND VALUE OF THE OYSTERS OBTAINED IN THE DOMINION DURING THE YEAR ENDED 31ST DECEMBER, 1935.

Locality.	Quantity.	Value (Wholesale).
DREDGE OYSTERS.		
	Sacks.	£
Foveaux Strait	49,712	31,070
ROCK OYSTERS.		
Bay of Islands	800	3,762
Whangarei Harbour	219	
Kaipara Harbour	400	
Hauraki Gulf*	914	
Coromandel	300	
Great Barrier Island	404	
Total	3,037	
Grand total	52,749	34,832

* Takatu to Gull Point, 72; Kawau, 48; Rakiuo, 60; Motutapu, 120; Waiheke, 578; Ponui, 36.

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, 1936.

Whaling-station.	Number of Whales taken.	Species.	Yield of Oil.	Quantity of Bonedust and Fertilizer.
			Tons.	
Marlborough Sounds (Picton)	57	Humpback ..	258	Nil.

TABLE V.—SHOWING THE TOTAL QUANTITY AND VALUE OF FISH AND SHELL-FISH IMPORTED INTO AND EXPORTED FROM NEW ZEALAND DURING THE YEAR ENDED 31ST MARCH, 1936.

Fish and Shell-fish imported.

Description of Fish.	Quantity.	Value.
		£ (N.Z.).
Oysters	Nil	..
Anchovies, salted, in containers of 28 lb. or over	51 cwt.	206
Other fish—		
Frozen, smoked, pickled, dried, or salted	2,614 cwt.	3,625
Potted and preserved in tins	3,997,112 lb.	156,559
		160,390

TABLE V (*continued*). — SHOWING THE TOTAL QUANTITY AND VALUE OF FISH AND SHELL-FISH IMPORTED INTO AND EXPORTED FROM NEW ZEALAND DURING THE YEAR ENDED 31ST MARCH, 1935.

Fish and Shell-fish exported.

Description of Fish.	Exporting Ports.	Quantity.	Value.
Produce of New Zealand.			£ (N.Z.)
Oysters, fresh	Auckland	756 doz.	22
	Wellington	4,912 doz.	105
	Invercargill (Bluff)	196,114 doz.	2,043
	Total	201,782 doz.	2,170
Blue cod, frozen	Auckland	2 cwt.	14
	Wellington	12,668 cwt.	30,383
	Lyttelton	72 cwt.	168
	Dunedin	69 cwt.	171
	Invercargill	11,546 cwt.	25,791
	Total	24,357 cwt.	56,527
Snapper, frozen	Auckland	11,133 cwt.	23,670
	Wellington	399 cwt.	704
	Total	11,532 cwt.	24,374
Flounder, frozen	Auckland	2,682 cwt.	7,431
	Wellington	563 cwt.	1,352
	Lyttelton	413 cwt.	882
	Dunedin	448 cwt.	1,188
	Timaru	5 cwt.	11
	Invercargill	394 cwt.	993
	Total	4,505 cwt.	11,857
Other kinds, frozen*	Auckland	7,005 cwt.	16,096
	Wellington	2,190 cwt.	3,868
	Lyttelton	878 cwt.	1,781
	Dunedin	3,187 cwt.	7,480
	Invercargill	613 cwt.	1,215
	Total	13,873 cwt.	30,440
Total exports of frozen fish from Dominion	,,	54,267 cwt.	123,198
Smoked, dried, pickled, or salted	,,	2,519 cwt.	6,816
Preserved in tins—			
Crayfish	,,	63,901 lb.	4,349
Oysters	,,	172,855 lb.	6,444
Toheroas†	,,	24,836 lb.	1,683
Whitebait†	,,	85,701 lb.	8,662
Value of total exports of New Zealand fish and shell-fish	,,	..	153,322
Re-exports.			
Potted and preserved in tins	,,	15,435 lb.	557

* Includes frozen crayfish—

	Cwt.	£ (N.Z.)
Auckland	336	1,026
Wellington	155	216
Lyttelton	184	660
Dunedin	294	740
Invercargill	23	51
Total	992	2,693

† Exporting Ports.	Toheroas.		Whitebait.	
	Quantity.	Value.	Quantity.	Value.
	lb.	£ (N.Z.)	lb.	£ (N.Z.)
Auckland	24,104	1,614	62,530	6,592
Wellington	36	4	8,630	716
Dunedin	696	65	13,094	1,271
Greymouth	..	..	1,344	72
Invercargill	..	..	103	11
	24,836	1,683	85,701	8,662

APPENDICES.

APPENDIX I.

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

Part I.

3rd	July,	1935.	Prescribing Netting Limits in Kakanui River.
12th	,,	,,	Restricting the Taking of Pipis in Kawhia Harbour.
12th	,,	,,	Regulating the Size of Nets in Hauraki Gulf, Frith of Thames, and Kawhia Harbour.
30th	,,	,,	Prescribing Close Season for Oysters in Pelorus and Queen Charlotte Sounds and Tory Channel.
5th	August,	,,	Restricting Use of Danish-seine Nets.
20th	,,	,,	Regulating Trawling and Danish-seining in Kennedy Bay, Coromandel Peninsula.
28th	,,	,,	Prescribing Close Season for Oysters in Port Underwood.
23rd	September,	,,	Altering Close Season for Toheroas.
21st	October,	,,	Prohibiting Trawling in Kaipara Harbour.
21st	,,	,,	Permitting Use of Whitebait Groynes in Avon River.
3rd	December,	,,	Prohibiting the Taking of Toheroas on Ohope Beach, Whakatane.

Part II.

20th	August,	1935.	Amending Regulations for Trout-fishing in Wellington Acclimatization District.
20th	,,	,,	Amending Regulations for Trout-fishing in Feilding Acclimatization District.
20th	,,	,,	Amending Regulations for Trout-fishing in Lakes Acclimatization District.
20th	,,	,,	Amending Regulations for Trout-fishing in Southland Acclimatization District.
28th	,,	,,	Amending Regulations for Trout-fishing in Auckland Acclimatization District.
28th	,,	,,	Amending Regulations for Trout-fishing in Nelson Acclimatization District.
2nd	September,	,,	Amending Regulations for Trout-fishing in Otago Acclimatization District.
16th	,,	,,	Amending Regulations for Trout-fishing in Hawke's Bay Acclimatization District.
16th	,,	,,	Amending the Rotorua Trout-fishing Regulations.
30th	,,	,,	Amending the Taupo Trout-fishing Regulations.

APPENDIX II.

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

—	Auckland Harbour (off Nelson Street Wharf).			Tamaki Estuary (off Panmure).			Bay of Islands (off Russell).			Kaipara Harbour (Whakapirau Estuary).		
	1933–34.	1934–35.	1935–36.	1933–34.	1934–35.	1935–36.	1933–34.	1934–35.	1935–36.	1933–34.	1934–35.	1935–36.
	°C.	°C.	°C.	°C.	°C.	C°.	°C.	°C.	°C.	°C.	°C.	°C.
May	15·6	15·3	16·3	15·1	14·6	..	15·7	16·9	16·4	14·5	14·5	15·7
June	12·5	13·6	13·7	..	..	..	13·9	14·8	14·2	10·7	13·3	12·6
July	11·7	12·4	12·1	11·4	15·0	12·7	13·6	13·7	14·1	10·9	12·2	11·9
August	11·6	12·6	12·0	11·4	..	12·1	13·4	13·8	13·8	14·5	13·6	12·5
September ..	13·9	13·5	12·6	14·0	14·8	13·2	14·7	14·8	13·5	15·1	15·3	12·3
October	15·7	15·8	15·1	12·9	..	16·8	16·0	15·4	15·5	15·4	18·0	16·6
November ..	17·2	18·7	15·1	21·1	18·4	18·0	16·7	16·9	15·9	16·9	19·6	16·4
December ..	20·6	20·8	18·9	20·5	23·5	22·1	20·2	21·1	19·7	23·0	21·8	22·1
January	19·4	21·8	20·9	20·3	19·5	23·8	20·7	21·9	21·0	22·8	23·9	22·6
February ..	20·3	24·0	21·4	21·9	23·2	22·4	20·9	22·2	20·7	21·2	22·3	21·8
March	19·9	21·4	18·7	..	..	22·8	19·2	20·9	19·4	19·2	22·0	21·8
April	18·8	19·7	18·1	17·0	19·8	18·5	19·2	19·1	18·5	17·0	20·7	17·0

APPENDIX III.

NOMENCLATURE.

LIST SHOWING POPULAR AND SCIENTIFIC NAMES OF FISH, CRUSTACEA, AND MOLLUSCA MENTIONED IN REPORT.

Popular Names.	Scientific Names.
FISHES—	
Barracouta	*Thyrsites atun* (Euphrasen).
Bass (or bass groper)	*Polyprion americanus* (Bloch. and Schn.).
Blue cod	*Parapercis colias* (Forster).
Brill	*Colistium (Ammotretis) guntheri* (Hutton).
Butterfish (= greenbone or kelp-fish)	*Coridodax pullus* (Forster).
Conger	*Leptocephalus conger* (Linnaeus).
Dab (commonly included among flounder)	*Rhombosolea plebeia* (Richardson).
Elephant-fish	*Callorhynchus milii* (Bory).
Flounder	*Rhombosolea leporina* Guenther.
Frost fish	*Lepidopus caudatus* (Euphrasen).
Greenbone (= butterfish)	*Coridodax pullus* (Forster).
Groper (= hapuku)	*Polyprion oxygeneios* (Bloch. and Schn.).
Gurnard	*Chelidonichthys kumu* (Lesson and Garnot) and *Lepidotrigla brachyoptera* Hutton.
Hake (= southern kingfish)	*Jordanidia solandri* (Cuv. and Val.).
Hapuku (= hapuka or whapuku)	*Polyprion oxygeneios* (Bloch. and Schn.).
Herring (= South Island mullet)	*Agonostomus forsteri* (Cuv. and Val.).
"Picton herring" (= pilchard or sardine)	*Sardinia (Clupea) neopilcharda* (Steindachner).
John Dory (or dory)	*Zeus faber* Linnæus.
Kahawai	*Arripis trutta* (Forster).
Kingfish (northern)	*Seriola lalandi* (Cuv. and Val.).
Kingfish (southern)	*Jordanidia solandri* (Cuv. and Val.).
Ling	*Genypterus blacodes* (Bloch. and Schn.).
Maomao (maumau)	*Scorpis violaceus* (Hutton).
Moki	*Latridopsis ciliaris* (Forster).
Mullet (northern)	*Mugil ?cephalus* Linnæus.
Mullet (southern) (= herring)	*Agonostomus forsteri* (Cuv. and Val.).
Pioke (dog-fish)	*Squalus fernandinus* (Molina).
Piper (garfish)	*Hemirhamphus intermedius* Cantor.
Red cod	*Physiculus bachus* (Bloch. and Schn.).
Rock-cod	*Lotella rhacinus* (Forster).
Sardine	*Sardinia (Clupea) neopilcharda* (Steindachner).
Skate	*Raja nasuta* Mueller and Henle.
Snapper	*Pagrosomus auratus* (Forster).
Sole	*Peltorhamphus novae-zeelandiae* Guenther.
Tarakihi	*Dactylopagrus macropterus* (Forster).
Trevally	*Caranx platessa* (Cuv. and Val.).
Trumpeter	*Latris lineata* (Forster).
Turbot	*Colistium nudipinnis* (Waite).
Warehou	*Seriolella brama* (Guenther).
Whitebait	*Galaxias attenuatus* (Jenyns).
Whiting (or English hake)	*Merluccius gayi* (Guichenot).
CRUSTACEA—	
Crayfish	*Jasus lalandii* (Milne-Edwards) and *J. hugeli* (Heller).
Whale-feed	*Munida gregaria* Fabricius.
MOLLUSCA—	
Borer	*Thais scobina* Quoy and Gaimard.
Cockle (or Pipi)	*Chione (Antigona) stutchburyi* Gray.
Mussel	*Mytilus canaliculus* Martyn.
Oyster, dredge	*Ostrea sinuata* Lamarck (*O. angasi* Sowerby).
Oyster, rock	*O. glomerata* Gould.
Pipi	*Chione, Dosinia, Mesodesma subtriangulatum*, &c.
Pupu	*Thais succincta* Martyn.
Toheroa	*Mesodesma (Amphidesma) ventricosa* Gray.

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