1935.

NEW ZEALAND.

MARINE DEPARTMENT.

ANNUAL REPORT FOR THE YEAR 1934–35.

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

YOUR EXCELLENCY,— Marine Department, Wellington, 7th October, 1935.

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

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

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

REPORT.

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

SIR,— Marine Department, Wellington, 30th September, 1935.

I have the honour to submit the Annual Report on the operations of the Marine Department for the financial year ended 31st March, 1935 :—

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.
		Revenue.			
Shipping Branch—	£ 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
Engagement and discharge fees	3,179 11 0	2,002 13 0	1,561 10 11	1,712 19 6	1,711 13 6
Survey fees	3,095 9 0	3,809 5 0	3,551 3 5	3,542 5 9	3,500 12 0
Examination fees, &c.	395 12 6	252 13 6	264 17 6	229 12 6	194 14 10
Lighthouse tender—					
Freight, passage-money, &c.	1,785 0 7	756 10 10	1,527 12 4	719 4 0	4,464 17 0
Miscellaneous	1,289 0 4	1,543 7 3	1,717 14 1	1,370 19 10	1,305 7 9
Harbours—					
Pilotage, port charges, &c.	764 14 6	1,293 4 1	1,860 7 5	1,806 3 0	1,711 15 1
Foreshore revenue	1,126 14 1	2,611 18 9	2,498 11 3	2,192 8 1	1,963 13 11
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
Examination fees, &c.	667 0 0	384 7 0	401 0 0	313 2 6	359 4 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
Fishing-boat license fees, &c.	324 9 6	691 0 3	560 1 6	613 7 6	513 17 1
Rental of toheroa-beds	10 0 0	309 0 0	317 18 6	320 1 9	316 0 0
Ross Sea revenue	..	600 0 0	..	1,000 7 6	600 0 0
Miscellaneous revenue	2,800 11 4	26 1 7	27 17 1	14 8 10	525 11 8
Totals	79,956 8 6	120,846 15 4	125,669 4 9	127,799 15 8	133,532 13 9
		Expenditure.			
Head Office	9,612 2 8	8,931 6 9	7,124 6 0	7,788 11 9	8,612 5 5
Harbours	4,826 13 2	2,409 16 0	1,919 12 1	1,792 3 3	2,071 3 7
Lighthouses	49,532 14 2	38,801 11 5	36,707 5 3	38,306 13 11	40,190 0 8
Mercantile marine	15,150 17 11	21,216 13 0	19,383 12 5	18,868 11 0	19,629 5 3
Inspection of Machinery	27,015 0 0	22,800 13 1	14,636 5 6	14,279 19 6	15,130 5 5
Fisheries	9,580 7 1	7,207 0 7	8,784 6 10	8,948 11 2	10,191 16 10
Miscellaneous services	2,655 3 8	1 14 8	0 18 11	25 19 6	..
Grants and subsidies	1,510 0 0	125 0 0	629 3 4	550 0 0	550 0 0
Depreciation	8,156 0 10	13,343 13 2	13,598 8 3	13,303 8 10	13,140 4 9
	128,038 19 6	114,837 8 8	102,783 18 7	103,863 18 11	109,515 1 11
Interest on capital	15,716 7 3	20,325 19 2	20,609 4 5	20,634 1 0	14,331 17 2
Totals	143,755 6 9	135,163 7 10	123,393 3 0	124,497 19 11	123,846 19 1
	Deficit.	Deficit.	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

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. There is every indication, however, that provision will require to be made in the near future for heavy expenditure on a complete survey of the New Zealand coast and this will fully absorb the small surplus which is being realized at present.

Westport Harbour.

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

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 fourteen 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 has shown a slight improvement, 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 ten 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

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.

Greymouth Harbour.

A subsidy amounting to £12,000 was paid to the Greymouth Harbour Board during the year in pursuance of the provisions of section 5 of the Greymouth Harbour Board Amendment Act, 1920. Formerly this subsidy was paid out of permanent appropriations under special Acts. The financial position of the Greymouth Harbour Board was closely reviewed towards the end of the year, and instead of paying an annual subsidy the Government has decided to take over the Board's loan liability. This means that the Board will be relieved of interest and sinking fund on its loans and will require to finance its operations out of its ordinary revenue. The new arrangement makes very little difference to the Consolidated Fund and has the distinct advantage of defining and stabilizing the position so far as the Board is concerned.

Harbour Works.

Westport Harbour.—No further construction work has been carried out on this harbour during the year. The average working depth on the bar at high water was 21 ft., an increase of 1 ft. 5 in. on that of the previous year, and this has been quite adequate for the shipping using the port. The steady progressive improvement in bar conditions was most noticeable during the first six months of the year. Gradual retrogression took place after September, when bad weather conditions and easterly sets resulted in general shoaling over the bar area. There was, however, an improvement again towards the end of the year.

The survey and investigation of the harbour referred to in the report of last year was completed. The objective was an examination of the possibilities of maintaining a greater depth of water on the bar, and the conclusion drawn has been that no permanent increase in depth would result from the extension of the existing walls. A temporary improvement would in all probability be obtained, but there would be a rapid return to old conditions and, in the meantime, the gradient of the river would be decreased, and its capacity for removing sand thereby lessened. The most promising means of deepening the water on the bar is to increase the tidal area inside the harbour, thereby inducing a greater inflow and outflow of water. This would necessitate considerable dredging, expenditure on which is not warranted as long as the bar maintains its present depth.

Dredging operations were confined solely to the suction dredge "Eileen Ward." The bucket dredge "Maui" and the suction dredge "Rubi Seddon" were out of commission. The "Eileen Ward" dredged on 187 days of the year, the material lifted being dropped at sea. The total quantity of material taken from the bar was 449,766 cubic yards, from the lower river 134,939 cubic yards, from berthages 34,152 cubic yards, and from the floating basin 12,496 cubic yards, making a total yardage shifted of 631,353 cubic yards.

The rainfall recorded on the harbour gauge for the year was 79·57 in., which fell on 169 days. For the three preceding years the figures were: 1933–34, 81·27 in., 174 days; 1932–33, 66·99 in., 179 days; 1931–32, 114·55 in., 178 days.

Seas on the bar were rough on forty-eight days, the bar being unworkable to shipping on sixteen full days and five half-days.

The use of the tug "Mana" was necessary on two occasions for towing vessels outward from the port.

The willow-plantations along the river have been kept in good order.

Running repairs to the "Eileen Ward" and other working-plant has kept the workshops fully employed. Cranes on the western breakwater and at the Cape Foulwind Quarry were chipped, scraped, and painted. The pilot launch "Kaiuranga" was placed on the "grid," painted, and tail-shaft drawn.

The signal station beacons and harbour lights are in good order, and diving-gear and rocket apparatus have also been overhauled and are ready for use when required.

Shipping at this port showed a slight improvement on that of last year, the total tonnage entering port being 253,041, an increase of 12,909 tons. Coal shipped from the port was 291,685 tons, against 280,080 tons in 1933–34.

Sixteen large overseas vessels worked the port.

Karamea Harbour.—Owing to the aggradation of the river by debris from earthquake slips, Karamea has ceased to be a port. The river now finds its way to sea through the Otumahana Lagoon, and no definite channel exists.

The harbour has not been worked since November, 1931, and all shipping to the district has been diverted to Little Wanganui.

Little Wanganui Harbour.—The port has been worked fairly regularly at spring tides by the a.s. "Fairburn." At times the channel has shoaled due to lack of freshes, which are relied on to maintain a fairly straight channel over the bar, but shipping was not at any time unduly delayed.

The shed at the wharf was overhauled and painted, and access road formed to the back of the shed so that merchandise can be handled more expeditiously. The tram-line on the wharf was taken up and relaid with new sleepers.

A railway-iron beacon was concreted into the rock on the south side at the entrance.

Waikokopu.—Operation of the port has been carried out by the Wairoa Harbour Board on behalf of the Public Works Department. During the year seventy-nine coastal vessels worked the port and handled 3,509 tons of general cargo, 247 bales of wool, and 8,666 sheep. In addition, and consequent on the reopening of the freezing-works at Wairoa, five overseas vessels were worked at the roadstead by lighters, handling frozen meat, wool, tallow, and skins. Minor repairs have been carried out to the wharf and buildings as required.

Early in the year 56 tons of concrete were placed in the breakwater to repair storm damage, and at the close of the year preparations were in train for more work of a similar nature.

Soundings taken during the year revealed no appreciable change in depths either at the wharf or in the roadstead.

Pitt Island Jetty—Chatham Islands.—This jetty was completed under contract during the year. It is a 29 ft. by 22 ft. structure, built of mixed Australian hardwood timbers on piles at approximately 6 ft. centres. On the jetty is a cattle-race 3 ft. wide, 15 ft. long, with a 31 ft. approach-race to same on shore. A 2 ton crane has also been erected on the jetty.

Great Barrier Island: Tryphena Wharf and Approaches.—Site No. 1: A stone-walled approach extending 120 ft. from high-water mark has been constructed. The wharf at this site is to be built by the settlers without Government subsidy.

At No. 3 site a stone-walled approach is constructed 4 ft. above high-water spring tide and extending to 55 ft. from high-water mark. From that point a jetty of turpentine piles and mixed

Australian hardwood superstructure is built 80 ft. long by 10 ft. wide. A crane has also been erected. The depth of the water at the end of the jetty is 10 ft. at low-water spring tide.

Great Barrier Island: Whangapara Wharf.—Plans have been approved and a contract let for the construction of the stone-walled approach.

Elmslie Bay Wharf, French Pass.—Proposals for the erection of a new structure have been approved, and plans and specifications have been prepared.

Waikawa Bay Wharf (near French Pass).—Surveys and tentative plans for a new structure have been completed.

Portage Wharf, Kenepuru Sound.—Minor repairs to steps and decking were carried out during the year.

Tiri Tiri Fog Signal.—The necessary machinery for this plant, including air-receiver, two Diesel-driven compressor sets, shafting, piping, and diaphone signal have been delivered on the island and placed in position. The pipe-work on the engine and compressor-cooling systems, also pipes to receiver and diaphone, are now being laid out and erected. The job is in a fairly advanced state.

Lighthouses.

Baring Head.—A contract for the erection of the concrete tower and two cottages for the accommodation of the keepers has been completed, and, in addition, the power-house for machinery for generating the electric energy has been completed. The lantern-house has been placed in position and everything was in readiness for the electrical equipment. The power is generated at the station by means of Diesel-driven generating-sets and fed through a battery of accumulators to the light itself. All parts are in duplicate, and every precaution has been taken to safeguard any possibility of failure through a breakdown of the power-supply, damage to the light-source, or any other contingency.

A considerable amount of tree-planting and breakwind construction has been carried out on the reserve.

The light was actually exhibited on 18th June, 1935, when Pencarrow Light, which had been in use for years, ceased operations.

Castlepoint.—A cast-iron cleaning-path around the lantern house was erected in order that the cleaning of the lantern could be carried out with greater safety.

Cape Saunders Lighthouse.—Painting and repairs to the lighthouse and repairs to the two cottages and other buildings were undertaken during the period.

Centre Island Lighthouse.—In November, 1933, a quantity of ruby glass for replacement of ruby screens was purchased, and this is held in store at the island pending the visit of the Department's expert to place same in position.

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.—Onekaka River Wharf; Kawakawa Landing-stage (Bay of Islands); Brown's Island (Hauraki Gulf—wharf); Mangarakau River (Westhaven—wharf); Taieri Mouth (wharf); Picton (Harbour—boatslip); Queenstown (jetty); Wairupe Stream (Motukaraka Wharf); Hokianga; Tangowahine; Kaipara; Lucas Creek, Auckland; Waikawa Bay, Queen Charlotte Sound; Brown's Bay, Waiheke Island (wharf); New Brighton, Hauraki Gulf; Ngaruawahia, Waikato River; Motukaraka, Hokianga; Picton.

Wharves and Jetties.—Kohimarama, Auckland; Holmes' Wharf, Oamaru; Tryphena Harbour, Great Barrier Island; Mangarakau River, Westhaven; Imlay Extension, Wanganui; Grader Wharf extension, Patea; Motukaraka, Hokianga Harbour; Lyttelton No. 1 reconstruction, Wellington Harbour.

Boat-sheds and Skids.—Picton foreshore (Picton—footbridge); Evans Bay, Wellington; Kawakawa, Bay of Islands; Port Nelson; Bastion Point, Auckland; Herne Bay, Auckland; Oaklands Road, Papakura.

Bridges.—Puhoi River, Rodney County; Maungaroa Creek, Manukau County; Orewa River, Waitemata; Waikawau Stream, Thames; Paremata River, Porirua Harbour; Limeburner's Creek, Whangaroa.

Retaining-walls.—Moncks Bay, Sumner; Motueka Harbour; Breakwater extension, Oamaru; groynes, Tauranga Harbour; Hokitika River.

Reclamations.—Point Howard, Wellington Harbour; Wairau Estuary, Takapuna.

Outfalls.—Septic tank, New Zealand Air Forces, Hobsonville; Evans Bay, Wellington; Karori sewerage, Cook Strait.

Harbour Board Legislation.

The only legislation passed during the year and affecting Harbour Boards was as follows:—

Bluff Harbour Board and Bluff Borough Council Empowering Act.—This Act supplemented the existing agreement between these local bodies in the matter of the water-supply to the Harbour Board wharves.

Oamaru Harbour Board Empowering Act.—This Act authorized the Oamaru Harbour Board to construct a necessary extension to the existing breakwater.

Lighthouse Tender.

The s.s. "Matai" has efficiently carried out the work of tendering the coastal lighthouses and overhauling the buoys and beacons in harbours under the control of the Department. In addition, she made a trip to certain islands under Government administration in the Pacific on inspection and relief work after the disastrous hurricane which swept these islands early in 1935.

Adjustment and Inspection of Ships' Compasses.

The regulations for the adjustment of compasses have been carefully administered, and compasses continue to be maintained in a good state of efficiency. The results of the investigation of adjustments show that the work of 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 Messrs. 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 brought up to date and, to ensure that purchasers receive information issued between the dates 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 has often been favourably commented on by purchasers. It is gratifying to know that this standard of correction is now a condition in agreements between sub-agents and the Admiralty agent in London.

During the year the Hydrographer issued a new chart, No. 2532, Banks Peninsula to Otago Peninsula; new editions of No. 2513, Napier Port and Harbour; No. 2521, Tauranga Harbour; No. 2535, Cape Egmont to Manukau Harbour; and a new copy of No. 2185, Nelson Anchorages, with large corrections.

The principal changes on No. 2532 included amendments to the coast-line made from Lands and Survey Department plans, new soundings from the Otago Harbour survey between Shag Point and Cape Saunders, and new insets of Timaru and Oamaru Harbours from surveys made by the respective Boards.

Nos. 2185, 2521, and 2513, showed considerable alterations, and were amended from information supplied by the Nelson, Tauranga, and Napier Harbour Boards respectively.

No. 2535 showed amendments to inset of New Plymouth, and a new plan of the wharves from a New Plymouth Harbour Board survey; amended longitude graduation, and numerous minor corrections.

The charts of the main ports in the Dominion are now up to date, and it is hoped that the various Boards will continue to co-operate with the Department and so keep the Hydrographer in touch with the changes that take place.

Coastal Survey.

The existing charts of the New Zealand coast are based to a large extent on surveys carried out very many years ago and are not sufficiently accurate or informative to meet the requirements of modern high-speed shipping running closely to time-table. The Government has been in communication with the Imperial authorities on this matter, with the result that satisfactory financial arrangements have now been concluded, and it is expected that a surveying ship will be made available to commence a resurvey of the whole of the coast-line of the Dominion next year.

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.

The practice of granting a partial pass, which came into force in 1931 with the present regulations, is working smoothly and is thoroughly appreciated by candidates.

The procedure for the extra masters examination has been considerably amended lately, and candidates now have the option of taking the written portion of the syllabus in two parts, a condition being that the oral work must be taken with one of them. A candidate gaining a pass in one or both of the written parts has his certificate endorsed to that effect. These alterations will ease the strain of the examination and should result in a number of candidates coming forward for this certificate.

Fifty examinations were held during the year. For foreign-going and home-trade certificates the percentages were as follows: Total passes, 55·2; partial passes, 20·7; partial failures, 10·3; total failures, 13·8. No 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 sixty-two candidates were examined, one of whom failed in the lantern test and one in the letter test. One special examination was held during the year. The lanterns were, as usual, examined during the year.

Marine Casualties.

During the year the casualties on or near our coasts varied considerably in their nature and were of comparatively slight importance, being due to stranding, fire, collision, grounding in small harbours, heavy seas, &c.

Preliminary inquiries into the circumstances attendant on the majority of the casualties were held by the Superintendents of Mercantile Marine, and in no case was it necessary to hold a formal investigation.

New Zealand Nautical Almanac and Tide-tables.

This publication for 1935 (33rd edition) was published, as usual, on the 1st November. 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. New plans of Nelson, Mapua, Wellington wharves, and additional plans (Whangarei harbour and Opua wharf) have 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 fifty-one have been issued during the year.

Arrangements have been made for the exhibition and inspection of notices received from the Admiralty, the Board of Trade, Australia, Tasmania, and Suva, at the offices of the Superintendent of Mercantile Marine at all ports visited by overseas vessels, and for the inspection of notices received from America, India, and Japan at the Nautical Adviser's Office.

Radio Beacons.

Progress in the erection of the radio beacon on Baring Head has been somewhat delayed on account of the difficulty in obtaining compliance with our specifications, which are higher than usual owing to the proximity of the Wellington Radio Station.

The installation of the experimental beacon at Tiri Tiri has also been delayed through some of the parts having to be manufactured in the United Kingdom. The beacon should, however, be in operation about the end of September.

Arrangements are in train for the sending of D/F signals at four-hourly periods and two intermediate times from the radio stations on Stephens and Portland Islands, on request. These arrangements are being made to give ships some temporary service, and while such is far from being what the Department desires it is the best that can be arranged in the meantime.

Certificates of Efficiency as Lifeboatmen.

Arrangements have been made for the examination of seamen and the issue of Certificates of Efficiency as Lifeboatmen in accordance with the provisions of the International Conference for the Safety of Life at Sea, 1929, which, although not yet in force in the Dominion, applies to many of the vessels trading here.

The examinations were held at 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, 758 certificates have been issued.

Registration of Shipping.

On the 31st December, 1934, there were on the Register of Vessels in the Dominion 55 sailing-vessels of 4,789 tons register, 199 steamers of 87,478 tons register, and 242 motor-vessels of 9,092 tons register, as compared with 56 sailing-vessels of 4,809 tons register, 211 steamers of 97,847 tons register, and 249 motor-vessels of 8,939 tons register at the end of the previous year.

The number of seamen employed on board was 3,063, as compared with 3,431 for the year 1933.

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 9,549 and 9,509 respectively, as compared with 9,613 and 9,519 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	2,720 (2,712)	2,854 (2,626)	514 18 0 (513 19 0)
Wellington	4,332 (4,534)	4,367 (4,499)	774 17 0 (685 5 0)
Lyttelton	516 (623)	513 (641)	82 2 0 (73 4 0)
Dunedin	602 (395)	484 (397)	101 5 0 (74 4 0)

Engagement of Seamen.

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

Sick and Injured Seamen.

The total amount paid by shipowners to sick and injured seamen, under the provisions of the Shipping and Seamen Act, 1908, and its amendments, was £12,357 2s. 6d., as against £9,764 19s. 8d. for the previous year, an increase of £2,588 2s. 10d.

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	145	(147)
Sea-going sailing-ships	4	(4)
Restricted-limits steam and motor ships	370	(389)
Total	519	(540)

Two sea-going vessels and eleven restricted-limits vessels were surveyed in the Dominion for the first time during the year under review. The new sea-going vessels were the m.v. " Breeze " and the s.s. " Waitaki," both fine examples of modern cargo-ships. The " Breeze " is a motor-vessel of 622 tons gross and 316 tons register propelled by a single set of two-cycle Diesel engines developing 725 brake horse-power. An oil-fired auxiliary boiler is carried which supplies steam to engine-room auxiliary machinery, steering-gear, windlass, and cargo-winches. The vessel is engaged in the coasting trade. The " Waitaki " was built in Glasgow early in 1934, and was put through a first annual survey in July, 1934, immediately after her arrival in New Zealand. She is a steamship of 2,211 tons gross and 1,097 tons register and is propelled by a single set of triple-expansion steam-engines developing 1,350 indicated horse-power. The boilers are oil-fired, and the vessel is engaged in the intercolonial trade between Melbourne and southern New Zealand ports.

The sailing-vessel " Ethel Wells " was converted to an auxiliary-powered vessel by the installation of an oil-engine, and the steamship " Pakura " was converted to oil-engine propulsion. The latter was the largest conversion job yet carried out in the Dominion. The boilers and engines were removed and replaced by a single set of two-cycle Diesel engines developing 750 brake horse-power. These engines occupy less space than the steam-propelling machinery, and the length of the engine-room was therefore reduced to provide increased cargo-carrying space. The speed has been fully maintained with the new machinery. The vessel has been operating some months since the alterations were carried out and is reported to be satisfactory in every respect.

The first complete survey in New Zealand of the Intercolonial passenger and mail steamship " Monowai " was carried out from June to October, 1934. The vessel had hitherto been surveyed annually at Sydney, New South Wales, but this year the owners decided to take advantage of the dry-docking facilities now provided at the Port of Wellington, and the complete survey, including examination of the hull in dry-dock, was carried out at this port. In addition to opening up and routine examinations, the machinery, equipment, and hull, including the passenger-accommodation, were reconditioned throughout. The work involved provided employment for a large amount of labour during the period that the vessel was laid up. This is the first survey carried out under the rules of the International Convention for the Safety of Life at Sea. The Pacific mail and passenger steamships " Maunganui " and " Makura," usually completely surveyed at Sydney each year, were partially surveyed at Wellington ; the work done included dry-docking for examination and repairs of hulls, propellers, and underwater fittings.

Two hundred and fifteen surveys for efficiency and seaworthiness under section 226 of the Shipping and Seamen Act and twenty-five tonnage and other surveys were made during the year, making the total number of surveys for all purposes 759. Twenty-two of the seaworthiness surveys were made in connection with the hulls, machinery, or equipment of overseas vessels not registered or normally surveyed in the Dominion. The damage, or deficiencies in equipment, were of minor nature, there being no major casualties connected with overseas shipping on the New Zealand coast during the year.

Three vessels, the " Katoa," " Komata," and " Kaimanawa," formerly regularly engaged in intercolonial and coasting trades, but latterly laid up in New Zealand waters, were sold to Eastern buyers for breaking up. After being reconditioned for the voyage, they left for the East in ballast. The " Kaimanawa " was towed to her destination by the " Komata."

Safe Working Loads Regulations : These regulations form a part of the General Harbour Regulations designed for the prevention of accidents to persons engaged in working cargo on board ship. The two thousand copies which were printed of the first edition are now sold out. Since the regulations were first published the British Standards Institution has prepared standard specifications for short-link chain, galvanized shipping-ropes, and cargo-lifting blocks. In order that the purchase and certification of these items of cargo gear may be simplified the requirements of the regulations relating to quality and physical tests of new chain and wire rope have been brought into agreement with the appropriate British standard specification. The quality and breaking loads of chain prescribed in the standard specifications do not differ materially from those given in the previous edition of the regulations, and no alterations to the tables of safe-working loads for chain have been necessary in the new edition. A slight alteration, however, has been made in the tables of safe-working loads for wire ropes in order that the nominal factors of safety may remain the same as previously. A supplement has been added to the regulations giving information which could not properly be included in the regulations but which will enhance the value of the regulations from the point of view of the prevention of accidents. The new regulations have now been gazetted.

Inspection of Boilers and Machinery.

Boilers and Pressure Vessels.

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

Boiler and pressure vessels inspected for the first time	339	(293)
Air-receivers inspected for the first time	36	(75)
Total inspections of all boilers, pressure vessels, and receivers ..	8,000	(7,922)

The number of inspections is a slight increase on that of last year, but is still 144 below the peak year of 1931. The inspections include eighty-one new power boilers, of which fifty-seven, with a total of 1,197 horse-power, were manufactured within the Dominion, and twenty-four, with a total of 761 horse-power, were imported from abroad.

The outstanding boiler defect of the year was found in July last during the ordinary annual inspection of a battery of eight water-tube boilers used in a large factory. Hydraulic tests applied in course of the inspection revealed a number of leaks at the longitudinal lap seams of six out of the eight steam and water-drums of the boilers. Further investigations showed that the leakages were due to a large number of fractured rivets. The majority of the defective rivets were fractured immediately beneath the heads within the boiler, but some were broken clean across the shank about $\frac{5}{16}$ in. from the internal head. The drums were made in three courses of plates, and the defective rivets in every case were in the front and rear courses.

The defective rivets were renewed in five boilers, and the remaining boiler was laid aside for some months while the cause of the defects was being fully investigated. The possibility of the existence of cracks in the plates was considered, and, to eliminate any doubt on the matter, the whole of the rivets in the longitudinal seams of the front and rear courses of the idle boiler were removed and the plates carefully sprung apart to reveal the hidden surfaces. Careful examination by magnifying glasses and a rivet-hole microscope failed to reveal any cracks on the surfaces of the plates or at the rivet-holes.

In the meantime samples of the defective rivets were forwarded to the School of Engineering, Canterbury College, for tests, photo-micrographs and sulphur prints, and to the Dominion Analyst for analysis of the material. The result of tests, Brinell and scleroscope, and photo-micrographs showed the steel to be of average quality in the unannealed state, but rather soft when annealed. No sign of corrosion cracks was observed. Sulphur prints did not reveal any marked segregation of sulphur. The results of analysis showed that the material of the rivets as regards chemical composition was satisfactory in every respect. The sulphur and phosphorus contents were low, and manganese and carbon conformed with the requirements of standard specifications of boiler-rivet steel.

The possibility of the defects being due to chemical embrittlement was not lost sight of during the investigations. Chemical embrittlement is caused by the combined effect of high stress and an intergranular chemical attack on the crystals of the material. Abnormal stresses exist in the neighbourhood of rivet-holes and at the edges of lap-jointed longitudinal seams. Imperfections in workmanship, such as were noted in the seams, accentuate these stresses. Intergranular chemical attack causing loss of adhesion in the crystals of steel has been noted in cases where the ratio of the soda carbonate alkalinity of the boiler water to sodium sulphate has been low. The nature of the rivet-fractures pointed to the desirability of investigating the composition of the boiler water. By arrangement with the manufacturers of the boilers, a very comprehensive report on the water was submitted by a qualified boiler-water analyst. As a result of the analysis the boiler water is regarded with suspicion. The water was found to have a ratio of soda carbonate alkalinity to sodium sulphate of 0·09, but, on the other hand, it contained a certain amount of phosphate, which in the opinion of some authorities inhibits embrittlement. Sufficient evidence is not yet available to definitely establish this opinion, and the owners have therefore been recommended to treat the boiler water with anhydrous soda sulphate, which is a proved inhibitor of embrittlement. Competent authorities have prescribed for the pressure at which these boilers are working a ratio of soda carbonate alkalinity to sodium sulphate of one to one. Routine tests will be made by the owners' chemist to see that this ratio is maintained.

As a further precaution, detection slots $\frac{1}{4}$ in. wide by $\frac{7}{32}$ in. deep will be cut across the outer landings of the longitudinal seams. Should cracking occur its presence should be indicated by slight leakage at the slots before it becomes dangerous.

Machinery.

Owing to a change having been made during the second half of the year in the system of reporting machinery inspections it is not possible to say exactly what number of machinery inspections, calculated on the basis of the old system, has been made. From a careful estimate, however, the number would be not less than 27,686, an increase of 1,661 over the previous year's number.

There were five fatal and sixty non-fatal accidents reported during the year, as against seven fatal and thirty-three non-fatal reported during the previous year. As the total number of machines inspected of all classes is about 65,000, the ratio of number of accidents to numbers of machines inspected is 1 in 1,000. In every case the circumstances of the accident were fully investigated by an Inspector of Machinery and the whole of the relevant facts were obtained, including a description of the machine at which the accident occurred, period the machine has been in use, history of previous accidents with the machine, period injured person had been engaged at the machine, complete description how accident occurred, and an opinion as to what was considered to be the cause of the accident, date, and particulars of last inspection of the machine, condition of the machine, description of guarding and fencing, particulars of the danger and warning notices exhibited in the factory, statement of the injured person,

and suggestions for improvement or additional guarding required for the prevention of similar accidents. These were embodied in a report to Head Office, and the investigation into the cause of each accident was not closed until the Department was satisfied that the machine had been made as safe as practicable, and, with ordinary care on the part of the worker, further accidents with the machine or with similar machines should not occur.

Two of the fatal accidents were connected with shafting, two with lifts, and one with fire in an oxygen-container. Brief summaries taken from the fatal accident reports are as follows :—

(1) On the 5th May, 1934, the owner of a sawmill operated near Alfredton was caught in the mill shafting and killed. Prior to the accident and during the currency of the certificate a grindstone was attached to the end of a line-shaft situated near the floor of the mill. The stone was removed later, but two bolts were left in the coupling to the great danger of any person who approached the shaft when it was running. The deceased climbed over a travelling table and wire rope near the end of the shaft, and his clothing became entangled with the coupling. Since the accident the shaft has been cut close to a bearing, and it is now impossible to attach any machinery to it.

(2) Another fatal accident with shafting occurred on 26th May, 1934, at Haldane, Southland. A designing engineer, while superintending the trials and tests of a new oil-engine-driven suction dredge, approached the exposed cranking-end of the engine-shaft, which protruded some 2½ in. beyond the engine-casing. His clothes were caught by the shaft, and he received injuries from which he died. The shaft was provided with a metal guard, which had been left off by the person who started the engine shortly before the accident. The machinery had not been inspected by the Department, and until the accident was not known to exist. An improved type of guard was fitted later on the advice of the Inspector who investigated the cause of the fatality.

(3) A lift accident occurred at Auckland on 16th November, 1934, when a boy aged fourteen years was fatally crushed between the platform of a slow-moving cage of an hydraulically operated lift and an overhead beam of the lift-well opening. The lift was certificated for the carriage of goods only, and notices were exhibited prohibiting any person from riding in the lift. The lad had been personally warned by the management against going into the lift, but it was evident that he disregarded this warning and met his death when trying to enter or leave the moving cage.

Goods-only lifts are not equipped with the safety provisions required in lifts certificated for the carriage of passengers or attendants, and it is a dangerous practice for persons to ride in them. The practice is a common one, however, and the Department, recognizing the difficulty of checking it, has of late encouraged owners of goods-lifts to provide additional safety equipment permitting the issue of a certificate which would authorize an attendant to travel in the cage. The equipment required is expensive, especially in the case of very old lifts, and it is difficult to persuade the owners in this direction. When any major alterations are carried out to an existing lift the opportunity is taken to require the provision of modern safety equipment.

(4) A second fatal lift accident occurred at Wellington on the 18th February, 1935, with a modern passenger-lift operated on the automatic push-button control. A young man was found on the top of the lift-cage so seriously injured that he died the following day. No one saw the accident happen, but it is known that he ascended to the fourth floor shortly before he was found. It is assumed that, on returning after a visit to his office, he opened the landing-door and stepped into the well. In the interval between leaving and returning to the lift the lift had been called away to a lower floor.

The safety equipment of an automatic lift is such that it should not be possible to open a landing-door when the cage is away from that landing. The mechanical lock on the door is so arranged that until the cage is stopped opposite the landing the latch cannot be released and the door opened by the intending passenger.

The landing-door locks of this lift were thoroughly tested immediately following the accident and attempts to open them under the conditions prevailing at the time of the accident failed. Later it was found that if the lock at the fourth-floor door was manipulated gently it could sometimes, but not always, be opened when the cage was absent from the landing. Slight wear was found in the mechanical gear, which may have been the cause of the occasional failure to function correctly. The locks were reconditioned, but in view of their unreliability steps were taken to import electro-mechanical locks of an improved design, which, should the locking-device fail to operate, will prevent the lift being called away.

(5) An unusual type of accident occurred at Auckland on the 11th October, 1934, when a young apprenticed engineer met his death by burning. A marine boiler used as a container for the storage of oxygen was being prepared for annual inspection. At the time of the accident the deceased was engaged in cleaning the internal surfaces. He was in a confined position between nests of tubes when his clothing became ignited, and before he could be removed he was burned to death.

No lights were used in the boiler, and the cause of the fire has not been satisfactorily explained. A burnt match was found, and it is assumed that the match was struck and there was sufficient oxygen left in the container to promote rapid combustion of the boy's clothing.

In thirty-seven out of the sixty non-fatal accidents reported and investigated during the year the machines were adequately guarded and practical additions to the safety equipment could not be made. In these accidents, many of which were of a minor nature, a contributing cause was failure of the human element, and in most cases the accidents could have been avoided if complete attention had been given to the work in hand. No less than thirty-eight, or 64 per cent. of the accidents reported, were to fingers or hands, the majority of the machines concerned being saws (12), mincers (4), stitching-machines (3), power-presses (3), and guillotines (2). Woodworking machines accounted for nearly one-third of the total accidents reported.

Instructions issued to the inspecting staff during the year included a comprehensive circular dealing with the design, construction, maintenance, inspection, testing, and operation of lifts. The

circular instructions were based on the Department's experience in dealing with lifts over many years and agree substantially with the rules of a lift code recently issued by the Standards Association of Australia. Copies were issued freely to manufacturers, builders, architects, engineers, and importing agents concerned with the installation and maintenance of lifts. As they set out the requirements in a brief and concise manner they have been of great value to the public where new lift installations or alterations to existing installations have been contemplated, and in this direction the instructions have filled a long-felt want. It is now almost a year since the instructions were issued, and no difficulty has been experienced in their application.

For the last six months of the year inspection charges have been fixed on a new basis designed to bring charges more into line with the cost of inspection and to remove anomalies that were unavoidable under the old scale.

Co-incident with this change, the system of reporting inspections was overhauled. The old system has been in use since the Inspection of Machinery Act was enacted and had become unsuitable to modern installations of machinery.

Previously a prime mover and its attached machinery were considered as one unit of inspection, for which a separate report and certificate were required. Under the new system only one report and one certificate is generally necessary to cover the whole of the machinery in any one plant. A considerable saving has thus been made in the time previously devoted by Inspectors to clerical work. It is estimated that the number of reports necessary has been reduced by sixteen thousand, or to one-half of the number previously required. The Act requires that certificates shall be posted up in the works, and owners, no doubt, appreciate the convenience of having all the machinery in the works covered by one certificate. Another advantage of the new report system is that by the grouping of machinery into one unit per plant, instead of into several units per plant depending upon the number of prime movers, a much better perspective is gained by Inspectors and Head Office of the year's work, leading to better and more efficient planning of the order of inspections.

These are only a few of the advantages of the new system. Inspectors are to be congratulated on the enthusiasm they have displayed in its inauguration. The whole scheme has worked quite smoothly and the results have exceeded expectations.

Examination of Marine Engineers.

In the course of the year 164 candidates were examined for Marine Engineers' Certificates of Competency at the various centres throughout the Dominion.

Of these, seventy-three candidates were examined for Third-class, Second-class, and First-class Ordinary and Motor Certificates of Imperial validity; of the fifty-five third-class candidates who presented themselves for examination twenty-nine were successful and twenty-six unsuccessful; of the four second-class ordinary and steam endorsement candidates examined two were successful and two unsuccessful; and of the fourteen candidates for first-class ordinary and motor five were successful and nine unsuccessful in the examination.

In the case of second-class candidates, the above particulars are comprised of two candidates for ordinary certificates, one passed and one failed; two candidates for steam endorsement, one passed and one failed.

In the case of first-class candidates, the foregoing return comprised seven candidates for ordinary certificates, two of whom were successful, and seven candidates for motor certificate, of whom three were successful.

Of the five candidates who were successful for the first-class ordinary and motor certificates, one passed at the first attempt, three at the second attempt, and one at the third attempt.

Of the two candidates who were successful for second-class ordinary and steam endorsement, one passed at the first attempt and one at the third attempt.

In the case of the twenty-nine candidates who were successful for third-class marine certificates, seventeen passed at the first attempt, eight at the second attempt, three at the third attempt, and one at the fourth attempt.

The remaining ninety-one candidates were examined for certificates of competency which are valid in New Zealand only. Of these, forty-three (thirty-three of whom were successful) were examined for seagoing vessels propelled by some motive power other than steam; forty-two (thirty-six of whom were successful) for service in vessels propelled by some motive power other than steam, plying within restricted limits; six (four of whom were successful) for service in steam-driven vessels plying within restricted limits.

The examinations for first-class, second-class, and 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 the fifteen centres throughout the Dominion.

Examination of Land Engineers, Engine-Drivers, and Electric Tram-drivers.

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

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

were held were: Extra first-class 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, and electric-tram driver.

The total number of candidates examined was 345. Of this number 238 were successful and 107 failed in their examinations. 275 certificates were issued, which includes 238 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.

Prosecutions.

During the year proceedings for offences under the various statutes administered by the Department were instituted in 38 cases. Prosecutions under each Act were as follows: Shipping and Seamen Act, 2; Harbours Act, 1; Fisheries Act, 24; 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 for the 1934 season showed a fairly substantial increase on sales of the previous season, the number of sacks marketed being 5,267, and the proceeds of sales £5,925 7s. 5d., as compared with 4,717 and £5,336 19s. 3d. The quality of the oysters was, on the whole, most satisfactory, very few complaints being received.

Whaling.

Legislation to give effect to the International Whaling Convention signed at Geneva in 1931 has been drafted for introduction into Parliament during the present session. The general principles of the Convention are in the direction of conservation of the species and regulation of the industry, and the most important provisions are as follows:—

(1) The taking of right whales, immature whales, and female whales accompanied by calves is prohibited under heavy penalty.

(2) Whaling ships and factories for treating whales must be licensed by the administrative authority of the country whose flag the ship flies, or in which the factory is situated. In addition, any country which is a party to the Convention may require a separate license to be taken out by any ship of whatever nationality, which proposes to whale in the territorial waters of that country.

(3) Provision is made for proper utilization of the whole of the carcass.

(4) Proper records, for scientific and general investigational purposes, of all whales taken and/or treated must be kept by each whaling ship and factory, and sent to the licensing authority for transmission to a central bureau.

(5) Provision is made for the appointment of Inspectors, who are to be empowered to enter any whaling ship or factory, or travel in any such ship, to ensure that all legal requirements and provisions are complied with.

One of the first steps in the matter of conservation has been the restriction of the coming season in the Antarctic waters to a period from 1st December, 1935, to 15th March, 1936. This restriction has been decided upon in view of definite evidence which has been received by the Imperial and Norwegian Governments of depletion of the species in these waters.

With respect to the local whaling-stations, that in Tory Channel took 52 whales during the 1934 season, giving a yield of 260 tons of oil, as compared with 41, with a yield of 205 tons, during the previous season. The station at Whangamumu did not operate during the season. The market for oil has, both in the matter of demand and prices, shown some improvement, which it is hoped will continue.

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, 1934.

Returns received from local inspectors of fisheries have been collected for the compilation of the appended tables—namely, Table I, showing the number of fishing-vessels and the number of fishermen and others engaged in the industry at each port; Table II, showing the various kinds of fish caught and approximately the total quantities of fish and shell-fish landed at the principal fishing ports; Table IIa, showing approximately the quantities of the different kinds of fish landed at certain ports for which these details were obtainable; Table III, showing the number of sacks and value of oysters obtained during the year 1934; Table IV, showing the products of the whaling industry; and Table V, showing the quantities of fish and shell-fish products imported and exported during the year (see pages 29 to 34). I regret that it is again necessary to add that, owing to the defects of the system under which the information is collected, arising from lack of departmental staff, the returns upon which Tables I, II, and IIa are based do not afford the statistical data that are required for the most satisfactory representation and elucidation of the fishery conditions.

The following statement gives the estimated total quantity and value of the various classes of sea-products marketed during the year :—

	Quantity.	Value. £
Wet fish	331,415 cwt.	294,267
Whitebait	3,241 cwt.	21,944
Dredge oysters	52,254 sacks	27,486
Rock oysters	5,270 sacks	6,060
Mussels	7,152 sacks	1,432
Crayfish	6,894 cwt.	4,320
Toheroa (canned products)	1,712 cases	5,825
Whale oil	260 tons	3,260
Quinnat salmon (netted fish only)	5,835 lb.	255
Total value		£364,849

Compared with the returns of the previous year an increase is shown for every class of product with the exception of crayfish and quinnat salmon. The estimated total quantity of wet fish (ordinary sea-fish) landed is 331,415 cwt., compared with 313,319 cwt. for the preceding year, an increase that is only due to a slight degree to the inclusion of returns from the French Pass, not obtained in former years, which account for an addition of approximately 1,200 cwt. to the grand total.

Considering the returns for the main fishing ports, Auckland, in respect of which the figures may be regarded as approximating more nearly to accuracy than in most other cases, shows an appreciable increase. The total landings of wet fish and of the two principal kinds (snapper and flounder) for the last five years have been as follows :—

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

It will be seen that snapper supplies have been maintained and indeed raised to the highest figure shown for the last five years, but with regard to flounders there has been a decided falling away from the high total reached in 1932–33. There is no point, with the available data, in attempting any further quantitative analysis of these returns.

Attention may be drawn to the fact that the Auckland Danish-seining fleet, from which the greater part of its fish-supplies are landed, has been considerably increased not only in number, but also in the tonnage, power, and fishing efficiency of individual vessels. This year the Danish-seiners at Auckland numbered thirty-nine vessels, of which thirty-seven were occupied for the whole time. In the preceding year the fleet numbered thirty-eight, but only thirty-one were engaged continuously in fishing. The more distant fishing-grounds, especially those in the outer part of the Hauraki Gulf, between Cape Colville and Great Barrier Island, and in the Bay of Plenty, have been increasingly exploited. These distant grounds have been the source from which the extra supplies of snapper have been derived. The nearer grounds in the Hauraki Gulf have yielded but moderate catches on the average. The seiners which specialize in flounder fishing have operated for the most part in the vicinity of the " Dab Patch " (about half-way between Ponui and Coromandel). It is clear from the diminished average catch per haul that the stocks on these grounds have not maintained their former abundance, and the question of their due conservation has become a matter of some concern to the Department as well as to the fishermen. The closure of the portion of the Gulf at the entrance to Thames Firth, which contains the principal spawning-grounds, was prescribed for the period 15th August to 16th September in order to prevent the heavy drain to which the spawning aggregations of flounders and dabs have recently become subject at this season.

Observations reported by the Inspector of Fisheries at Coromandel showed that the main spawning of flounders took place in the month of August, but principally in the first half of this month, and that dabs spawned from towards the end of August to the middle of September.

Two steam-trawlers operated from the Port of Auckland during the year. No trawling took place during the month of January, 1935, and one trawler was in commission for only three months out of the twelve. The whole year's operations may be estimated as equivalent to the work of one trawler fishing for thirteen months—a slight increase on last year. The trawling-grounds most visited were those of the Bay of Plenty and those off East Cape. The landings consisted of decidedly fewer snapper and rather more tarakihi than in the preceding year.

Only one landing of sardines was made during the year, amounting to 550 lb. of fish. The development of this industry still hangs fire, but the causes of this would appear to be connected with the commercial problems as to treatment and distribution of material rather than with fishing possibilities.

At Thames the industry has maintained its level so far as quantitative production is concerned, but as elsewhere the year's trade was not satisfactory owing to low prices and difficulties of marketing.

The Napier fleet, consisting of ten small trawlers and one Danish-seining vessel with seven net and line fishing launches, has brought in a slightly increased total of fish compared with last year's

return. 87·2 per cent. of the total fish landed was taken by trawling, 10 per cent. by Danish-seining, 2·3 per cent. by long lining and 0·5 per cent. by vessels fishing with lines and nets. The trawlers made 2,156 landings, averaging 176 lb. of flatfish and 464 lb. of round fish, while for 160 landings the Danish-seiner's catches averaged 211 lb. of flatfish and 775 lb. of round fish per landing (or per day's fishing). Thanks to the co-operation of skippers and the assiduous attention to the collection of fishing returns paid by the local inspector of fisheries at Napier, it is now possible to obtain for this port returns that may be regarded as satisfying statistical requirements.

Two steam-trawlers operated from Wellington, one making sixty-five landings and the other thirty-two landings during the year. Their fishing-grounds extended from Hawke's Bay to Kaikoura. Tarakihi constituted more than half of the catch. A general increase in the catches is shown in comparison with the previous year, particularly in respect of hake, tarakihi, and groper, while barracouta show a marked diminution. The average landings of long-line boats in Wellington show a decrease with regard to groper and a slight increase in respect of hake and ling.

Returns of landings obtained from certain of the fishing-boats operating in the French Pass area show that their combined catches consist of blue cod (52 per cent.), groper (22 per cent.), butterfish (16 per cent.), snapper (2 per cent.), with 8 per cent. designated as "mixed." No comparison can be made with previous years as earlier records are lacking.

The returns obtained from fishing centres in the South Island are for the most part inadequate for enabling one to form anything more than a vague and general idea as to the fishery conditions. There is urgent need for the setting-up of an organization for making better and more frequent contacts with those engaged in the industry in order that reliable information, especially statistical information, as to operations and production may be placed on record. On the basis of conclusions formed from general impressions and the statements of fishermen and fish-merchants it may be said that the condition of the South Island fisheries in general compares unfavourably with that of former years. Broadly speaking, fish are becoming more and more difficult to catch. More powerfully engined craft using the cheaper heavy oil fuel, more efficient fishing-gear, and longer working-hours have been required to enable fishermen to maintain supplies. But some of them are not in a position to acquire the means of increasing efficiency and lowering working-costs, and these men are undoubtedly having a hard struggle to make ends meet in the face of the prevailing low prices for fish.

In my last annual report reference was made to the deterioration of the stocks of flatfish in Tasman Bay which had formerly yielded a lucrative fishery to small trawlers and subsequently to Danish-seiners operating from the Port of Nelson. In order to afford some respite from fishing to the Tasman Bay grounds as well as to enable the legitimate exploitation of areas which had been closed to trawling since 1922 and to Danish-seining since 1928, but which, in the absence of effective surveillance, had been subject to occasional poaching incursions, the lower half of Pelorus Sound was thrown open to Danish-seining for the months of April, May, June, and July, 1934. Arrangements were made to keep the fishing operations under official observation so far as was possible and at the same time to collect data as to the biological conditions with regard to the fish stocks. Reports on these observations have been made by the Marine Biologist, Mr. M. W. Young, of which the concluding one is printed as an Appendix to this report (Appendix IV, p. 37).

With few exceptions both fishermen and fish-dealers in Otago had a difficult year. The prevalance of bad weather in winter and spring frequently kept the market short of supplies for long periods, and even when conditions for fishing were favourable the catches were generally inferior to those at corresponding seasons in previous years. The deficiency was most marked in respect of flounders; consequently both trawlers working the outside grounds and seiners operating in Otago Harbour and other inshore waters had a decidedly unprofitable year, though when supplies were available the keen demand for these flatfish for export kept prices at a reasonable level. When weather was favourable moderate supplies of groper and ling were brought in, but the boats engaged in the long-line fishery are now compelled to go farther afield than formerly. A comparative shortage of large crayfish on the usual grounds was also reported.

Reports regarding the condition of the fisheries off the coast of Canterbury were generally of the same tenor. In so far as supplies have been maintained at normal level it has been with the expenditure of a higher degree of fishing-energy.

A development to be recorded as of interest to the history of New Zealand fishing-grounds, if of no further moment, is the fact that during the past year a steam-trawler from Sydney has paid several visits to our coasts and is reported to have returned to her home port in New South Wales with good catches. The first intimation that the fishing-grounds on this side of the Tasman Sea were receiving attention from Australian fishermen was when the steam-trawler "Alfie Cam" put into Manukau Harbour, to land an injured member of the crew, in January, 1933. The results of the earlier voyages would appear to have been encouraging, and it is possible that in the future the New Zealand fishing-grounds will be regularly exploited by Australian trawlers just as those of Iceland and even more remote countries in the North Atlantic region have for many years been within the normal range of operations of steam-trawlers from Britain. It is a case of history repeating itself. First comes vigorous exploitation of the fishing-grounds near at hand, followed by depletion which reduces their yield of fish to a degree that makes longer voyages a more profitable undertaking in spite of the higher expenditure incurred. There is no doubt but that the trawling grounds of New South Wales have deteriorated very considerably as the result of about fifteen years' intensive exploitation. It is probable that the grounds off the New Zealand coasts are endowed by Nature with more fish and certainly with better-quality fish than those of Australia. And so far as sea-fisheries proper (as distinct from harbour and estuary fisheries) are concerned, they have been less intensively fished than those of New South Wales. It is quite certain, however, that the fish stocks in the seas round our coasts are not so abundant as those of the historic fishing regions in the northern hemisphere, and their exploitation

has hitherto been but slight in comparison with the vast intensity of fishing that has been going on for half a century or more in the European seas. That European fishing-grounds have been depleted is evident from the fact that greatly augmented efforts, by way of longer fishing voyages and the employment of more efficient fishing-gear, are necessary to enable supplies to be maintained at a level approximating to the quantities of former years; and the quality (the sizes of fish caught and the proportion of the more valuable fish in the total catches) has very definitely declined. As the result of intensive fishery investigations carried out by international collaboration the facts of the condition of the fisheries in the North Sea and neighbouring areas are thoroughly well understood. The relation between natural production (by spawning and growth) and artificial abstractions (by fishing operations) has been elucidated by research. So far as the known fishing-grounds off the coasts of New Zealand are concerned it is agreed by all who are acquainted with the facts that as the result of fishery operations the fish stocks are deficient in comparison with former years. In the absence of statistical records, and in view of the very limited amount of special investigational work that has been carried out with regard to our fisheries, it is not possible to indicate what degree of deterioration has been reached up to the present, nor precisely what relation the fishery factor bears to the other (natural) factors affecting the existence of the marketable fishes that constitute the natural assets of the fishing industry of New Zealand. So far as I am able to judge, concerning the history of the New South Wales trawling industry, the impoverishment of the fishing-grounds has been accelerated by the excessive catches of fish that were aggregated on spawning-grounds and by the excessive destruction of undersized fish, both undesirable effects of trawling which are not easily obviated. Unless developments at present unforeseen take place there is no reason for fearing that occasional visits of Sydney trawlers may affect the conservation of our trawl fisheries so long as our visitors confine their operations to waters outside the three-mile limit, where they have as much right to fish as any one else. The erroneous impression is held by many people that trawling is illegal inside three nautical miles from the coast, but this is not the case so far as New Zealand trawlers are concerned, though trawling is prohibited in certain inshore areas in the Hauraki Gulf, the Bay of Plenty, Hawke's Bay, and off parts of the Canterbury coast. So far as my own knowledge goes, the best trawling-grounds off these coasts are within three nautical miles of land, and certainly a large proportion of fish landed from trawlers is obtained from these inshore grounds. The depth of water increases very quickly towards the open sea, the 100 fathom line lying no more than about ten or twelve miles from the land off most parts of the East Coast, except where there are definite bays. At a comparatively short distance from land, therefore, the water is too deep for ordinary trawlers to operate, if indeed the fish are there to induce them to work at such depths. Out of the total of fifty-five trawlers that fished regularly out of New Zealand ports during the past year thirty-nine are small oil-engined vessels incapable of working in more than about 40 fathoms and confining their operations to depths generally between 10 fathoms and 30 fathoms; and of the sixteen steamers only three would at present be capable of towing a trawl in depths of more than 60 fathoms. In the Atlantic Ocean trawling is carried on in water of over 200 fathoms depth, and the same might be done here if catches could be made to repay for the additional power required. Whether fish are to be found in payable quantities beyond the grounds that have hitherto been exploited must remain for the present an unsettled and doubtful question. While New Zealand's fleet of large trawlers remains at its present low number there would appear to be no reason for the imposition of further territorial restrictions on this method of fishing. There is, however, an essential need for keeping all fishery operations under the closest observation possible by maintaining truly statistical records of catches and by extending our present exiguous understanding of the biology of the more important fishes. Such information is essential as a basis for fishery regulation to ensure that our resources may be utilized rationally to-day and preserved from irremediable impoverishment for the future. In view of the weakness of administrative machinery it is a fortunate circumstance that the relatively low demand for fish in New Zealand has in the past placed a limit to the degree of exploitation to which our sea-fishing grounds have been subjected. New South Wales, with its greater capacity for consumption and with the urge of unsatisfied demand, listened too readily to those who talked of the "boundless resources" of the ocean, confined its administrative attention to harbour, lake, and river fisheries and neglected to study trawl-fish stocks and the conditions on the trawling-grounds. Under similar circumstances it is more than likely that New Zealand would have made the same mistake to the same degree. The question of the day as to whether the fishing industry in New Zealand is making as much profit out of its fish as it might do is of less urgent importance from the point of view of national economics than the question as to whether we are not already drawing too heavily on our sea-fishery resources to the detriment of their future well-being.

Exports.—It will be seen from Table V (p. 34) that the total value of exports of New Zealand fish and shell-fish (£121,903) shows a very considerable increase over the corresponding figures (£98,417) for the previous year. The quantities in the principal classes of exports for the last five years have been as follows:—

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

The increased exportation of frozen and smoked fish was probably stimulated by the diminished supplies of trawl-fish to Sydney markets from the fishing-grounds off New South Wales and must also have been assisted to an appreciable extent by a lowered demand in New Zealand markets arising out of the restricted purchasing-power of consumers in the Dominion.

With regard to tinned fish and shell-fish, the marked decline under the head "Other kinds" from the amount shown for the preceding year is due mainly to a drop in the export of tinned crayfish. Exports of whitebait and toheroa have increased.

Rock-oysters.

Picking commenced on 21st May, the depot being opened on the 31st May, and the last sales for the season were made on 31st August. With some few exceptions in the early part of the season where oysters from an area of sub-normal temperatures had not reached the good condition shown later, the quality was very satisfactory. The total quantity picked showed an increase of 550 sacks compared with the previous year and was the highest since 1929.

The numbers of sacks marketed from each area were as follows: Bay of Islands, 1,609; Whangarei Harbour, 195; Kaipara Harbour, 970; Hauraki Gulf, 1,729 (Takatu to Gull Point, 250; South Shore, Tamaki Strait, 75; Kawau and nearby islands, 158; Rangitoto, 142; Motutapu 110; Browns Island, 62; Motuihi, 43; Waiheke, 539; Ponui, 311; Pakihi, 28; Crusoe Island, 11); Coromandel, 350; Great Barrier Island, 414: total, 5,267 sacks; value, £6,060.

The weather during the picking season was frequently wet and stormy with occasional frosts, the latter being a most unusual occurrence.

Oyster-cultivation.

In consequence of the policy of financial economies the appropriation for this work was again a comparatively small sum. The kind and quantity of work done in the various areas, and the cost of the same, is given in the statement below. This includes a considerable amount of rock-cleaning and destruction of pests, with some other work, that was done by Inspectors in the course of their ordinary patrols.

Area, Work done, and Cost:—

I. Bay of Islands: 800 square yards of capstones turned and walls opened up; 5,990 square yards of rock cleared of weeds; 10,000 square yards of rock cleared of dead shell; and 383,000 borers destroyed. Cost, £49 15s.

II. Whangarei Harbour: 895 square yards of rock cleared of dead shell, 516 pupu and 103,900 borers destroyed. Cost, nil.

In addition the following work was done on the Native reserve as expenditure of royalty for oysters (30 sacks) picked from the reserve during the season: 300 square yards of oyster rock shifted to the middle zone, 350 square yards of rock cleared of dead shell, 120 pupu destroyed, and 33,000 borers destroyed. Cost, £4 10s. 5d.

III. Kaipara: 2,950 square yards of clean stone laid down (201 cubic yards of material) and 61,300 borers destroyed. Cost, £55 5s. (including £6 11s. 11d. compensation for accident).

IV. Takatu to Gull Point: 10 square yards of capstones turned, 12 square yards of rock cleared of dead shell, 211 pupu and 201,000 borers destroyed. Cost, nil.

VI. Coromandel: Overcrowded beds at Waiaro thinned out and 126 square yards of drift-beds formed with material removed, 90 square yards of rock cleared of weed, 920 pupu and 141,100 borers destroyed. Cost, £14 19s. 8d.

VII. Kawau: 100 concrete slabs laid in 13 "nests" for catching spat. 73 pupu and 17,700 borers destroyed. Cost (slab material), £9 17s. 9d.

VIII. Rakino: 1,000 borers destroyed. Cost, nil.

X. Motutapu: 25 pupu and 3,500 borers destroyed. Cost, nil.

XII. Motuihi: 3 yards of stone turned, 3,500 borers destroyed. Cost, nil.

XIII. Waiheke: 1,195 square yards of rock cleared of dead shell, 104 square yards of rock cleared of weed, 777 pupu and 237,950 borers destroyed. Cost, nil.

XIV. Ponui: 3 yards of stone turned, 593 square yards of rock cleared of dead shell, 816 square yards of rock cleared of weeds, 45 square yards of new rock face exposed by blasting, 25 pupu and 91,000 borers destroyed. Cost, nil.

XVI. Great Barrier: 45 square yards of clean rock laid down, 272 square yards of capstones laid out, 1,143 square yards of rock cleared of weed. Cost, £10 6s. 8d.

All areas: 2,995 square yards of clean rock laid down; 300 yards of oyster-bearing rock shifted to better position; 1,088 square yards of capstones and oyster-bearing stones turned, relaid, or laid out from walls; 8,143 square yards of rock cleared of weed; 13,153 square yards of rock cleared of dead shell; 45 square yards of clean rock face exposed by blasting; 126 square yards of drift beds formed; 100 slabs laid in 13 "nests" for spat-fixation; 2,667 pupus and 1,277,950 borers destroyed. Cost of labour, material, tools, and compensation, £143 19s. 1d.

The number of sacks of oysters picked in the 1934 season was 550 more than the total for the previous year. The demand for oysters in Auckland appears to be appreciably in excess of supplies, but there seems to be little ground for expecting that an average of more than 5,000 sacks a year can be made available from existing beds without bringing the breeding-stock too low for the safeguarding of future supplies. It is advisable that every effort should be made to extend the cultivation work, which has been reduced to a minimum during the recent years of straitened finances.

Dredge Oysters.

The total landings for the 1934 season amounted to 52,254 sacks, as compared with 42,176 sacks for the previous one. The same fleet of seven steamers was operating, but a greater number of voyages were made and the average quantity landed per voyage was somewhat higher than in 1933. The quantity of canned oysters exported during the year shows a decline, 95,270 lb. as against 128,028 lb. for 1932–33. The quantity of fresh oysters exported from Bluff rose to 206,660 dozen, from 102,980 dozen for 1932–33.

Toheroas.

No opportunity occurred for visiting the two most important toheroa regions—the Ninety-mile Beach and the North Kaipara Beach—but from reports received it would appear that as a whole the stocks on each of these beaches are being maintained satisfactorily, though the more accessible and therefore more frequented areas of the North Kaipara Beach are still deficient as compared with former years. The two canneries were in operation during the winter and spring season and six licenses were taken out for commercial digging on the North Kaipara Beach during the year. The toheroa population of the Muriwai Beach is reported to be maintaining its former abundance only at a distance of ten to twenty miles from the road entrance at the southern end, with a satisfactory proportion of the younger year-groups. The beaches on the west coast between Waikanae and the Manawatu are still carrying good supplies of toheroas, especially on the Waitarere Beach near Levin, but the beds are narrow compared with those of North Auckland and there is apparently a relative shortage of the younger stages.

On a visit to the Waitarere Beach in March, 1925, the Marine Biologist saw evidence of a recent mortality among the toheroas which was estimated to have amounted to about 30,000 to the mile. He considers the cause to have been the long-continued conditions of drought during the previous months which had greatly reduced, if not entirely stopped, the normal seepage of fresh water from the back of the sandhills to the beach, which drainage is necessary for the maintenance of adequate supplies of diatomaceous or other minute algae food for the toheroas. The surviving toheroas were thin and ill-nourished in appearance. The mortality was local and did not affect the whole of the toheroa area.

The beds on the Ohope Beach near Whakatane are reported to be depleted of toheroas of large size, and it would appear that the prescription of a close season by regulation and provision of the means of enforcing the regulations would have beneficial results.

Whitebait.

The tabulated statement below gives a general view of the principal waters fished and the productivity of the fishery for the 1934 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 ..	22nd July	Early October ..	60	50	645
Auckland ..	Kaituna and Maketu	Hand-nets ..	14th July	August–September	40	20	51
Auckland ..	Matata and Tarawera (Bay of Plenty)	Hand-nets ..	7th July ..	October ..	56	36	122
Napier ..	Tukituki, Ngaruroro, Wairoa	Set-nets ..	July ..	October ..	25	40	19
New Plymouth and Waitara	Mimi, Urenui, Mokau, Waitara, Waiwakaiho, &c.	Set and hand nets	August ..	August ..	..	100	171
Foxton ..	Manawatu ..	Set-nets ..	July ..	October ..	5	20	23
Blenheim ..	Wairau, Opawa, Tua Marina, and Rose's Overflow	Hand-nets ..	September	November ..	20	200	100
Westport ..	Buller, Orawaiti, Mokihinui	Hand-nets ..	August ..	October ..	5	40	489
Greymouth ..	Teremakau, Grey, and New River	Set and hand nets	August ..	October – early November	60	200	266
Hokitika ..	Hokitika, Teremakau, Arahura, Mahinapua Creek, Waimea, Totara, Waitaha	Set and hand nets	August ..	October – early November	..	145	880
Matainui ..	Maori, Jacobs, Waitangi, Wanganui	Set-nets ..	1st September	October ..	14	..	154
Christchurch	Ashley, Waimakariri, Salt Water Creek, Avon, Styx, Heathcote	Set and hand nets	August ..	October ..	..	80	156
Dunedin ..	Mataura, Oreti, Clutha, Jacobs, Taieri, Waikouaiti	Hand-nets ..	September	October ..	(?)	(?)	76
Invercargill ..	Mataura, Oreti, Aparima, Makarewa	Set and hand nets	August ..	September–October	100	150	89
Total ..	..	..	..	..	..	..	3,241

There are still fisheries for which it has been impossible to obtain returns, but these would not augment the total estimate very much. The estimated total catch for the Dominion, 3,241 cwt., indicates that the fishing in 1934 was, on the whole, better than for the previous year, but not so good as in 1932. Increased production was shown for the Waikato, Taranaki, Marlborough, and South Westland fisheries, while Hawke's Bay and Otago show a decline. Reports from other districts (*e.g.*, Nelson), for which we have no figures, also tell of poorer fishing.

The general trend over the last ten years has undoubtedly been in the direction of deterioration. The number of people engaging in the fishing rose considerably in the depression years from the prevalence of unemployment, and there is little doubt but that the intensity of fishing is everywhere too high for the satisfactory preservation of future stocks of this species. If conservation is to be assured steps must be taken for a closer supervision of this fishery. In my opinion, and in the opinion of most of the fishermen whose past experience and permanent interest in whitebaiting qualifies them to judge, the establishment of a system of licenses for this fishery is overdue. This would automatically enable the Department to keep in closer touch with the operations, to get a more accurate return of the fishing results, and therefore a better grasp of conservational requirements, and would afford revenue which might be utilized in artificial aids to whitebait propagation on lines indicated in former reports.

Quinnat Salmon.

The 1934 run of salmon into the Hakataramea was better than had been expected after the generally disappointing catches that had been obtained from anglers during the early months of the year in the Canterbury rivers. The construction of the rack for trapping the fish running up the Hakataramea was commenced on 9th April and completed on 14th April. The numbers of fish and eggs taken each month were as follows :—

——	Males.	Females.	Ova.
April	34	13	44,000
May	59	46	197,000
June	4	7	24,000
Whole period	98	66	265,000

Two hundred thousand eyed ova were sent to Hokitika for the stocking of lakes and streams in the Westland Acclimatization District. Twenty-five thousand were sent to Tasmania, forty thousand were hatched out at Hakataramea, of which thirty-two thousand fry were planted in the local river and eight thousand were kept in the hatchery ponds for rearing to yearlings, when they are to be marked and liberated.

Considerable trouble was caused by the prevalence of floods during the time the fish were running. The first salmon were seen at the rack on 17th April, but owing to a continuance of spates in the river no fish were caught till 27th April. On 5th May a heavy flood carried away the middle of the rack, and no further trapping was possible till twelve days later, when a pound net was got into operation. This was washed out on 4th June, and trapping operations ceased with a total of two hundred and sixty-five thousand ova laid down in the hatchery. The Fish Culturist reported that the salmon were well conditioned, though of small average size, and very few showed scars from the attacks of sea-fish. The largest fish taken in the trap this season weighed 32 lb. The run was later than usual, but appeared to be more numerous than in 1933. The presence of spawning fish in the Otamatata Creek strengthened this conclusion, as this tributary does not appear to be used by salmon when the run is subnormal. An inspection of Deep Creek, the principal spawning tributary of the Rangitata River, made on 18th June, also revealed the presence of numerous spawners, which served to modify the impression obtained from the somewhat pessimistic reports of anglers from the lower reaches during the preceding fishing season. The bed of the creek showed a considerable number of redds formed by salmon which had spawned in May, and, in addition, there were many clean fish which had run later.

The 1935 quinnat-fishing season was spoilt by high and discoloured water conditions which prevailed in the so-called snow rivers during the greater part of the season. Though the Canterbury district suffered from drought in late summer and autumn and the trout streams were exceedingly low, the salmon rivers were continually swollen by the north-westerly rains which fell in the mountainous back-country. The lower Waitaki, as is usual under such conditions, provided little sport to the angler, not more than about half a dozen fish being taken near the mouth during the whole season. At the Rangitata mouth four fish were caught in February, 176 in March (but there were only seventeen days when fishing was possible in this, the best month) and nineteen in April. The fishing in the Rakaia was probably somewhat better than in the Rangitata, but no comparative records are available. The rod-and-line fishermen at the mouth of the Opihi made a total catch of sixty for the season. With regard to the Clutha River, the only information received is as to the arrival of large sea-run fish in Lake Wanaka in the month of March—an earlier migration than usual—which provided fishermen trolling on the lake with several big salmon. It has also been reported that quinnat salmon have been definitely seen in Lake Mapourika and McDonald's Creek in South Westland during the last year.

A summary of the returns of rod-catches made by anglers holding selling-licenses and by the four holders of netting-licenses operating in the lower Waimakariri is given below.

Quinnat Salmon, 1935.

——	Males.	Females.	Sex not given.	Totals.
Returns from Rods.				
Waimakariri River, 15/3/35 (one rod)—				
Number of fish caught	..	1	..	..
Total weight of fish	..	14 lb.	..	14 lb.
Average weight	..	14 lb.	..	14 lb.
Rakaia River, 26/1/35 to 16/3/35 (four rods)—				
Number of fish caught	1	2	152	155
Total weight of fish	25 lb.	27 lb.	2,013 lb.	2,065 lb.
Average weight	..	..	13·2 lb.	13·3 lb.
Rangitata River, 19/2/35 to 18/4/35 (four rods)—				
Number of fish caught	23	20	7	50
Total weight of fish	345 lb.	313 lb.	95 lb.	753 lb.
Average weight	13·6 lb.	15·6 lb.	13·6 lb.	15·1 lb.
Opihi River, 22/3/35 to 10/4/35 (one rod)—				
Number of fish caught	5	3	..	8
Total weight of fish	52 lb.	37 lb.	..	89 lb.
Average weight	10·4 lb.	12·3 lb.	..	11·1 lb.
Combined rivers, 26/1/35 to 18/4/35 (ten rods)—				
Number of fish caught	29	26	159	214
Total weight of fish	422 lb.	391 lb.	2,108 lb.	2,921 lb.
Average weight	14·6 lb.	15·0 lb.	13·3 lb.	13·6 lb.
Return from Net Fishing.				
Waimakariri River, 22 1/35 to 17/3/35 (four nets)—				
Number of fish caught	200	301	11	512
Total weight of fish	2,183 lb.	3,531 lb.	121 lb.	5,835 lb.
Average weight	10·9 lb.	11·7 lb.	11·0 lb.	11·4 lb.

The total of 214 fish caught by the ten rods is smaller than the total return (260 fish) from the thirteen rod-fishers who made returns in 1934. The average catch per rod is slightly higher, 21·4 fish, compared with 20 fish for the previous season. The average weight of fish caught is lower, however. The weight of individual fish averaged 15·9 lb. in 1934 and 13·6 lb. in 1935. The average weight of fish caught by each rod was 318 lb. in 1934 and 292 lb. in 1935.

The total catch by the netsmen in the Waimakariri also shows a marked decline, 512 fish, weighing 5,835 lb., for 1935, as against 1,118 fish, weighing 13,570 lb., for 1934. The numbers of salmon caught by the nets each month were as follows: January, 15; February, 149; March, 348. The first fish was taken on 22nd January, the last on 27th March.

Waitaki Dam and Fish-ladder.

The dam constructed across the Waitaki River in connection with the hydro-electric station at Awakino was finally closed in February, 1935. From this time onward the progress of migratory fish up the river is effectually blocked at this point and the fish-ladder constructed by the Public Works Department is now the only means by which access may be obtained to the artificial lake formed above the dam and thence to the upper Waitaki and its principal tributaries. The mean height of the new lake above the river-level below the dam is 70 ft. The fish-pass has been constructed in three stages—(1) a series of twenty-four pools each about 8 ft. long and about 5 ft. wide with a difference of water-level of 2 ft. between each pool; (2) a channel about a hundred yards long, which is a succession of very long pools of gentle grade leading to a round resting-pool; (3) a further succession of pools, similar to those of the first section but in most cases longer, the three uppermost being built alongside the dam and each being connected with a port through the dam affording a passage to the lake above. Each port may be opened or closed according to the level of the lake. This last series carries the fish-pass from a height of about 40 ft. to a height of about 70 ft. above the level of the river below.

About the middle of March the first fish, a trout, was seen to go up the ladder. According to reports received the ascent was made easily. The first salmon was reported to have made its way up on the 19th March. It was seen to travel as far as the round rest-pool, and it is assumed that the rest of the assent would present no difficulty as the lowest flight is the most difficult owing to the shortness of the pools. No very precise information has been obtained as to subsequent ascents, but it is reported that three quinnat salmon were definitely seen going up during March. The main run of quinnat salmon that came up in April and May, however, showed practically no disposition to attempt the ascent of the ladder, though many were seen making vigorous leaps into the tail-race issuing from an auxiliary turbine on the side of the power-house farthest from the fish-ladder. The fact that only the two outermost turbines have so far been installed has kept the water in the vicinity of the entrance to the ladder in a "dead" state, while the strong current is out towards mid-stream where the tail-

race is running from the outer end of the power-house, or below the spillway, which is between the power-house and the Canterbury side of the river. The salmon appear to prefer to keep in the strong current and to be unattracted by the comparatively weak stream issuing from the fish-ladder. One is led to the conclusion that the failure of the fish-ladder to serve the purpose for which it was designed is due principally, if not entirely, to the relatively small volume of water that it carries and that the only remedy would be to enlarge it very considerably.

Atlantic Salmon.

Very excessive floods prevailed in the Upokororo River during the whole of April and May, 1934, the two months which normally provide a good start for the trapping of Atlantic salmon for the Te Anau Hatchery season. The water was so high that it was not possible to get a rack constructed till 29th April, and the pound net that was set up to trap salmon pending the completion of the rack was more often submerged than not. A very high flood on 15th May carried away the rack. The river did not return to normal till 27th May, and a new rack was ready on 31st May. The major part of the run of salmon had passed up the river in the meanwhile. The floods were followed in June by low-water conditions with very few fish moving, and at the beginning of July by heavy falls of snow which for some time prevented traffic along the Te Anau road. The following statement shows the numbers of fish trapped and ova taken :—

	Males.	Females.	Totals.
April	2	5	7
May	..	4	4
June	13	15	28
July	4	1	5
Totals	19	25	44

Only fifteen females were stripped, yielding 44,000 ova, of which 21,500 were sent to Tasmania. The remainder were handed over to the Southland Acclimatization Society to be hatched out and the fry liberated in the Upokororo River. The occurrence of further excessive floods in August render it doubtful whether the propagation from naturally deposited spawn in the Upokororo River would provide a very appreciable addition to the stock.

The location of the rack and fish-trap was changed this year to a position below the traffic bridge some hundreds of yards nearer the river-mouth, where the river-bed is wider. It was considered that this would relieve the pressure on the rack in times of flood, but this winter's floods were so much higher than usual that no comparison is possible. The rack was well inundated before it finally carried away.

Salmon angling in the 1934–35 season is reported to have been unsatisfactory. The total number caught is estimated to have been below 150, with an average weight of about 3½ lb. A few odd fish were taken in the tidal waters, even as far as the breakers in Te Wae Wae Bay. The river conditions were for the most part unfavourable for salmon-angling, the Waiau being too high for long periods. It would appear that the Atlantic-salmon stock is deteriorating in size and number, while rainbow trout, without any assistance from artificial stocking, are definitely on the increase in the Waiau. Doubtless the later spawning habit, and possibly other biological characters of this species, render it better fitted for the environmental conditions existing in the Waiau watershed. To what extent the factor of rainbow-trout competition may operate in bringing about the apparent deterioration of the Atlantic salmon stock is a question on which light could be thrown only by biological investigations, which at present we have no means of making.

Fresh-water Eels.

In my last report, in recording the commencement of a commercial enterprise, based at Greytown in the Wairarapa district, for the purpose of utilizing the abundant supplies of eels that are found in most of our New Zealand lakes and rivers, I gave a general account of the occurrence of these fishes, the means whereby they could be taken, their potential economic value and a discussion of their high dietetic value. I pointed out that, though greatly esteemed by many civilized races and of high commercial value in certain countries, the eel as a food-fish did not at present commend itself to the majority of British people. The same bias has temporarily stood in the way of the proper utilization of many other food-fishes and, it is to be hoped, will similarly fade out when we are educated to a more rational understanding and appreciation of the qualities of what we eat. Of the progress of the above-mentioned enterprise I can say nothing further at this stage. It may be mentioned, however, that what was formerly regarded as the principal drawback to most of our New Zealand eels and the chief difficulty in the way of their exportation as a profitable trade—namely, their large size—may very likely prove to be their most valuable quality. The utilization of eel-skins for the manufacture of a very fine leather most suitable for ladies' gloves of the best quality, is now an accomplished fact in Europe. The tanning of the skins to make "kid" of the requisite quality and value is a process that calls for highly specialized technical processes which have already been successfully developed in Europe. European eels are of small size compared with those of New Zealand. Consequently our eel-skins have an appreciably higher value for this particular purpose. There is therefore scope for the development of a minor industry for the manufacture, in the Dominion, of this eel-skin leather. The industry is not one that

can be undertaken by those unskilled in modern tannery processes or even by the skilled unless they have the requisite modern plant. If the successful results, which there is reason to anticipate, are achieved, New Zealand eel-skin leather will be on the market in the near future. Tinned eel may then be of the nature of a by-product of the tanning industry instead of eel-skin being a waste product of the canning industry. The catching of eels to provide the raw material should afford a suitable occupation for many Maoris who are not happily situated in the economic circumstances of to-day.

Returning to the subject of eels as food, I can report from trials made by myself and others that tinned eel is little, if at all, inferior either in flavour or food value to tinned salmon (imported from countries that raise high barriers against the importation of New Zealand produce). At present it may be difficult to sell at a price commensurate with its real value. So was our mutton until the bias of ignorance was overcome and until science came to the aid of industry and commerce to ensure that only a commodity of high quality should be put upon the market.

Fresh-water Fishery Research.

In my report for 1933–34 I gave a brief history of the Fresh-Water Research Committee set up by the New Zealand Acclimatization Societies' Association in 1929, referring to the financial arrangements made for the work, the nature of the organization for its control and prosecution, and the general lines of investigation undertaken.

Meetings of the Committee were held at Christchurch in May, August, and November, 1934, and in March, 1935. Early in the year it was evident that, though the work was increasing in volume and had already developed to a stage at which results were being obtained that had a practical bearing on the management of fresh-water fisheries, the financial provision for research was in a state of decline. Since its funds depended on voluntary contributions from acclimatization societies, all of which, having experienced depressions in their budget balances, were inclined to give preferential treatment to the financing of their normal activities, it was necessary for the Committee to carry on with the utmost economy that was compatible with the continuance of the tasks in hand. At the Biennial Conference of the Acclimatization Societies' Association held in October, 1934, the delegates having received reports by the Chairman of the Research Committee and the Honorary Director of Research together with a special report by Mr. D. F. Hobbs on his observations of spawning phenomena, a special sub-committee met to consider the question of research and to make recommendations concerning its continuation. It was unanimously agreed that the work was of importance to the interests of societies and should continue, and that its financial provision should be placed upon a satisfactory basis. To this end it was resolved that the Government be recommended to increase the license fee payable to acclimatization societies for angling for acclimatized fish from £1 to £1 5s., of which 2s. 6d. should be definitely earmarked for research purposes. However, there have subsequently been indications that the unanimity of the delegates to the conference is not shared by all acclimatization-society councils. The financial outlook for research has therefore not improved, but has rather deteriorated so far as support from societies is concerned. In the face of dwindling reserves and no certain prospect of financial relief the Committee was obliged to curtail field-work during the year. The lack of funds to pay for the publication of reports has been a further hindrance to the satisfactory fulfilment of its functions. The decision of the Government to make a grant from opossum-license revenue to the Acclimatization Societies' Association for this work has brightened the outlook for the time being.

During the past year the examination of scale-samples from various waters for age and growth determination has been continued. The biologist, Mr. Parrott, working at Canterbury College, Christchurch, has completed comprehensive reports based on the analysis and the statistical treatment of data from scale-reading, and has published four short papers on the brown trout of the Oreti River and the rainbow trout of the Waikato, Wanganui, and Rangitikei during the year in the *New Zealand Fishing and Shooting Gazette**. A paper giving the results of an earlier investigation into the fundamentals of scale-reading technique, "Growth of the Scales in relation to Growth of the Fish in *Gobiomorphus gobioides*," was published in the *New Zealand Journal of Science and Technology*, Vol. XVI, No. 3, pp. 136–44, 1934.

During the winter of 1934 Mr. D. F. Hobbs extended his earlier observations on the spawning-conditions in streams in the neighbourhood of Inchbonnie, Westland, and in the Selwyn River, Canterbury. He has completed a report on the subject of the conditions under which the spawning of trout take place and on the losses sustained during the incubation and larval stages. Tentative arrangements for the extension of the study of trout-spawning conditions to other district have been made.

I have, &c.,
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, 1935.

The Station has been kept in first-class order, and all boats and other gear in good repair despite the restrictions caused by the very little money we have had at our disposal. This has been only possible by the faithful service rendered by Mr. W. Adams, assisted, whenever possible, by the voluntary work of the hon. secretary, Mr. G. Howes.

* Vol. VIII, Nos. 9, 10, and 12, 1934; Vol. VIII, No. 3, 1935.

The aquarium has been kept fully supplied, the glass observation-tanks being used to their full capacity to display fish, varying in size from pilchards to large skate, along with a good assortment of other sea-life. Visitors have availed themselves freely of the opportunity of inspecting the aquarium, many spending hours watching the fish.

European Lobsters.

We have lost a few of the adult stock through the usual causes, such as attack by the others when casting and through fighting. The remaining stock is in excellent condition and the females are still producing eggs. Attempts were made to rear the young both by keeping them in large ponds and by placing fifty of them singly in jars inside the hatchery. Neither attempt was successful, and the conclusion arrived at is that this failure was due to sudden variations of temperature. The young in jars were fed daily and each day were transferred to clean jars, a tedious amount of work being involved. During January we had very hot weather with sudden cold changes, variations of 4° being noted in a very short time. In the shallow outside ponds the young lobsters survived until the stage when they go to the bottom of the water, but then died. In the hatchery the rapid heating of the water was the deciding factor against them. It is evident that without funds we cannot create a suitable environment to match the natural one of the young lobster, which spends this portion of its life in the deeper seas. The work on the lobsters has placed the ponds in good order with new valves and screens, and all the ponds have been cleaned.

European Turbot.

Very interesting reports have been received from Invercargill that Bluff fishermen have taken numbers of good-sized turbot near Bluff when netting in the surf. The fishermen consider these to be English turbot. We are now awaiting specimens promised. English turbot frequent shallow bays and estuaries, but no records have been published on New Zealand brill or turbot being taken in any other than deep water, hence it is very probable that these are the progeny of those we introduced and released in Tautuku Bay.

Biological Notes.

This year has been exceptionally fine, and the warm weather has resulted in extra warmth of the harbour-water. In December the records show that 18° C. was common, and 20·2° C. was recorded on one occasion. During the winter months in July the temperature was down to 5·5° C., and in June, after a snowstorm, dropped suddenly 2° lower. Both extremes proved fatal to some of the fish in captivity. Out of five dozen mullet which had been in the ponds for two years only four survived the winter. Red cod and wrasse also died, while during the hot weather of the summer months red cod died from the heat. The winter months caused the blanket-weed in the harbour to die off, and great masses of this floated about and so clogged the nets as to cause a considerable handicap to fishermen, and fish moved out from the harbour to cleaner areas. By December the weed had disappeared, but dogfish of fair size were then numerous, and when caught in the nets tore them considerably.

Greenbone, both *Coridodax pullus* and *Odax vittatus*, were exceptionally plentiful near the Station this year. *C. pullus*, the larger greenbone, is usually present, but *O. vittatus* is not a frequent visitor, yet this year both were equally plentiful. Along with them occurred great numbers of leather-jackets (*Pseudomonacanthus scaber*), a fish which has not been seen in the Otago Harbour for many years.

Smooth-hound (*Mustelus antarcticus*) appeared in large numbers and caused considerable damage to our set net. They were found to be feeding solely on crabs. A female caught at the end of December placed in one of the ponds gave birth to seven young. Some of these placed in the observation tank swam around freely and within two days fed freely on pieces of fish. They are still alive and are fully four times their original size. Numbers of young dogfish of about the same size were caught in the harbour, and apparently the gravid females arrive in December to give birth to their young.

Skate (*Raja nasuta*) caught off Portobello Hatchery Point produced eggs, and from these we have hatched young skate. The period from the laying of the egg in its case to the emergence of the young was exactly twelve months. Two of the egg cases were opened about the six-month stage and the young skate, with the yolksac attached, was placed in a glass jar under running water. Very unexpectedly they thrived quite well under these peculiar circumstances, gradually absorbing the yolksac and started to feed within a week after the yolksac finally disappeared. They were apparently as healthy as the naturally hatched fish.

Pilchard (*Clupea neopilchardus*) and sprat (*Amblygaster antipodus*) were in abundance throughout the year in the vicinity of the Station and are still in evidence. Variations in size point to a succession of shoals covering a wide hatching-period entering the harbour at different months of the year. A number were secured and carefully transferred to the observation tanks in November—these are still alive and have grown to three times the size they were when secured. They were first placed in the tank which is specially devoted to sea anemones, but recently had to be transferred elsewhere because they bit off the tentacles of the anemones.

Smelt (*Retropinna retropinna*).—The cucumber-smelt has occurred in vast numbers. In December they were taken in hand-nets off Port Chalmers wharves and used as whitebait. They are still plentiful, occurring in the whitebait stage and up to large specimens 6½ in. in length. Usually this is referred to as a fresh-water fish going down to the sea to spawn, but we have it here purely a salt-water fish in all stages. It is interesting to note that while pilchards, sprat, and small mullet survive in the observation tanks, smelt die in a few hours, no matter how carefully they are handled. This is quite the reverse of the fresh-water minnow, or inanga, which will survive in a pickle-jar.

Mullet (*Agonostomus forsteri*) have been numerous as usual, but the main supply have been small fish. The largest specimens were taken from October onwards. When the clear shrimp is available the stomachs of the mullet are always full of them.

Warehou (*Seriolella brama*) have appeared in fair number, but only small specimens occur in the harbour near Portobello, generally running from 6 in. to 8 in. long.

Red cod (*Physiculus bacchus*).—While plentiful until May, 1934, they have been hardly procurable this year, and as they usually form an easily procured food-supply for the fish in the aquaria their absence is greatly felt. A few in very poor condition appeared in March.

Kahawai (*Arripis trutta*).—Shoals appeared in November, and small ones were then taken in the seine net. In February a large shoal appeared near the hatchery and remained there for nearly a fortnight. The use of a spoon-bait procured a number of these, and two fish of about 5 lb. weight have been kept alive in the hatchery until the present time. Those examined proved to be full of young barracouta of about 6 in. in length, and also pilchards, small mullet, and smelt.

Moki (*Latris ciliaris*).—These fine fish are very hardy and stand confinement in the hatchery tanks. Some we have had for more than two years. A very large one was taken on the spoon-bait when spinning for kahawai, but they have not been plentiful this year.

Tarakihi (*Dactylosparus macropterus*).—Small-sized fish of this species are usually plentiful through most months of the year in the harbour. We never get here the large ones that are taken nine to ten miles from the Heads.

Wrasse and spotty have been in great abundance, the wrasse secured being of large size.

Flat fish have not been so plentiful in the harbour as in normal years.

Sea perch (*Helicolenus percoides*) have been fairly numerous in certain favoured spots. Several have been taken suffering from a warty growth, which appears to be peculiar to these fish.

Blue cod (*Parapercis colias*) has appeared this year in fair numbers, but not of great size, the specimens being from 10 in. to 12 in. in length. It is some years since they were common near the Station.

Flathead (*Kathetostoma giganteum*) have not been as plentiful as usual. It is apparent from specimens examined that we have here two species which have been treated as one.

Mr. Griffin, of the Auckland Museum, has kindly identified two species—*Pseudolabris pittensis* and *Bovicthus variegatus*—which appeared here this year and which are unusual in the harbour near the hatchery.

Whalefeed (*Munida gregaria*) appeared in successive shoals, but was never in great abundance. The first appearance was in November, two months later than last year. Large numbers appeared in December, January, and February, and since then have not been seen.

Clear shrimps (*Nyctiphanes australis*), as usual, appeared in tremendous numbers, but the season was limited. They were here in October and were found on the surface and in fish-stomachs until March. The arrival of the shoals of this shrimp always results in numbers of fish appearing in the harbour and it appears to be even of more importance than the whalefeed. Flights of screaming gulls give the first indication of the approach of the shoals.

In addition to the foregoing, notes and records have been kept of other fish and various forms of marine life, and in many cases specimens have been preserved. Material has been collected for specialists and Universities. Visitors have been numerous and they have been shown round and given interesting information as to the various specimens on view.

The work involved in the attempt to rear young lobsters, although passed over with a few words, has been very heavy, both in the outside ponds and inside the hatchery, and has called for continuous attention. The employment of a biologist would probably have made this attempt successful, as it is manifestly impossible for one man to be always on duty. With two workers a closer watch at critical periods would have been possible. The present small grant of £300 per annum is only sufficient to pay for the services of one employee whose time is fully occupied in the care of the jetties, launch, dinghys, nets, the various buildings, ponds, and grounds, as well as the regular daily work of keeping the indoor aquarium and observation tanks in order and in showing visitors around.

The members of the Board consider that much valuable work can be done at the Portobello Marine Biological Station and that the time is ripe to place this institution on a sound footing so as to allow of a properly planned scheme of work being carried out. The Station is admirably situated, and with a resident biologist working on definite lines would easily justify the small amount of extra expenditure necessary.

I have, &c.,
WM. 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, 1935.

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	1,481	146 19 0	1,515	138 18 0	1,239	110 10 0	1,339	118 11 0	2,720	257 9 0	2,854	257 9 0	5,574	514 18 0
Dunedin	394	34 13 0	281	27 14 0	208	19 14 0	203	19 4 0	602	54 7 0	484	46 18 0	1,086	101 5 0
Foxton P.O.	..	..	..	..	6	0 12 0	6	0 12 0	6	0 12 0	6	0 12 0	12	1 4 0
Gisborne	1	0 2 0	1	0 2 0	185	14 15 0	182	15 6 0	186	14 17 0	183	15 8 0	369	30 5 0
Greymouth	22	2 4 0	21	2 2 0	52	4 2 0	54	4 8 0	74	6 6 0	75	6 10 0	149	12 16 0
Hokitika	..	..	..	..	9	0 8 0	12	0 14 0	9	0 8 0	12	0 14 0	21	1 2 0
Invercargill	94	11 6 0	95	11 12 0	47	2 16 0	39	3 13 0	141	14 2 0	134	15 5 0	275	29 7 0
Lyttelton	155	13 14 0	148	13 0 0	361	27 12 0	365	27 16 0	516	41 6 0	513	40 16 0	1,029	82 2 0
Napier	9	0 18 0	5	0 10 0	162	15 3 0	146	13 15 0	171	16 1 0	151	14 5 0	322	30 6 0
Nelson	2	0 4 0	1	0 2 0	464	33 19 0	434	31 18 0	466	34 3 0	435	32 0 0	901	66 3 0
New Plymouth	9	0 18 0	16	1 12 0	17	1 6 0	22	1 12 0	26	2 4 0	38	3 4 0	64	5 8 0
Oamaru	4	0 8 0	5	0 10 0	1	0 2 0	2	0 4 0	5	0 10 0	7	0 14 0	12	1 4 0
Onehunga	..	..	..	..	143	12 6 0	107	8 16 0	143	12 6 0	107	8 16 0	250	21 2 0
Patea	..	..	..	..	48	2 11 0	58	3 16 0	48	2 11 0	58	3 16 0	106	6 7 0
Picton	..	..	..	..	14	0 18 0	12	0 18 0	14	0 18 0	12	0 18 0	26	1 16 0
Timaru	18	1 13 0	16	1 9 0	17	1 14 0	3	0 6 0	35	3 7 0	19	1 15 0	54	5 2 0
Wairau	..	..	..	..	3	0 6 0	3	0 6 0	3	0 6 0	3	0 6 0	6	0 12 0
Wanganui	1	0 2 0	2	0 4 0	17	1 14 0	17	1 14 0	18	1 16 0	19	1 18 0	37	3 14 0
Wellington	2,660	242 11 0	2,656	246 18 0	1,672	141 9 0	1,711	143 19 0	4,332	384 0 0	4,367	390 17 0	8,699	774 17 0
Westport	9	0 18 0	10	1 0 0	25	2 0 0	22	1 14 0	34	2 18 0	32	2 14 0	66	5 12 0
	4,859	456 10 0	4,772	445 13 0	4,690	393 17 0	4,737	399 2 0	9,549	850 7 0	9,509	844 15 0	19,058	1,695 2 0

TABLE SHOWING TOTAL COST OF MAINTENANCE (EXCLUDING INTEREST ON CAPITAL AND DEPRECIATION) OF NEW ZEALAND COASTAL LIGHTHOUSES FOR THE YEAR ENDED 31ST MARCH, 1935.

Name of Lighthouse.	Salaries and Wages.	Oil consumed.		Stores and Maintenance.	Totals.
		Gallons.	Value.		
	£ s. d.		£ s. d.	£ s. d.	£ s. d.
Akaroa Head	392 7 5	718	45 2 5	131 13 9	569 3 7
Brothers	714 15 0	743	47 4 3	270 12 1	1,032 11 4
Cape Brett	669 10 2	605	39 10 7	160 19 10	870 0 7
Cape Campbell	419 7 3	665	42 18 4	139 2 11	601 8 6
Cape Maria	685 6 0	766	48 11 10	319 1 11	1,052 19 9
Cape Palliser	477 12 8	757	48 14 9	169 7 3	695 14 8
Cape Saunders	449 12 7	737	47 1 4	286 16 9	783 10 8
Castlepoint	405 10 3	694	45 1 6	190 18 1	641 9 10
Centre Island	667 15 1	678	44 0 3	122 15 11	834 11 3
Cuvier Island	614 4 6	724	47 2 0	195 8 6	856 15 0
Dog Island	471 18 10	716	46 5 9	140 14 4	658 18 11
East Cape	412 14 8	685	44 2 4	131 0 1	587 17 1
Farewell Spit	696 12 0	831	53 6 4	271 17 4	1,021 15 8
French Pass	209 5 1	107	6 15 10	78 6 10	294 7 9
Kaipara Head	644 9 6	809	52 12 11	188 14 0	885 16 5
Moeraki	384 17 5	638	41 3 7	69 4 0	495 5 0
Moko Hinou	667 3 0	677	43 17 11	212 5 6	923 6 5
Nugget Point	428 16 5	894	56 15 8	146 8 8	632 0 9
Pencarrow Head	442 1 4	725	45 11 3	108 9 6	596 2 1
Portland Island	722 3 5	779	50 8 5	303 15 5	1,076 7 3
Puysegur Point	728 13 5	801	51 4 8	362 15 3	1,142 13 4
Stephens Island	724 5 7	807	60 7 9	171 4 3	955 17 7
Waipapapa Point	447 6 2	732	47 3 10	119 9 9	613 19 9
Marine Store	622 1 8	..	..	42 0 7	664 2 3
Automatic lights	1,101 15 1	..	..	1,258 0 3	2,359 15 4
Fog signals	..	..	..	219 2 9	219 2 9
Government steamer ..	8,451 5 11	..	..	10,673 1 3	19,124 7 2
Totals	22,651 10 5	16,288	1,055 3 6	16,483 6 9	40,190 0 8

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, 1935.

Name of Seaman.	Balance to Credit of the Estate on 1st April, 1934.	Amount received.	Amount paid.	Balance to Credit of the Estate on 31st March, 1935.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Andrews, G.	..	17 15 5	17 15 5	..
Evans, W.	8 10 4	..	8 10 4	..
Farrell, E.	..	27 8 8	27 8 8	..
Fox, A.	..	18 15 8	18 15 8	..
Fuller, R. A.	..	14 14 9	14 14 9	..
Gillies, J.	..	21 0 0	0 9 1	20 10 11
Johnston, J.	..	16 19 9	..	16 19 9
McLean, D.	..	3 12 5	..	3 12 5
McMahon, S. G.	13 2 2	..	13 2 2	..
Nelson, R.	..	1 1 7	..	1 1 7
Stone, W. R.	37 4 8	..	37 4 8	..
Terry, J. R.	..	1 1 2	1 1 2	..
Thompson, T.	11 17 6	..	11 17 6	..
Woolley, J. J.	..	4 1 11	4 1 11	..
	70 14 8	126 11 4	155 1 4	42 4 8

RETURN SHOWING AMOUNTS RECEIVED PRIOR TO 1ST APRIL, 1934, STANDING TO CREDIT OF ESTATES OF DECEASED SEAMEN, AND FOR WHICH CLAIMS HAVE NOT BEEN PROVED.

Name of Seaman.	Balance to Credit of Estate on 31st March, 1935.
	£ s. d.
Carle, W. H., late fireman, s.s. "Rata"	3 0 7
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
Tronson, J. A., late seaman, s.s. "Rangi"	0 1 3
Wareline, F., late seaman, s.s. "Koromiko"	0 1 2
Wassel, R., late seaman, s.s. "Elsie Mary"	0 1 3
	£7 12 3

SUMMARY OF EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS MASTERS AND MATES FOR THE YEAR ENDED 31ST MARCH, 1935.

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	3	1	2	2	2	..	..	9	5	1	2	17
Home-trade, masters and mates	5	1	2	1	2	..	1	..	7	1	3	1	12
Master, river service	4	..	2	..	1	..	..	..	5	..	2	..	7
Masters of sailing-vessels plying in harbours, &c.	..	..	3	..	..	..	..	..	..	..	3	..	3
Colonial pilots	..	..	..	..	1	..	..	..	1	..	..	..	1
Signals only	4	..	1	..	..	..	..	..	4	..	1	..	5
Voluntary examination, compass deviation	2	..	1	..	..	..	1	..	2	..	2	..	4
Sub-lieutenant, R.N.V.R. ..	1	..	..	..	..	..	..	..	1	..	..	..	1
Totals	23	4	10	3	6	2	2	..	29	6	12	3	50

SUMMARY OF EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS MARINE ENGINEER FOR THE YEAR ENDED 31ST MARCH, 1935.

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 CERTIFICATES.																		
Foreign-going engineer—																		
First and second class (steam) ..	..	1	1	3	5	8	..	..	..	..	..	..	..	..	..	3	6	9
First and second class endorsement (steam)	..	..	..	1	1	2	..	..	..	..	..	..	..	..	..	1	1	2
First and second class (motor) ..	1	..	1	2	4	6	..	..	..	..	..	..	..	..	..	3	4	7
Third class (steam)	10	10	20	9	6	15	5	6	11	5	4	9	..	..	..	29	26	55
Totals	11	11	22	15	16	31	5	6	11	5	4	9	..	..	..	36	37	73
LOWER-GRADE CERTIFICATES.																		
Sea-going engineer, P.V.O.S. ..	18	3	21	7	2	9	1	..	1	1	..	1	6	5	11	33	10	43
Restricted-limits engineer, P.V.O.S. ..	13	..	13	..	..	..	..	..	..	3	1	4	20	5	25	36	6	42
River engineer (steam)	3	1	4	..	..	..	..	..	..	..	..	..	1	1	2	4	2	6
Total	34	4	38	7	2	9	1	..	1	4	1	5	27	11	38	73	18	91
Grand total	45	15	60	22	18	40	6	6	12	9	5	14	27	11	38	109	55	164

Summary of Casualties to Shipping reported to the Marine Department during the Financial Year ended 31st March, 1935.

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	3	86	..	..	..	..	3	86	..
Slight damage	14	10,052	..	..	..	..	14	10,052	..
No damage	7	10,496	..	..	..	..	7	10,496	..
Total strandings	24	20,634	..	..	..	..	24	20,634	..
Fires—									
Total loss	..	..	..	..	..	..	..	..	..
Slight damage	3	89	..	..	..	..	3	89	..
No damage	..	..	..	..	..	..	..	..	..
Total fires	3	89	..	..	..	..	3	89	..
Collisions—									
Total loss	..	..	..	..	..	..	..	..	..
Slight damage	4	27	..	..	..	..	4	27	..
No damage	..	..	..	..	..	..	..	..	..
Total collisions	4	27	..	..	..	..	4	27	..
Miscellaneous, including damage by heavy seas to hull and cargo, breakdown of machinery, &c.	22	28,995	..	10	48,485	..	32	77,480	..
Total number of casualties reported	53	49,745	..	10	48,485	..	63	98,230	..

Return of Land Boilers and Machinery inspected during the Year ended 31st March, 1935.

Class.	Not exceeding 5 Horse-power.	Exceeding 5 but not exceeding 10 Horse-power.	Exceeding 10 Horse-power.	Total.
Boilers—				
Stationary, portable, and traction	1,095	1,157	2,403	4,655
Digesters, jacketed pans, sterilizers, vulcanizers, and other steam-receivers	..	..	..	2,670
Air-receivers	..	..	..	675
Total boilers	..	..	..	8,000
Machinery—				
Electric-motors	11,935	3,814	4,281	20,030
Internal-combustion engines	956	485	1,159	2,600
Water-power engines	45	54	169	268
Lifts	..	..	..	3,072
Cranes	..	..	..	364
Hoists	..	..	..	1,352
Total machinery	..	..	..	27,686
Grand total	..	..	..	35,686

Return of New Boilers inspected for the Year ended 31st March, 1935.

Class.	Made in Dominion.		Imported.		Total.	
	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.
Stationary, portable, and traction	57	1,197	24	761	81	1,958
Digesters, jacketed pans, sterilizers, vulcanizers, and other steam-receivers	133	..	125	..	258	..
Air-receivers	11	..	25	..	36	..
Total	201	1,197	174	761	375	1,958

Return of the Number of Certificates issued to Land Engine-drivers and Electric-tram Drivers during the Year ended 31st March, 1935.

Class.	Number.	Class.	Number.
Service—		Competency—*continued.*	
First-class engine-driver	3	Locomotive and traction-engine driver ..	27
Competency—		Locomotive-engine driver	7
Extra first-class stationary engineer ..	1	Traction-engine driver	26
First-class engine-driver	25	Electric-tram driver	2
Second-class engine-driver	173		
Steam-winding-engine driver	7	Total	275
Electric-winding-engine driver	4		

Return of Land Engineers', Engine-drivers', and Electric-tram Drivers' Examinations held throughout New Zealand during the Year ended 31st March, 1935, 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 ..	..	..	7	3	26	5	1	..	..	..	1	..	..	..	..	..	..	..	35	8	43
Christchurch ..	..	..	1	..	9	3	1	2	..	..	11	1	..	..	..	..	2	..	24	6	30
Dunedin ..	..	..	1	5	12	3	1	..	3	..	4	1	1	..	1	..	..	..	23	9	32
Gisborne ..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	3	1	4
Greymouth ..	..	..	2	3	4	5	1	1	1	1	1	..	3	..	1	..	..	..	13	10	23
Hamilton ..	..	..	1	1	17	13	..	2	..	1	..	..	1	..	1	..	..	..	20	17	37
Invercargill ..	..	..	3	11	18	6	1	..	1	..	1	1	1	..	..	..	..	..	25	18	43
Kaitaia ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Napier ..	..	..	2	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	4	2	6
Nelson ..	..	1	2	1	10	2	2	..	..	..	1	1	..	..	..	..	..	..	15	5	20
New Plymouth	1	1	2	1	23	10	..	..	..	..	2	..	..	..	..	..	..	..	28	12	40
Palmerston N.	..	..	..	..	12	4	..	1	..	..	1	..	..	..	..	..	..	..	13	5	18
Paradise ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Timaru ..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	2	1	3
Wairoa ..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Wanganui ..	..	..	..	..	4	2	3	..	..	..	..	..	..	..	..	..	..	..	7	2	9
Wellington ..	..	3	1	2	14	4	..	..	1	..	1	..	..	..	..	..	..	..	17	9	26
Whangarei ..	..	..	..	..	4	1	2	..	..	..	..	..	..	..	..	..	..	..	6	1	7
Totals ..	1	5	22	28	162	61	12	6	6	2	24	5	6	..	3	..	2	..	238	107	345

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, 1935.

Name of Port.	Vessels engaged in Fishing for Wet Fish.														Vessels engaged in Shell-fishery.						Number of Persons employed.					
	Steamers Trawling.		Motor Trawlers.		Steamers Danish-seining.		Motor-vessels Danish-seining.		Motor-vessels, Set-net and Line Fishing.		Sailing-boats.		Rowing-boats.		Oyster-dredging Vessels.		Mussel-dredging Vessels.		Crayfishing Vessels.		Fishermen.		Others.		Total.	
	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.
Russell	..	..	..	..	..	..	..	..	7	14	..	..	..	23	..	..	..	..	..	4	14	30	..	3	14	33
Kaipara	..	..	..	..	..	..	..	..	33	..	..	..	..	2	..	..	..	..	..	..	42	2	..	..	42	2
Whangarei	..	..	..	..	..	..	..	..	9	10	..	..	..	7	..	..	..	..	..	..	18	27	4	4	22	31
Auckland*	..	..	1	1	..	..	37	2	161	30	..	..	20	56	..	..	1	1	3	3	466	108	85	25	551	133
Thames	..	..	..	..	..	..	2	1	21	1	..	..	3	1	..	..	2	..	..	..	78	..	21	..	99	..
Mercury Bay	..	..	..	..	..	..	..	..	4	3	..	1	..	..	..	..	..	..	6	1	10	4	2	..	12	4
Tauranga	..	..	..	..	..	..	2	..	15	8	..	..	..	..	..	..	..	..	..	8	30	..	4	..	34	..
Opotiki	..	..	..	..	..	..	..	..	..	4	..	..	..	3	..	..	..	..	..	..	..	7	..	..	..	7
Gisborne	..	..	1	..	1	..	..	..	13	..	..	..	1	14	..	..	..	..	..	27	29	30	..	..	29	30
Napier	..	..	7	..	2	1	..	..	1	..	3	19	..	..	..	24	..	..	..	..	..	8	39	80	12	8	51	88
New Plymouth	..	..	..	..	..	..	..	..	..	..	10	17	..	..	..	4	..	..	..	..	..	..	25	48	..	6	25	54
Wanganui	..	..	..	..	..	..	..	..	..	..	..	25	..	..	..	3	..	..	..	..	..	..	..	57	..	..	..	57
Wellington and district	..	2	..	..	..	..	..	..	..	..	58	23	..	..	22	29	..	..	..	..	2	36	235	81	36	49	271	130
Picton	..	..	..	..	..	..	..	..	..	..	24	22	..	..	6	4	..	..	..	..	..	1	46	53	..	..	46	53
Blenheim (Wairau)	..	..	..	..	3	5	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	7	12	..	..	7	12
Nelson and French Pass	..	..	..	..	..	..	..	..	5	2	4	34	..	..	..	5	..	..	..	..	..	..	18	80	4	..	22	80
Westport	..	..	..	1	..	10	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	2	..	11	..	3	..	14
Greymouth	..	..	2	..	3	..	1	..	..	..	..	10	..	..	..	10	..	..	..	..	..	..	16	30	..	..	16	30
Kaikoura	..	..	..	..	..	..	..	..	..	..	17	..	..	..	4	..	..	..	..	..	4	..	30	..	3	..	33	..
Akaroa	..	..	..	..	2	5	..	..	..	2	9	3	..	..	..	7	..	..	..	..	..	5	20	10	..	9	20	19
Lyttelton	..	..	1	1	11	3	..	..	..	3	58	..	..	..	35	80	..	..	..	..	..	16	197	70	16	7	213	77
Timaru	..	..	..	..	7	10	..	..	3	3	10	8	..	..	1	..	..	..	..	..	..	..	33	17	3	..	36	17
Oamaru and Moeraki	..	..	..	..	..	..	..	..	..	..	20	19	..	..	..	..	..	..	..	..	..	8	35	20	4	5	39	25
Dunedin and Otago district	..	2	..	10	12	..	..	..	..	..	53	..	..	..	9	4	..	..	..	..	..	23	143	..	27	..	170	..
Invercargill and district	..	..	..	..	..	..	..	..	..	..	20	21	..	..	10	7	..	..	..	..	..	..	60	58	..	..	60	58
Bluff	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	7	..	..	..	..	..	95	..	20	..	115	..
Stewart Island (Half-moon Bay)	..	..	..	..	..	..	..	..	..	..	35	..	..	..	..	..	..	..	..	..	..	..	86	..	12	..	98	..
Chatham Islands	..	..	..	..	..	..	..	..	..	..	18	..	..	..	..	..	..	..	..	..	..	..	69	..	15	..	84	..
Totals	..	16	3	39	46	1	..	50	13	632	273	..	1	113	288	7	..	3	1	15	142	1,841	835	268	119	2,109	954

* Including Coromandel.

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, 1935.

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, hapuku, crayfish, kingfish, tarakihi, gurnard, maomao	1,680	1,570	..	..	..	..	60	56	56	1,626
Kaipara	Flounder, snapper, mullet	3,864	5,107	..	..	..	..	..	..	..	5,107
Whangarei	Snapper, hapuku, mullet, blue cod, flounder	3,930	5,996	..	..	..	..	..	..	..	5,996
Auckland (including Manakau and Coromandel)	Snapper, flounder, tarakihi, hapuku, gurnard, pioke, dory, mullet, crayfish, blue cod, kingfish, trevally, frost-fish, barracouta, piper, oysters (rock), mussels, sardines	102,313	72,586	5,270	6,060	3,524	881	1,368	1,271	8,212	80,798
Thames	Snapper, flounder, dab, mullet, gurnard, dory, pioke, mussels	17,614	13,957	..	..	3,628	551	..	..	551	14,508
Mercury Bay	Snapper, tarakihi, hapuku, gurnard, blue cod, flounder, kingfish, crayfish	2,794	1,710	..	..	..	..	260	243	243	1,953
Tauranga	Snapper, tarakihi, hapuku, mullet, blue cod, kingfish, trevally, dogfish	4,800	2,821	..	..	..	..	..	..	..	2,821
Opotiki	Snapper, flat fish, hapuku, gurnard, tarakihi	255	670	..	..	..	..	..	..	..	670
Gisborne	Tarakihi, gurnard, snapper, hapuku, sole, flounder, kahawai, crayfish	3,320	4,648	..	..	..	..	..	..	..	4,648
Napier	Tarakihi, gurnard, sole, snapper, hapuku, flounder, barracouta, crayfish	14,887	12,196	..	..	..	..	104	104	104	12,300
New Plymouth	Snapper, hapuku, crayfish, tarakihi, cod, gurnard, kingfish, kahawai	3,105	3,535	..	..	..	..	80	100	100	3,635
Wanganui	Snapper, hapuku, blue cod, flounder, kahawai	397	658	..	..	..	..	..	..	..	658
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	54,887†	55,144	..	..	..	..	680	340	340	55,484
Picton	Flounder, butterfish, moki, blue cod, groper, crayfish	3,350	3,135	..	..	..	..	..	..	..	3,135
Blenheim (Wairau)	Sole, flounder, moki, tarakihi, red cod, snapper, butterfish, groper, gurnard, crayfish	3,000	2,950	..	..	..	..	100	100	100	3,050
Nelson and French Pass	Snapper, blue cod, groper, butterfish, moki, flat fish, barracouta, tarakihi	5,380	5,100	..	..	..	..	..	..	..	5,100
Westport	Sole, snapper, groper, ling, flounder, crayfish, gurnard, turbot, red cod	372	453	..	..	..	..	18	19	19	472
Greymouth	Sole, groper, snapper, flounder, turbot, tarakihi, kingfish, red cod, ling	2,891	2,761	..	..	..	..	..	..	..	2,761
Kaikoura	Groper, trumpeter, hake, ling, tarakihi, bass, blue cod, crayfish	5,562	6,490	..	..	..	..	..	..	..	6,490
Akaroa	Flounder, sole, groper, brill, red cod, blue cod, crayfish, barracouta, kingfish, kahawai, moki, butterfish	4,342	6,141	..	..	..	..	307	153	153	6,294
Lyttelton	Flounder, dab, groper, tarakihi, ling, gurnard, red cod, elephant-fish	6,470	7,691	..	..	..	..	..	..	..	7,691
Timaru	Flounder, sole, groper, ling, red cod, blue cod, kingfish, elephant-fish, gurnard, brill, barracouta	11,892	15,838	..	..	..	..	..	..	..	15,838
Oamaru and Moeraki	Groper, blue cod, red cod, ling, barracouta, crayfish	4,760	4,640	..	..	..	..	650	300	300	4,940
Dunedin and Otago districts	Sole, hapuku, flounder, bream, red cod, blue cod, trevally, ling, moki, brill, barracouta, crayfish, gurnard, mullet, garfish, tarakihi, red perch, kingfish, trumpeter, skate, kahawai	42,616	34,801	..	..	..	..	3,267	1,634	1,634	36,435
Invercargill and district	Blue cod, hapuku, flounder, sole, green-bone, trevally, ling, kingfish, crayfish	1,246	1,531	..	..	..	..	..	..	..	1,531
Bluff	Blue cod, hapuku, flounder, green-bone, trevally, ling, kingfish, crayfish	13,237	12,185	52,254	27,486	..	..	..	..	27,486	39,671
Stewart Island	Blue cod, hapuku, trumpeter, green-bone, moki	8,523	8,120	..	..	..	..	..	..	..	8,120
Chatham Islands	Blue cod, hapuku	3,928‡	1,833	..	..	..	..	..	..	..	1,833
	Totals	331,415	294,267	57,524	33,546	7,152	1,432	6,894	4,320	39,298	333,565

* Not including whitebait. † Includes 9,144 cwt. blue cod and 467 cwt. of groper caught at the Chatham Islands and landed at Wellington. ‡ Exclusive of 9,144 cwt. of blue cod and 467 cwt. of groper caught at the Chatham Islands and shipped direct to Wellington.

TABLE IIA.—SHOWING APPROXIMATELY THE QUANTITIES OF DIFFERENT KINDS OF FISH LANDED AT CERTAIN PORTS DURING THE YEAR ENDED 31ST MARCH, 1935.

—	Russell.	Kaipara.	Whangarei.	Auckland.	Thames.	Mercury Bay.	Tauranga.	Opotiki.	Napier.	Kawhia.	New Plymouth.	Wanganui.	Wellington.	Blenheim.	Nelson and French Pass.	Westport.	Greymouth.	Lyttelton.	Oamaru.	Moeraki.	Invercargill.	Bluff.	Stewart Island.	Chatham Islands.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Barracouta	..	..	..	..	..	..	..	..	..	..	..	..	1,708	..	..	..	..	..	23	7	..	..	..	..
Blue-cod	..	..	200	62	3	59	20	..	..	..	50	23	12,934*	..	..	..	..	..	101	399	596	12,684	7,485	12,880
Butterfish	..	..	..	..	..	..	..	..	..	..	..	..	266	..	..	..	..	..	..	..	..	16	..	..
Frost-fish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Flounders, dabs, and soles	..	2,131	210	6,550	4,769	33	..	40	3,958	192	..	38	..	1,400	..	182	2,241	1,310	..	..	145	183	..	..
Garfish (Piper)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Groper (Hapuku)	..	..	320	2,892	6	89	520	30	..	12	360	30	9,015†	..	..	50	336	900	2,517	1,113	505	354	1,038	659
Gurnard	..	..	..	505	449	..	..	25	3,519	..	45	..	..	..	..	30	..	..	..	..	..	..	..	..
Herring	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
John-dory	..	..	..	604	219	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hake	..	..	..	..	..	..	..	..	..	..	..	..	3,437	..	..	..	..	..	..	..	..	..	..	..
Kahawai	..	..	..	..	..	..	..	..	..	..	..	66	..	..	..	4	..	..	..	..	..	..	..	..
Kingfish (Northern)	..	..	..	1	..	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ling	..	..	..	..	..	..	..	..	..	..	..	..	6,110	..	..	25	..	1,160	114	136	..	..	..	..
Maumau	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Moki	..	..	..	..	..	..	..	..	..	..	..	..	1,069	..	..	..	..	..	..	..	..	..	..	..
Mullet	..	120	703	300	965	23	3	60	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..
Pioke	..	..	..	..	..	645	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Red Cod	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	..	..	161	189	..	..	..	..
Sardines	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Snapper	..	..	891	2,520	68,432	11,163	2,391	3,600	140	1,435	310	2,600	240	1,872	..	..	62	68	..	..	..	..	..	..
Tarakihi	..	..	..	..	14,293	8	179	560	20	5,722	..	50	..	12,037	..	..	..	..	2,500	..	..	..	..	..
Turbot	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	..	..	..	..	..	..	..
Trevally	..	..	..	..	578	..	..	20	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Mixed or kind not specified	1,560	139	380	6,112	329	40	..	..	253	..	..	..	6,439	1,600	5,380	..	246	600	..	..	..	..	..	..
Totals ..	1,680	3,864	3,930	100,999	17,614	2,794	4,800	255	14,887	523	3,105	397	54,887‡	3,000	5,380	372	2,891	6,470	2,916	1,844	1,246	13,237	8,523	13,539§

* Including 9,144 cwt. from Chatham Islands. † Including 467 cwt. from Chatham Islands. ‡ Including 9,611 cwt. from Chatham Islands. § Includes shipments to Wellington by s.t. "South Sea."

TABLE III.—SHOWING THE NUMBER OF SACKS AND VALUE OF THE OYSTERS OBTAINED IN THE DOMINION DURING THE YEAR ENDED 31ST DECEMBER, 1934.

Locality.	Quantity.	Value (Wholesale).
DREDGE OYSTERS.	Sacks.	£
Foveaux Strait	52,254	27,486
ROCK OYSTERS.		
Bay of Islands	1,609	6,060
Whangarei Harbour	195	
Kaipara Harbour	970	
Hauraki Gulf*	1,729	
Coromandel	350	
Great Barrier Island	414	
Total	5,267	
Grand total	57,524	33,546

* Takatu to Gull Point, 250; South Shore Tamaki Straits, 75; Kawau, 158; Rakino, 142; Motutapu, 110; Brown's Island, 62; Motuihi, 43; Waiheke, 539; Ponui, 311; Pakihi, 28; Crusoe Island, 11.

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, 1935.

Whaling-station.	Number of Whales taken.	Species.	Yield of Oil.	Quantity of Bonedust and Fertilizer.
			Tons.	
Marlborough Sounds (Picton)	52	Humpback	260	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, 1935.

Fish and Shell-fish imported.

Description of Fish.	Quantity.	Value.
		£
Oysters	Nil	..
Anchovies, salted, in containers of 28 lb. or over	54 cwt.	136
Other fish—		
Frozen, smoked, pickled, dried, or salted	994 cwt.	2,562
Potted and preserved in tins	3,208,256 lb.	96,990
	..	99,688

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.			£
Oysters, fresh	Auckland	676 doz.	15
	Wellington	1,264 doz.	27
	Lyttelton	..	..
	Invercargill (Bluff)	204,720 doz.	1,853
	Total	206,660 doz.	1,895
Blue cod, frozen	Auckland	..	..
	Wellington	15,209 cwt.	32,587
	Lyttelton	45 cwt.	87
	Dunedin	88 cwt.	179
	Oamaru	..	..
	Invercargill (Bluff)	7,203 cwt.	14,426
	Total	22,545 cwt.	47,281
Snapper, frozen	Auckland	7,191 cwt.	12,943
	Wellington	161 cwt.	348
	Total	7,352 cwt.	13,291
Flounder, frozen	Auckland	2,189 cwt.	5,797
	Wellington	539 cwt.	1,195
	Lyttelton	872 cwt.	1,730
	Dunedin	411 cwt.	923
	Oamaru	..	..
	Invercargill (Bluff)	298 cwt.	749
	Total	4,309 cwt.	10,394
Other kinds, frozen*	Auckland	5,973 cwt.	11,902
	Wellington	1,644 cwt.	2,966
	Lyttelton	1,216 cwt.	2,622
	Dunedin	3,129 cwt.	7,840
	Oamaru	..	..
	Invercargill (Bluff)	546 cwt.	1,173
	Total	12,508 cwt.	26,503
Total exports of frozen fish from Dominion	,,	46,714 cwt.	97,469
Smoked, dried, pickled, or salted	,,	1,968 cwt.	4,064
Preserved in tins—			
Crayfish	,,	54,561 lb.	3,229
Oysters	,,	95,270 lb.	3,818
Toheroas†	,,	24,688 lb.	1,867
Whitebait†	,,	105,899 lb.	9,561
Value of total exports of New Zealand fish and shell-fish	,,	..	121,903
Re-exports.			
Potted and preserved in tins	..	8,354 lb.	287

* Includes frozen crayfish—

	Cwt.	£
Auckland	117	245
Wellington	94	136
Lyttelton	243	799
Dunedin	961	3,060
Total	1,415	4,240

† Exporting Ports.	Toheroas.		Whitebait.	
	Quantity.	Value.	Quantity.	Value.
	lb.	£	lb.	£
Auckland	24,524	1,853	46,945	4,392
Wellington	72	6	18,434	1,256
Greymouth	..	..	2,880	201
Dunedin	92	8	57,620	3,410
Invercargill (Bluff)	..	..	20	2
	24,688	1,867	105,899	9,561

APPENDICES.

APPENDIX I.

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

PART I.

9th April,	1934.	Regulating trawling and Danish-seine Netting in Whangaroa, Tutukaka, Whangaruru Harbour, and Pelorus Sound.
27th ,,	,,	Regulating trawling and Danish-seine Netting in Whangamata Harbour.
6th August,	,,	Making further Restrictions on Danish-seining in Hauraki Gulf.
15th ,,	,,	Amending Regulations (*a*) Licensing of Fishing-boat Tenders, (*b*) altering Form of "Application to register Fishing-boat."
27th ,,	,,	Prohibiting Trawling in a Portion of Hawke's Bay.
15th October,	,,	Amending Whitebait Regulations.
15th ,,	,,	Making Regulations for Tonnage-measurements of Fishing-boats.
29th ,,	,,	Extending Close Season for Seals.
14th ,,	,,	Prohibiting Danish-seine Nets in Ports Fitzroy and Abercrombie, Great Barrier Island.
27th February,	1935.	Prescribing Size at which (*a*) Hapuku may be taken, and (*b*) regulating Danish-seine Netting and Trawling in Pelorus and Queen Charlotte Sounds and Admiralty Bay.
11th March,	,,	Prohibiting Danish-seine Nets in Tryphena Harbour, Great Barrier Island.

PART II.

30th July,	1934.	Amending Regulations for Trout-fishing in South Canterbury Acclimatization District.
30th ,,	,,	Amending Regulations for Trout-fishing in Ashburton Acclimatization District.
6th August,	,,	Amending Regulations for Trout-fishing in Waitaki Acclimatization District.
15th ,,	,,	Amending Regulations for Trout-fishing in Wellington Acclimatization District.
2nd September,	,,	Amending Regulations for Trout-fishing in Auckland Acclimatization District.
8th October,	,,	Amending Regulations for Atlantic-salmon Fishing in Southland Acclimatization District.
14th December,	,,	Making Regulations as to taking of Quinnat Salmon in Rakaia River.

PARTS I AND II.

18th February,	1935.	Making Regulations *re* Netting in Canterbury and Otago Rivers.

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).		
	1932–33.	1933–34.	1934–35.	1932–33.	1933–34.	1934–35.	1932–33.	1933–34.	1934–35.	1932–33.	1933–34.	1934–35.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
May	15·4	15·6	15·3	14·9	15·1	14·6	16·1	15·7	16·9	15·7	14·5	14·5
June	12·9	12·5	13·6	12·8	..	..	15·0	13·9	14·8	12·6	10·7	13·3
July	11·6	11·7	12·4	10·9	11·4	15·0	13·3	13·6	13·7	11·6	10·9	12·2
August	11·6	11·6	12·6	11·3	11·4	..	13·4	13·4	13·8	11·3	14·5	13·6
September ..	14·2	13·9	13·5	13·4	14·0	14·8	15·2	14·7	14·8	15·0	15·1	15·3
October	17·1	15·7	15·8	16·7	12·9	..	17·0	16·0	15·4	17·1	15·4	18·0
November ..	18·3	17·2	18·7	19·3	21·1	18·4	17·9	16·7	16·9	19·2	16·9	19·6
December ..	19·2	20·6	20·8	19·1	20·5	23·5	18·3	20·2	21·1	21·1	23·0	21·8
January	22·2	19·4	21·8	23·1	20·3	19·5	20·8	20·7	21·9	22·3	22·8	23·9
February ..	22·0	20·3	24·0	22·8	21·9	23·2	21·3	20·9	22·2	23·0	21·2	22·3
March	20·9	19·9	21·4	20·1	..	..	20·2	19·2	20·9	22·0	19·2	22·0
April	18·9	18·8	19·7	18·9	17·0	19·8	19·2	19·2	19·1	20·2	17·0	20·7

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 dori)	*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)	*Hemirhampus 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	*Peltorhampus novae-zeelandiae* Guenther.
Tarakihi	*Dactylopagrus macropterus* (Forster).
Trevally	*Caranx platessa* (Cuv. and Val.).
Trumpeter	*Latris lineata* (Forster).
Turbot	*Colisteum nudipinnis* (Waite).
Warehou	*Seriolella brama* (Guenther).
Whitebait	*Galaxias attenuatus* (Jenyns).
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.

APPENDIX IV.

FISHERY INVESTIGATIONS IN PELORUS SOUNDS, 1934.—FINAL REPORT.

UNDER your instructions, I made three trips to Pelorus Sound to investigate the effect on the fishery of certain portions being opened to Danish-seiners for a limited portion of the year.

An interim report has been supplied at the end of each trip, and it is now only necessary to set out the results as a whole, so that each trip may be compared with the others, and to have the evidence gathered presented in such form as to facilitate the drawing of such conclusions as are possible from the limited data at our disposal.

The trips undertaken were as follows :—

Trip.	Date and Duration.	Interim Report dated
1	12th April, 1934, to 24th April, 1934	2nd May, 1934.
2	15th June, 1934, to 26th June, 1934	29th June, 1934.
3	18th July, 1934, to 31st July, 1934	7th August, 1934.

AREA OPENED.

The area under discussion was opened to Danish-seiners from the 1st April, 1934, to the 31st July, 1934, and consisted of those waters inside the present line from Cape Jackson to Harding Point, and outside a line drawn from Tawera Point to Opani-Aputa Point, which are the heads of the Popoure Reach.

FISHING METHODS AND GROUNDS.

The methods of fishing used in Pelorus Sound are—(1) Set-netting; (2) hand-seining; (3) line-fishing, with "windy buoys"; (4) hand-lining; and, during the period under review and in the specified waters (5) Danish-seining. The set-netting is confined to the upper reaches of the Sounds, such as Nydia and Maori Bays, Kenepuru Sound, and up round Black Point. Line-fishing is carried on outside, and off the points and reefs inside, up as far as Tawera Point.

The Danish-seining was tried out in most of the newly opened area, and the surprising thing was the limited number of clear hauls which were found.

Each type of fishing will be considered separately. As the Danish-seining was the main portion of the investigations it will be dealt with first.

DANISH-SEINING.

Gear.—The gear used was found to be similar to that now used in the Auckland District. Each net examined had the regulation mesh in the cod end.

Catches.—The catch of the hauls witnessed during the three trips is to be seen in Table I.

In this table it will be seen that during the first period which coincided with the first appearance of the seine-boats in the Sounds the catch per clear haul is high, amounting to 3·25 cases of marketable flat fish per haul. On the second trip a decided drop to 0·85 cases per haul was noted, and the third trip showed a further decline to 0·70 cases per haul.

This drop in the catch per haul requires some explanation, though it is the type of movement one would expect. In the first period the vessels were catching the accumulated stocks of the fish which had made up during the closed period. By the time of the second trip these accumulations had been caught where possible, and the grounds were now down to what may be termed their working-level. The slight difference in the catch per haul of the second and third trips is not of major importance, and may be attributed to working different hauls, seasonal migrations of the fish, or slightly less effective fishing-gear or personnel.

From these figures it would appear that with the fishing-gear in use, and if the intensity of fishing remains constant, the normal catch of marketable flat fish per haul would during a few months season be of the order of 0·80 of a case.

When one considers that on the "Dab Patch," one of the best flat-fish grounds near Auckland, the average catch per haul using much the same class of gear is only about one case per haul, this result is not so unsatisfactory as it may appear.

In addition to this catch of marketable flat-fish there are usually a few other fish such as snapper, red cod, and gurnard, which are of some economic value.

It must be stressed that although 0·80 case of marketable flat fish is the result of an average haul, very many tiny flat fish escape from the net while it is being hauled, although those under or just over the legal limit which are brought on board are sorted out and dumped immediately with practically no mortality. In fact we found that these small fish could be sorted out, measured, and then returned to the water with practically no loss at all.

Dab Measurements.—As the dab was the predominating flat fish I concentrated on the measurement of this species only. The samples measured consisted of the whole of the catch of the hauls enumerated in the interim reports, or of a representative portion of the catch where the total was too large to handle in the time at my disposal.

The results of these measurements are seen in Tables 2 and 3, which are similar, except that in Table 2 the figures represent numbers of individual fish, whereas in Table 3 these figures have been reduced to percentages of the respective totals to make the comparison both easier and more accurate.

On the examination of these tables one is struck by the apparent decline in the size of the most prominent groups. The decline between the April trip and the June trip is explained by the same argument as the decline in the catch per haul—that is, the quick elimination of the excess stock of larger fish. The second decline is most possibly a sexual difference. Unfortunately, I was unable to sex the samples except on the last trip, when an interesting phenomenon was noticed—that was that the males were distinctly smaller than the females and were in almost equal proportions. This aggregation of males and femals was due to the proximity of the spawning-season. At the time this sample was taken in July several ripe fish of both sexes were obtained—so ripe in fact that some eggs were artificially fertilized on the measuring board. Tables Nos. 4 and 5 show the size relationships between the sexes on this trip. This explains the double peaks in Tables 2 and 3. They are not two age-groups, but two sex-groups most probably of the same age.

Species of Flat Fish caught.—From the interim reports, which give the details of each haul, it will be seen that dabs generally predominate in the Danish-seiner catches. In the outer bays at times soles constitute a large portion of the catch. Flounders were nearly always present in small numbers, but in none of the recorded hauls did they constitute the bulk of the haul. The number usually varied from three or four to about eighteen.

Other Species.—The fish of other species caught may be divided into two sections—(1) Those of some value; (2) those unsaleable by these fishermen, although in other districts some of the species mentioned may be sold.

(1) Snapper, red cod, john-dory, gurnard.

(2) Elephant-fish, skate, star-gazers, sting-rays, dogfish.

The first two species in the second division are marketed in some ports, and dogfish are of value as bait where line-fishing is carried on from the same port.

Set-netting.

On the June and July trips advantage was taken of those days when no Danish-seiners were working to inspect the set-net fishing-operations in the upper portion of the Sounds. From the details of these trips it will be seen that flounders constitute the bulk of the catch, although at times dabs are also present in fair numbers.

In June two fleets each of twenty nets caught approximately two cases of flat fish, practically all flounder, with a few—not more than a dozen dabs in one set—and for the day's (twenty-four hours) work the boat had about 4¼ cases of fish.

In July the same vessel was averaging about two cases per day, but I was informed that the set-net men usually find that July is their worst month.

In July a catch of about a case and a half was analysed and consisted of fifty-four dabs, twenty flounder, and one gurnard.

The best results with the set nets are obtained at night-time.

This fishing is only carried on during the winter months as the warm weather causes transportation difficulties in the summer, and, further, during the warmer months of the year the Sounds are overrun with dogfish, stingarees, and elephant-fish, which cause a great deal of damage to the fine-thread nets used for set-netting.

Hand-seining.

Small hand or shore seines are generally operated in conjunction with the set-nets.

In June one haul with the shore seine over unfavourable ground yielded seventeen large flounder but no dabs.

In July two hauls over much the same type of bottom yielded thirty-three large flounder, thirteen marketable dabs, eight undersized flounder and eleven undersized dabs. Half of the flounder were very large fish indeed. Working the hand-seines in conjunction with the set-nets these men usually work from 2 a.m.–8 a.m., from 5 p.m.–6 p.m., and also overrun their set-nets about 10 p.m.

Line-fishing with Windy Buoys.

This type of line-fishing is carried on near Maud Island and from there outwards. Hapuka is the main species of fish taken by this method.

Hand-lining.

This method is employed for blue-cod fishing all over the Sounds, but the commercial fishermen seldom operate above Tawera Point. Opportunity was taken to engage in the fishing whenever possible, and the catch was measured, weighed, and sexed. These results, shown in Table 6, are rather interesting. The total fish represented is too small to make any dogmatic statements, but as the sampling was fairly well spread we may draw some conclusions from them. It appears that there has been a large abstraction of fish about the legal limit (between 30 cm. and 31 cm.) and that the groups below the legal limit are fairly well represented in proportion to the groups above. The total number of legal sized fish caught, however, was a very poor return for the time spent in catching them. It is worthy of note that these fish were all caught on standard-sized hooks, so there appears to be no necessity for the small "herring" hooks used by some of the summer visitors.

On certain grounds inside the Sound, mainly off Tawera Point, Maud Island, and between Maud Island and the entrance, small hapuka are also obtained. Many of these hapuka are below the legal limit, and it is essential that some control should be exercised over this fishery, as apparently these are mainly nursery-grounds. I will deal with this more fully in a later paragraph.

In addition to the blue cod and groper, the line-fishermen also capture snapper, conger-eels, and barracouta.

Small Hapuka.

As I have pointed out in a previous paragraph, there were large quantities of small hapuka caught on certain grounds in the Sounds during the time I was making my investigations. As this is definitely exploiting nursery-grounds this type of fishing should be stopped if possible. The present legal limit of 5 lb. is quite impossible to administrate, as the fisherman has only to head and gut the small fish as they are caught, and no action can be taken against him with any definite chance of success. In a previous report dated 30th June, 1934, I have given a list of small hapuka caught with the weights and lengths set out alongside, and I would recommend that the size limit for hapuka be changed from 5 lb. weight to a total length of 2 ft. from the snout to the tip of the tail, or a length when headed of 15 in. measured from the posterior side of the base of the pectoral fin to the tip of the tail.

Conclusions.

With regard to the effect of Danish-seining in the Sounds I do not think that the open season of four months has done any material harm to these fishing-grounds from the point of view of the adequate conservation of the flat fishes.

There is no evidence of the wholesale destruction of under-sized flat fish by Danish-seiners. Some unmarketable fish, such as elephant-fish and dogfish, *may* have been destroyed and wasted, but as a rule they are thrown over the side alive, as the fisherman is too busy to kill them.

After due consideration of the results obtained by this small investigation, I can see no reason why the Danish-seiners should not be allowed to use this ground again next season (1935), and if this is permitted I would like to stress the importance of my being on the spot, to sample the catches, so as to estimate the result of the eight months' closure. Finally, I wish to draw your attention to the inadequate policing of the grounds. The lay of the land definitely favours the poacher, and it is only fair to fishermen who abide by the regulations that poaching should be stopped by catching and making an example out of any poachers who use these grounds during the close season, or who at any time fish in the waters above Tawera Point.

M. W. Young,
Marine Biologist.

Table 1.—Catches of Marketable Flat-fish.

(Figures in this table refer to hauls actually observed and from which fish were measured. They do not include data from other Danish seiners operating in Pelorus Sound during the same period.)

Month during which Observations were made.	Number of Total Hauls.	Number of Foul Hauls.	Number of Clear Hauls.	Total Catch (Cases).	Average Catch per Haul (Cases).		Catch per Haul (Cases).	
					Clear Hauls.	Total Hauls.	Highest.	Lowest.
April	12	2	10	32·50	3·25	2·70	5·50	0·25
June	6	1	5	4·25	0·85	0·70	1·50	0·25
July	12	3	9	6·30	0·70	0·52	1·50	0·13
Totals ..	30	6	24	43·05	1·79	1·43	5·50	0·13

Note.—A case contains approximately 65 lb. of fish.

Table 2.—Dab Measurements.

Numbers of Fish at each Centimetre of Length. Combined Results for each Trip.

Trip.	Centimetres.																					Total Fish.
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
April	..	..	11	58	165	242	324	315	244	187	174	163	183	144	83	31	33	11	1	..	1	2,370
June	..	..	3	20	57	58	58	43	39	20	16	14	10	7	5	6	4	1	..	..	..	361
July	5	34	86	113	98	72	78	54	45	29	31	13	9	1	5	2	..	1	..	1	..	677
Totals ..	5	34	100	191	320	372	460	412	328	236	221	190	202	152	93	39	37	13	1	1	1	3,408

These results expressed as percentages of the totals will be seen in Table 3.

Note. — 23 centimetres represents the legal limit (9 in.), below which fish must not be retained. In practice most fishermen discard all fish below 24 cm. unless they are in exceptionally good condition.

Table 3.—Numbers of Fish at each Centimetre of Length exprsseed as a Percentage of the Total Fish in each Sample.

Combined Results for each Trip.

Trip.	Centimetres.																					Number of Fish.
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
April	..	..	0·46	2·44	6·96	10·21	13·66	13·28	10·29	7·88	7·34	6·87	7·71	6·07	3·50	1·30	1·39	0·46	0·04	..	0·04	2,370
June	..	..	0·83	5·54	15·78	16·06	16·06	11·91	10·80	5·54	4·43	3·87	2·77	1·94	1·38	1·66	1·11	0·28	..	..	..	361
July	0·74	5·02	12·70	16·68	14·47	10·62	11·52	7·98	6·64	4·27	4·55	1·92	1·32	0·15	0·74	0·29	..	0·15	..	0·15	..	677
Totals ..	0·15	0·99	2·93	5·60	9·38	10·91	13·49	12·08	9·62	6·92	6·48	5·57	5·92	4·46	2·73	1·14	1·08	0·38	0·03	0·03	0·03	3,408

Note.—23 centimetres represents the legal limit (9 in.), below which fish must not be retained. In practice most fishermen discard all fish below 24 cm. unless they are in exceptionally good condition.

TABLE 4.—DAB MEASUREMENTS, COMBINED-SEXED SAMPLES, JULY, 1934.

Number of Fish at each Centimetre of Length.

—	Centimetres.																				Totals.
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Males	3	21	56	71	40	20	8	7	3	..	3	..	..	..	..	..	..	..	..	..	232
Females	..	..	8	18	31	31	48	26	23	18	16	5	5	1	3	2	..	1	..	1	237
Total ..	3	21	64	89	71	51	56	33	26	18	19	5	5	1	3	2	..	1	..	1	469

Fourteen specimens whose sex was doubtful are omitted from this table. The double bar between 22 and 23 cm. represents the legal limit of size.

TABLE 5.—SAME DATA AS ABOVE EXPRESSED AS PERCENTAGES OF THE RESPECTIVE TOTALS.

—	Centimetres.																				Totals, Number of Fish.
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Males	1·3	9·1	24·1	30·6	17·2	8·6	3·4	3·0	1·3	..	1·3	..	..	..	..	..	..	..	..	..	232
Females	..	..	3·4	7·6	13·1	13·1	30·2	11·0	9·7	7·6	6·7	2·1	2·1	0·4	1·3	0·8	..	0·4	..	0·4	237
Total ..	0·6	4·5	13·6	19·0	15·1	10·9	11·9	7·0	5·5	3·8	4·1	1·1	1·1	0·2	0·6	0·4	..	0·2	..	0·2	469

Table 6.—Blue-cod Measurements.

Centimetres.	Males.			Females.			Totals.		
	First Trip.	Third Trip.	Total Males.	First Trip.	Third Trip.	Total Females.	First Trip.	Third Trip.	Both Trips.
20	..	1	1	1	..	1	1	1	2
21	..	..	..	..	..	..	..	..	..
22	3	..	3	3	..	3	6	..	6
23	5	2	7	1	1	2	6	3	9
24	8	2	10	5	2	7	13	4	17
25	..	4	4	..	2	2	..	6	6
26	9	2	11	6	..	6	15	2	17
27	5	2	7	7	7	14	12	9	21
28	8	3	11	17	2	19	25	5	30
29	4	3	7	11	5	16	15	8	23
30	..	2	2	..	1	1	..	3	3
31	4	5	9	7	..	7	11	5	16
32	6	4	10	3	1	4	9	5	14
33	10	5	15	1	..	1	11	5	16
34	3	5	8	1	1	2	4	6	10
35	..	2	2	..	1	1	..	3	3
36	5	4	9	1	..	1	6	4	10
37	4	1	5	..	..	..	4	1	5
38	6	1	7	..	..	..	6	1	7
39	1	1	2	..	..	..	1	1	2
40	..	3	3	..	..	..	..	3	3
41	3	..	3	..	..	..	3	..	3
42	1	..	1	..	..	..	1	..	1
43	..	..	..	..	..	..	..	..	..
44	..	..	..	..	..	..	..	..	..
45	1	..	1	..	..	..	1	..	1
46	..	..	..	..	..	..	..	..	..
47	1	..	1	..	..	..	1	..	1
48	..	..	..	..	..	..	..	..	..
Totals	87	52	139	64	23	87	151	75	226

The bar between 30 and 31 centimetres represents the legal limit 12 in. below which fish must not be retained.

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