

1928.
NEW ZEALAND.

MARINE DEPARTMENT

ANNUAL REPORT FOR 1927-28.

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

YOUR EXCELLENCY,—

Marine Department, Wellington, 30th July, 1928.

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

I have, &c.,

F. H. D. BELL,

For the Minister of Marine.

His Excellency General Sir Charles Fergusson, Bart., LL.D., G.C.G.,

K.C.B., D.S.O., M.V.O., Governor-General of New Zealand.

REPORT.

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

SIR,—

Marine Department, Wellington, 25th July, 1928.

I have the honour to submit this my fourth annual report on the operations of the Marine Department for the financial year ended the 31st March, 1928.

FINANCIAL.

The Department's cash position shows a slight improvement on last year's figures, the surplus of receipts over payments for 1926-27 being £13,702, and for 1927-28 £14,697. The following comparative statements of the receipts and payments for the past seven years are interesting, showing as they do that the Cash Account has risen from a deficit of £78,000 in 1921-22 to a surplus of £14,697 in 1927-28 :—

Receipts.

Branch.	1921-22.	1922-23.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
Shipping Branch—	£	£	£	£	£	£	£
Light dues	41,311	39,689	76,868	80,469	78,709	82,082	80,763
Engagements, discharges, &c.	3,968	4,108	4,027	4,155	4,532	4,074	3,658
Survey fees	3,354	3,202	4,666	5,027	5,750	5,310	4,957
Examination fees ..	586	396	370	417	431	379	322
Miscellaneous receipts ..	1,076	1,288	1,331	1,174	823	449	461
Harbours—							
Pilotage, port charges, &c.	648	765	769	843	871	934	1,768
Foreshore revenue ..	1,175	1,131	2,904	4,579	5,374	6,041	5,781
Fisheries—							
Sale of oysters	7,763	7,702	7,356	8,395	10,205	8,345	7,315
Sundry receipts	324	324	926	667	804	738	779
Inspection of Machinery—							
Inspection of boilers, &c. ..	13,102	17,300	16,568	18,417	17,289	19,136	19,969
Examination fees	602	618	635	649	568	464	425
Tramways Act—							
Examination fees	57	49	104	84	91	92	73
Ross Sea Revenue	..	..	200	200	1,721	2,921	7,177
Miscellaneous Receipts ..	..	..	653	307	2,278	2,519	327
Totals	73,696	76,572	117,377	125,383	129,446	133,484	133,775

Payments (Net Vote).

Branch.	1921-22.	1922-23.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	£	£	£	£	£	£	£
Head Office	*	9,169	8,433	9,378	9,148	9,687	9,214
Harbours	5,194	4,216	6,279	3,911	3,862	4,338	7,882
Lighthouses	37,085	27,734	25,503	26,018	26,038	25,273	24,119
Meteorological Office ..	3,909	5,314	5,671	6,009	6,007	..	..
Mercantile Marine ..	12,632	11,901	13,422	14,262	15,413	14,813	15,087
Inspection of Machinery ..	27,492	25,279	24,821	24,714	26,181	28,294	27,045
Fisheries	13,784	10,456	10,792	12,539	15,351	14,922	14,238
Government Steamers ..	34,184	19,675	21,155	19,956	18,642	21,215	19,638
Miscellaneous Services ..	17,415	3,460	1,573	2,676	1,359	1,240	1,855
Totals ..	151,695	117,204	117,649	119,463	122,001	119,782	119,078

* It was formerly the practice to include Head Office expenditure under miscellaneous services.

It will be observed that the receipts have increased from £73,696 in 1921-22 to £133,775 in 1927-28, while the payments have decreased from £151,695 in 1921-22 to £119,078 in 1927-28. Thus by an increase of £60,079 in receipts and a decrease of £32,617 in payments the Department has improved its cash position to the extent of £92,696 in seven years.

Turning now to the Income and Expenditure Account, which is the really reliable index of the Department's financial position, the figures for recent years are as follows :—

Revenue.

Branch.	1922-23.		1924-25.		1925-26.		1926-27.		1927-28.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Shipping Branch—										
Light dues	39,688	16 8	80,467	6 2	82,875	6 3	81,064	9 8	81,247	11 8
Engagement and discharge fees	3,179	11 0	3,420	14 0	3,664	15 3	3,124	13 3	2,790	2 6
Survey fees	3,095	9 0	5,010	0 4	6,137	16 11	5,371	7 8	5,144	7 6
Examination fees ..	395	12 6	417	5 0	429	10 0	379	5 0	321	5 0
Miscellaneous	1,289	0 4	1,175	6 3	823	14 3	505	18 3	427	5 11
Harbours—										
Pilotage, port charges, &c.	764	14 6	842	18 7	870	11 8	920	17 1	1,801	18 10
Foreshore revenue ..	1,126	14 1	4,393	19 1	5,704	2 4	5,988	17 4	6,212	2 3
Inspection of Machinery—										
Inspection fees, &c. ..	17,126	19 0	17,256	2 10	18,005	8 10	19,531	8 3	19,549	16 9
Examination fees ..	667	0 0	732	18 0	657	5 0	556	4 0	497	5 0
Fisheries—										
Net profit from sale of oysters	2,546	9 6	2,139	10 1	2,517	3 11	1,347	11 7	1,003	17 11
Fishing-boat license fees, &c.	324	9 6	477	14 6	575	5 4	629	15 9	845	0 1
Rental of toheroa-beds ..	10	0 0	300	0 0	300	0 0	300	0 0	300	0 0
Government Steamers—										
Freight, passage-money, &c.	1,785	0 7	4,793	0 10	3,185	17 8	5,134	9 6	1,458	9 2
Ross Sea Revenue ..	..	..	200	0 0	1,720	12 6	2,921	5 0	7,176	15 0
Miscellaneous Revenue ..	2,800	11 4	1,696	1 6	1,818	1 10	1,693	12 2	1,616	3 7
Totals ..	74,800	8 0	123,322	17 2	129,285	11 9	129,469	14 6	130,392	1 2

Expenditure.

Head Office	9,612	2 8	9,292	7 4	9,626	13 9	10,007	16 10	9,721	15 2
Harbours	4,826	13 2	3,921	2 11	4,295	13 3	3,938	6 0	7,790	0 0
Lighthouses	26,995	19 5	26,823	6 5	24,220	2 2	24,157	5 4	24,266	9 2
Meteorological	5,374	0 3	5,863	19 2	6,124	12 6	..	..	..	..
Mercantile Marine ..	15,150	17 11	17,896	11 0	24,626	5 5	25,021	18 8	24,792	14 9
Inspection of Machinery ..	27,015	0 0	26,124	16 11	20,793	2 9	22,288	13 8	21,842	2 1
Fisheries	4,545	3 2	2,890	13 10	3,179	2 6	3,385	5 11	3,389	19 10
Government Steamers ..	21,697	19 6	21,837	5 4	24,309	19 11	22,605	0 4	20,733	16 9
Miscellaneous Services ..	2,655	3 8	1,734	3 1	2,189	17 10	2,861	17 4	2,161	11 7
Grants and Subsidies ..	1,510	0 0	150	0 0	540	0 0	290	0 0	594	0 0
Depreciation	8,035	4 9	8,844	18 9	8,862	19 6	9,032	5 3	9,158	5 10
Interest on Capital ..	15,716	7 3	17,737	15 7	17,811	11 0	18,005	6 0	18,119	18 0
Totals ..	143,134	11 9	143,117	0 4	146,580	0 7	141,593	15 4	142,570	13 2

The following statement setting out the financial result of each of the past seven years, both before and after the payment of interest on capital, gives an indication of the Department's progress towards the equalization of expenditure and revenue :—

Year.				Before paying Interest on Capital.			After paying Interest on Capital.		
					£	s. d.		£	s. d.
1921-22	..	..	..	Deficiency	74,146	4 2	Deficiency	95,153	14 11
1922-23	..	..	..	„	53,456	11 3	„	69,172	18 6
1923-24	..	..	..	„	9,759	8 1	„	27,231	4 9
1924-25	..	..	..	„	2,144	4 11	„	19,882	0 6
1925-26	..	..	..	Surplus	517	2 2	„	17,294	8 10
1926-27	..	..	..	„	5,881	5 2	„	12,124	0 10
1927-28	..	..	..	„	5,941	6 0	„	12,178	12 0

The position now is that the Department requires at least an additional £12,000 annually in order to place it on a self-supporting basis. This loss is made up somewhat as follows: Survey of ships, £5,500; inspection of machinery, £5,500; fisheries, £1,000.

Ross Sea Dependency.

The royalties on whale-oil procured in the Ross Sea realized a substantial increase during 1927-28. The following statement shows the revenue received each year since the Dependency has been under the Department's administration: 1923-24, £200; 1924-25, £200; 1925-26, £1,720 12s. 6d.; 1926-27, £2,921 5s.; 1927-28, £7,176 15s. For the last whaling season it is anticipated that the royalties, &c., will amount to approximately £13,000.

Foreshore Revenue.

The revenue from foreshores for the year under review amounted to £6,212 2s. 3d., as compared with £5,988 17s. 4d. for the previous year.

Harbours.

The revenue from port dues in respect of various small harbours under the administration of the Department showed an appreciable increase this year, amounting to £1,801 18s. 10d., as against £920 17s. 1d. last year. The increase was due principally to the raising of the port charge at Picton and to the increased wharfage collected at Karamea.

Formerly Picton Harbour was being run at a loss, and, in order to place it on a self-supporting basis, the port charge was increased to a more equitable rate. The amended by-law came into operation on the 1st May, 1927, with the result that, for the first time for a considerable number of years, the revenue from this harbour in 1927-28 exceeded the expenditure.

Karamea Harbour also showed a much improved financial position this year, a result which, I am glad to say, was brought about by increased trade and not by increased port dues. The export of timber was 1,314,080 superficial feet in 1927-28, as compared with 288,988 superficial feet in 1925. The wharfage collected at this port during the past three years is as follows: 1925-26, £269 4s. 11d.; 1926-27, £543 18s. 7d.; 1927-28, £814 13s. 1d.

Both Hokianga and Kaipara Harbours are being run at a loss, and, although the shipping at these two ports at present is not sufficient to make them fully self-supporting, the loss could be reduced to some extent by increasing the scales of port dues, which scales have been in operation since before 1900.

WESTPORT HARBOUR.

The following are the receipts and payments in respect of Westport Harbour for the past seven years :—

Year.				Receipts.	Payments.
1921-22	..	..	..	31,412	75,642
1922-23	..	..	..	44,020	50,303
1923-24	..	..	..	44,126	44,588
1924-25	..	..	..	49,566	40,949
1925-26	..	..	..	56,920	49,876
1926-27	..	..	..	63,181	46,907
1927-28	..	..	..	65,697	69,108

The receipts have increased from £31,412 in 1921-22 to £65,697 in 1927-28, and the payments have decreased from £75,642 in 1921-22 to £69,108 in 1927-28, which means that there has been a net improvement of £40,639 in the seven years the Department has had control of the port. In this connection it must be borne in mind that during 1927-28 the sum of £13,453 was expended on protective works, with the object of making the harbours safer for shipping.

With regard to the Income and Expenditure Account, the surplus for the year after the payment of interest and sinking-fund amounted to £81 6s. 6d. The reason for the marked decrease is the special expenditure on protective works referred to above.

The following statement shows the net tonnage of shipping entering the port, the tonnage of coal exported, and the financial result for each year since 1921-22 :—

Year.					Net Tonnage of Shipping entered.	Tonnage of Coal exported.	Financial Result.		
							£	s.	d.
1921-22	..	..	..	..	273,706	480,873	Deficiency	38,113	2 7
1922-23	..	..	..	..	332,401	573,487	„	12,038	9 4
1923-24	..	..	..	..	275,762	442,070	„	4,333	14 7
1924-25	..	..	..	..	334,827	556,669	Surplus	5,711	17 0
1925-26	..	..	..	..	386,669	552,949	„	5,630	8 0
1926-27	..	..	..	..	459,670	637,165	„	10,207	1 4
1927-28	..	..	..	..	466,021	623,256	„	81	6 6

This statement is evidence of the satisfactory improvement in the finances and trade of the harbour since the Department assumed control.

The new scale of port dues was brought into operation on the 1st May, 1927, and, although it placed the incidence of the charges on a more equitable basis, it did not have the effect of materially increasing revenue. The port dues collected during 1926-27 amounted to £7,768 2s. 5d., and during 1927-28 to £8,496 11s. 9d.

The bunkering trade at Westport continues to show a steady increase, the number of vessels having called for bunker coal during the past three years being as follows : 1925-26, 20 ; 1926-27, 44 ; 1927-28, 51.

The past year has been an active one as far as construction and maintenance are concerned, and a great deal of work has been carried out.

The average depth on the bar for the year was 22 ft. 11 in. at high water, as compared with 24 ft. 10 in. for the previous year. The “Eileen Ward” has been kept steadily employed whenever conditions were favourable, and handled a total of 380,000 cubic yards. During the latter half of the year considerable shoaling took place on the bar, and opportunity was taken to push on with dredging on every possible day (including Sundays) when weather conditions permitted. Arrangements have also been made to put the “Rubi Seddon” into commission to supplement the work of the “Eileen Ward.”

The reduction in depth on the bar has been caused to a very large extent by a combination of circumstances most exceptional for Westport—namely, a continuous easterly set of the sea, which has the effect of banking up the bar, and an absence of heavy floods, which can usually be relied upon to clear out the bar to its normal depth. This subject is a highly-complex one. The forces of nature are working so gradually and irresistibly that it is quite possible that a measurable increase in the depths may occur coincidentally with the increased dredging which has now been commenced, and yet that increased depth may not be caused by the dredging, because the cycle of adverse winds may give way to a lengthy period of favourable winds and increased rainfall.

In addition to dredging on the bar, the bucket dredge “Maui” was hired from the Gisborne Harbour Board and utilized to deepen the berthages and increase the swinging-area.

The breakwaters are in excellent order. No work has been found necessary on the eastern breakwater, but 2,400 tons of selected 15- to 25-ton stone was placed on the western breakwater, and a further 600 tons has been reserved for use here if required.

The erosion which was taking place immediately above the railway-bridge has been arrested by the construction of a short stone training-wall, approximately 4 chains long. This wall contains some 8,200 tons of stone, and has already performed good work, the main current of the river having been forced farther out into the channel. In addition to this some 10 chains of river-bank between the down-stream end of the erosion and the railway-bridge, where previous stone facing was collapsing, has been rebuilt with some 5,000 tons of stone.

In order to cope with the situation at what is termed Organ’s Island, adjacent to the relief channel, extensive stonework has been carried out in facing the river-bank. Ten chains of work have been completed, and there are 40 chains yet to do, which it is hoped to complete during the coming year. In order to carry out this work it has been necessary to construct one mile and a half of railway-track, including a bridge 450 ft. long, across the old river-bed near the Orowaiti overflow channel.

Erosion has also been taking place on the right bank of the river some distance above the Buller Bridge, adjacent to properties owned by Messrs. Hannah, Organ, and Howey. This erosion covers a considerable length of the bank, but, as the stream has beached considerably at this point, it was decided to try and deal with the problem by planting willows. A strip of land 2 chains wide and the whole length of the erosion was therefore acquired, and extensive willow-planting carried out. In spite of the very dry summer the majority of the trees seem to have taken well, and it is hoped that they will soon be successfully established.

A great deal of snagging was carried out above the Cape Foulwind Railway-bridge, especially towards the end of the year. A large number of snags, some of very large proportions, were removed, and many others were loosened for removal by floods.

The quarry at Cape Foulwind is now in good working-order, and an ample supply of good stone is in sight. The shifting of a 25-ton crane, compressor, boiler, and other plant from Tauranga Bay quarry was completed, and the railway-track thereto has been taken up and used on other parts of the work. One 25-ton and one 10-ton crane are in full operation, and the provision of a 5-ton crane is in hand.

Two locomotives are in constant use transporting the stone to the various protective works, the output from the quarry to all works during the year being 22,000 tons.

A great deal of survey work was carried out, including soundings in the roadstead, swinging-basin, and berthage area, traverses of various shingle beaches, lagoons, &c., and investigations at the Orowaiti overflow.

All plant has been well maintained during the year, and all buildings were completely renovated and painted.

In my last report it was mentioned that the Railway Department, which controls the wharves at Westport, was calling for tenders for an up-to-date electric crane for the coal-wharf. Owing to unforeseen circumstances the completion of negotiations for the purchase was delayed, but the contract has now been let, and the crane is due to arrive in New Zealand at the end of May next.

HARBOUR BOARDS' SPECIAL LEGISLATION.

During the year the following Bills were promoted and passed :—

Auckland Harbour Board Empowering.—This Bill dealt with the following matters :—

- (a) Empowered the Board to lease to the City Council the Orakei Basin inside the Railway Embankment for a boating, bathing, and camping area :
- (b) Empowered the Board to reclaim certain land at Devonport and transfer it to the Devonport Borough Council on payment by the Council of the actual cost of reclamation ; the land to be used for road and recreation purposes ; and vesting a small portion of reclaimed land in the Board :
- (c) Empowered the Board to erect social rooms, &c., for the use of its employees at the Board's quarries :
- (d) Validated certain expenditure on production of Board's Jubilee Booklet.

Napier Foreshore.—This Act empowered the Board to lease to the Napier Borough Council a part of its endowment land adjoining the Marine Parade for recreation purposes ; and for the Council to sublet the area on occasions of carnivals, fetes, &c.

Napier Harbour Board Empowering Loan and Constitution Amendment.—This Act dealt with the following matters :—

- (a) Gave effect to the recommendations of the Napier Harbour Commission in the matter of endowment reclamation and the allocation of unexpended loan-moneys in hand :
- (b) Increased the membership of the Board from thirteen to fourteen by giving an additional member to represent the Borough of Hastings :
- (c) Empowered the Board to borrow the necessary money to pay the expenses of raising certain loans to pay off loans falling due :
- (d) Validated the excess sum borrowed over and above the loan authorization, the said excess having been raised through a misunderstanding.

Napier Harbour Board Loans Enabling Act, 1918, Extension.—The principal Act of 1918 authorized the Board to borrow the money necessary, with the amount of sinking fund, to meet the repayment of certain authorized loans as they fell due. The Act of last session extended the provisions of the principal Act to the reborrowing of the amount then authorized, less further sinking funds accrued, when such loan falls due.

Whangarei Harbour Board Vesting and Empowering.—This Act vested certain small areas of foreshore, as an endowment, in the Board.

In addition to these Bills the Timaru Harbour Board promoted the Timaru Harbour Board Loan Bill, purporting to authorize the Board to borrow the sum of £200,000 for the purpose of carrying out harbour-works in extension and improvement of the port. This Bill was opposed by the Department on the ground that the trade of the port and the prospects of its improvement in the near future did not justify the carrying-out of the work, and that the financial position of the Board was such that if the loan were authorized the district would be unduly loaded with increased rates and charges to cover the additional interest and sinking fund. After thorough investigation the Local Bills Committee recommended that the Bill be not allowed to proceed, and this recommendation was adopted by Parliament.

The Board has now submitted alternative schemes of works for investigation by a Commission as provided for in the Timaru Harbour Board Act, 1876, with a view to promoting loan legislation again. The 1876 Act empowers the Commission to approve the plans from the point of view of practicability of the schemes only ; but under the authority of the Commissions of Inquiry Act, 1908, the order of reference of the present Commission has been extended to enable it to view the proposals from the point of view of the economic, financial, and all other relevant considerations, and also to suggest some other modified scheme if none of the schemes submitted by the Board meets with its approval.

The report of the Commissioner has now been received, but as it has not yet been discussed by the Board I refrain from commenting thereon.

HARBOUR-WORKS.

Karamea Harbour.—The erection of the new wharf-shed was completed early in the year. This is a substantially constructed building, 30 ft. by 20 ft., and its provision has considerably facilitated the work at the port. In connection with the development work which was necessary in order to enable the permanent stonework at the training-walls to proceed, 3 miles 50 chains of tram-line from the training-wall to the quarry-site at the Oparara Quarry has been completed and the track laid throughout. Two miles of ballasting has been completed, 300 lineal feet of trestling erected, and a

further length of 280 ft. from the end of the tram-line to the beginning of the training-wall is in hand. A considerable amount of work has been involved in the stripping and general opening-up of the quarry-site. The blacksmith's shop and benzine-store have been erected, together with one cottage and eight huts for workers' accommodation. Four end-tip and four side-tip stone-wagons have been delivered, whilst a petrol locomotive, air-compressor, and 5-ton crane have been procured and are awaiting shipment.

Okarito Harbour.—A thorough engineering survey of this locality was made, covering the harbour lagoon and roadstead, the final plans and report being in course of preparation.

Russell.—The new ferro-concrete wharf has been completed during the year, and is now in use.

Whangaroa.—It is proposed to erect two new wharves here, one at Whangaroa, in reinforced concrete, which is almost complete, and one at Totara North, for which a contract has been let for the erection in timber.

Waikokopu Wharf.—An addition was made to the main wharf to strengthen it and enable a 30-ton crane to be mounted on it. This crane, which was designed by the Department and constructed in New Zealand, was provided to enable the transformers and other heavy lifts for the Waikaremoana Power-station to be handled. The plans for the stone breakwater at this port were also prepared, and a contract has been let for its construction.

Waitangi Harbour (Chatham Islands).—Extensive harbour surveys were carried out, plans prepared, and a very full examination made of this harbour to determine the possibilities of erecting a wharf there, and of the economic position generally.

Karaka Point Wharf.—Practically all timber for this wharf has been received, and a contract is being arranged for the erection.

Halk-moon Bay Wharf.—Amended plans were prepared for this wharf, all material was ordered, and the work is well in hand.

Matakana Wharf.—The erection of a wharf, shed, and approach was completed during the year. The work was carried out by the Rodney County Council and subsidized by the Department.

Marlborough Sounds.—The wharf at Manaroa has been repaired and extended, and the whole position regarding wharves in the Sounds has been investigated and reported on.

A number of minor works have been carried out, among which were : Nugget Bay fishing-station—repairs to breakwater ; Tahakopa Bay improvement—surveys and reports ; Waikawa Harbour—fisherman's wharf ; Raupo Ferry slip—plans, &c. ; Rawene car and launch landing—plans, &c.

LIGHTHOUSES.

North Cape Lighthouse.—The apparatus for this lighthouse, which is to be of the automatic flashing type with an optical range of sixteen miles, has come to hand, and the site has been prepared for its erection. Unfortunately, the weather was too rough to land the material on the last trip of the lighthouse tender, but it is anticipated that the light should be in operation by the end of the current year.

Kaipara Harbour (Sail Point).—A small automatic flashing light operated by compressed acetylene gas has been purchased and is at present being installed. It will have an average range of seven miles, and should be of great assistance to shipping in this locality, the definition of the Main channel being very necessary on account of the large amount of shoaling taking place.

Piako Beacon.—The original oil-burning leading-lights have been replaced by a single automatic flashing light fitted with sectors to define the channel at the entrance to the river.

Manukau South Head.—It was decided to convert this lighthouse to automatic operation ; at present it is a third-order watched light, and the necessary flasher and automatic controlling mechanism have been procured for installation in the existing lens and tower.

Cape Brett Lighthouse.—The keepers' residences were repaired and renovated.

Godley Head Fog-signal.—The complete apparatus for a large diaphone fog-signal, similar in every respect to that recently installed at Pencarrow, was procured, and erected with the necessary building. The signal has been in operation for some time and is giving satisfactory service. In addition to the assembly proper, it was necessary to construct an incline and track to enable the materials to be lowered to the site of the fog-signal.

Godley Head Access Road.—A road four miles in length giving access to the lighthouse was also formed from Evans Pass to the lighthouse.

Kaikoura Lighthouse.—This is a new light which has been erected to fill the comparatively long gap between Cape Campbell and Godley Head. The light itself, which consists of an open-flame automatically-operated flasher is a 500 mm. catadioptric lens, was procured and erected during the past year. The lens is mounted on a small iron tower containing the gas-holders.

Kahu Rocks.—The proposals to install a light at this point were investigated carefully last year, and following that investigation a final survey was made and plans prepared for an automatic light with an optical range of sixteen miles. This light will be of the new automatic Dalen type ; and, as the cost of placing it on the rock itself would be very high, it has been arranged to place it on the foreshore immediately adjacent and cover the rock itself with a red sector. To have placed the light on the actual rocks, which are very low and difficult of approach, would have involved an expense running probably into many thousands of pounds. The prominent position selected will compensate for the fact that the light is inshore of the danger. The order for the apparatus has been placed, and the erection will be proceeded with as soon as it arrives.

Cape Egmont.—The existing watched light on this point is a fixed light, and has been in use for many years, being one of the earliest provided. Owing to the multiplicity of powerful electric lights in the locality, and the confusion caused by the headlights of motor-cars on the main road between

New Plymouth and Opunake, it has been decided to provide a new and up-to-date light with a definite characteristic. An order has therefore been placed for a powerful new revolving light. This light will be the most modern yet installed on the New Zealand coast. It will be fitted with triple lenses giving three flashes at definite intervals. The whole of the apparatus, both the lighting and revolving parts, will be automatically operated and governed by the pressure of the gas, the whole process in turn being controlled by a daylight valve which automatically starts the mechanism as the daylight fades, and stops it again at daybreak.

Cow Island, Coromandel.—A small automatic light has been erected here.

Cape Foulwind.—A new type of burner was provided at this light, and has resulted in a considerable and satisfactory increase in the optical range.

Dog Island.—Two new six-roomed dwellings were erected for the lightkeepers. The old stone residences dated back to 1868, were inconvenient, and were falling into disrepair.

Waipapapa Point Light.—Fairly extensive repairs were carried out to the residences here.

Tory Channel.—There are at present two oil-burning lights in Tory Channel, but difficulty is sometimes experienced by masters of vessels in locating these lights. It is proposed to replace them by automatic flashing lights situated in such positions that they will be of greater use to ships making or leaving the entrance. The proposals for the new system of lighting the channel make provision for a light on West Head.

ADJUSTMENT AND SURVEY OF SHIPS' COMPASSES.

During the year, 195 compass-adjustments have been carried out on all ships coming under our jurisdiction. This has been performed by qualified adjusters of ships' compasses who are licensed by this Department for the purpose, and in some cases by the master of a ship when he has held the necessary qualifications. The work performed by the licensed adjusters is subjected to inspection by this Department's Inspectors of compasses, and the results of all compass-adjustments and compass-inspections are investigated at the Nautical Adviser's office. These investigations show that the adjustments have been satisfactorily performed and that the Inspectors have exercised a care in this branch of their duty which is commendable.

It has not been found necessary to detain any ship owing to an inefficient compass equipment, but in a few cases in which compass-deviations have been considered unstable a readjustment has found desirable.

MARINE CASUALTIES.

During the year no loss of life has resulted from a marine casualty to any trading-vessel, but two pleasure-launches were posted as missing, involving the loss of three men. Since 1924 only two lives have been lost at sea from trading-vessels.

Casualties of comparatively slight consequence, embracing strandings, fires, collisions with wharves, lighters, a hulk, a ship at anchor and between ships, have been of normal extent. Of those worthy of reference one ship became a total loss by stranding, and one ship suffered extensive damage by stranding, and was fortunate in reaching the shelter of a harbour.

Three casualties, two resulting from strandings and one from a collision between two ships, in each case necessitated a magisterial inquiry being held, and one magisterial investigation into an occurrence not amounting to a casualty was held. Of the total collision cases none occurred beyond the limits of a port.

The major casualty during the year was that concerning the Norwegian whale-factory ship "C. A. Larsen," 13,246 tons gross. This ship suffered considerable structural damage when approaching Paterson Inlet, Stewart Island. This casualty does not impugn the correctness of the very few depths shown on the chart of this place.

In my last report mention was made of the fact that a large overseas steamer, the s.s. "Northumberland," had sustained serious damage as the result of striking a submerged obstruction at a position which is shown by the Admiralty Chart to have been well surveyed and clear of obstruction. The s.s. "Tutanekai" made a thorough search of the locality where the s.s. "Northumberland" is said to have struck, but after sweeping the area for five days no obstruction could be located. In addition to this, arrangements were made for H.M.S. "Laburnum," H.M.S. "Veronica," and the mine-sweeper "Wakakura" to make an exhaustive search of the locality in question. An area three miles long by two miles wide was thoroughly swept to a depth of 10 fathoms and no obstruction was encountered. Lines of soundings were taken, and the results indicated that the chart of the locality was accurate.

NOTICES TO MARINERS AND NAVIGATION WARNINGS.

Navigational information of importance, relating to changes in the many descriptions of "aids" to navigation on our coasts and in our harbours and at more remote places frequented by our ships, and also concerning newly discovered obstructions, derelicts, wreckage, &c., or other dangers which might affect shipping, has been published throughout the Dominion and overseas on occasions when such has been deemed necessary. This information, if of a general character and not requiring urgent dissemination, is issued in the form of a "Notice to mariners" conveying the information in a prescribed form suitable for use on ships and in hydrographical offices for amending charts used by navigators, but if of urgent maritime importance requiring prompt publicity among shipping it is broadcasted by radio-telegraphy in the form of a "navigation warning." During the year ninety-five such notices to mariners were published in the *New Zealand Gazette*, extracts of which have been circulated among shipping; and twelve navigation warnings were broadcasted by radio-telegraphy. The latter means of communication provides a ready facility for rapidly making known to ships information concerning

a newly discovered danger, or other hindrance to navigation, the existence of which navigators might be quite unaware. Any benefit resulting from this rapid means of communication may become more widely distributed among ships of this Dominion than would be the case in other countries, as our wireless regulations require that wireless shall be carried on comparatively smaller ships than is required by the regulations of other nations.

Of the total urgent radio-broadcast navigation warnings, nine had reference to unforeseen temporary changes at coastal lights, one to a missing launch, one to a missing airplane, and one to a derelict which was considered a menace to shipping.

Of the total notices to mariners, sixty had reference to navigation on New Zealand coasts and harbours, fifteen to navigation within the Commonwealth of Australia, and twenty to matters affecting the navigation of ships trading to and from this Dominion.

The issue and circulation of notices to mariners is almost an international system of exchanging information concerning matters affecting the safe navigation of ships, and this Dominion suitably reciprocates by issuing and circulating information relating to its coasts and harbours. The necessity for reciprocity in this will be appreciated when it is realized that in our harbours most of the important maritime countries are represented.

RADIO DIRECTION-FINDING FOR NAVIGATIONAL PURPOSES.

The application of radio to navigation has shown marked progress by extended use of the device now widely known as a radio-beacon. This device, installed at a salient point on shore, when used in conjunction with its component—a radio direction-finder on board a ship—provides a ready means of obtaining a position-line. By making use of two or more radio-beacons, a ship having a radio direction-finder on board is enabled to ascertain her position within reasonable accuracy by the use of well-known methods of navigation. This system would appear to have ousted the earlier systems, some of which were both expensive and complicated in their use. It has survived a lengthy experimental period, and has apparently come to stay. It is largely used in the older countries where ships are more numerous. The installation systems of radio-beacons in other countries has been closely watched, and so far it has been established the spark system of transmission is being discarded in favour of that of the interrupted continuous wave.

Very little use has been made during the past year of the radio direction-finding beacon at Cape Maria. This, of course, is due to the fact that comparatively few ships are fitted with the complementary apparatus.

With regard to the provision which was made on the appropriations for the erection of similar beacons at Lyttelton and Wellington, the Department learned that the Canadian authorities were carrying out experiments with a continuous-wave type, something other than the spark-gap type having become desirable because of interference with other wireless telegraphic operations. The advice tendered by the Canadian authorities was to the effect that, while it was early to assert positively the success of the continuous-wave type, they considered it inadvisable to proceed in the meantime with the installation of any further beacons of the spark-gap type, and consequently no further action has been taken in the meantime.

EXAMINATION OF MASTERS AND MATES.

This Department's regulations relating to the examination of masters and mates have been revised so as to conform with those issued by the Board of Trade of Great Britain in 1927, thus ensuring that the examinations for foreign-going certificates conducted by this Department are identical to those carried out by the Board of Trade. Examinations for all grades of certificates are held at Wellington monthly, and every three months at both Auckland and Lyttelton.

During the past twelve months the total number of examinations held in this Dominion for certificates of competency as master and as mate, and for certificate-holders who desired to have their certificates endorsed as having passed the voluntary examination in compass deviation, was eighty-seven. Fourteen of these examinations were for certificates for restricted-limits ships.

The proportion of passes to the total number of examinations held during the past five years shows 49½ per cent. in 1927–28, 38½ per cent. in 1926–27, 34 per cent. in 1925–26, 46 per cent. in 1924–25, and 51 per cent. in 1923–24. The percentage of passes shows an improvement when compared with that of the previous year. The number of candidates who were successful in passing their examination at first attempt was twenty-five, this number for last year being eighteen.

Two candidates were successful in passing for the higher certificate—that of extra master—and four succeeded in passing the voluntary examination in compass-deviation. Examinations for a license as colonial pilot or in the voluntary examination in signalling were not held, there being no applicants for these qualifications.

Wellington continues to provide the greatest number of candidates for examination, the percentages of the total number of examinations held for each of the three ports being—Wellington, 69 per cent., Auckland, 22 per cent., and Lyttelton 9 per cent. These figures for 1926–27 were 59 per cent., 23 per cent., and 18 per cent., and for 1925–26, 52 per cent., 28 per cent., and 19½ per cent. respectively.

EXAMINATION IN FORM AND COLOUR VISION.

The number of sight-test examinations carried out totalled sixty-four. Of this number two candidates failed to pass the letter test. These examinations are open to all persons serving or intending to serve in the mercantile marine or in fishing-vessels, for the purpose of enabling them to ascertain whether their vision is such as to qualify them for service in that profession.

EXAMINATION OF LIGHTKEEPERS IN SIGNALLING.

Lightkeepers have been examined in the signalling part of their duties as occasion required. Six such examinations were conducted, in each case the candidate being successful. Since its introduction in 1922 thirty-nine lightkeepers have passed this examination.

NAUTICAL ALMANAC AND TIDE-TABLES.

The 26th edition of the "New Zealand Nautical Almanac and Tide-tables" was issued during the first week in November, 1927, so as to enable its contents to be earlier available to ships proceeding overseas. This publication contains the latest authentic navigational information relative to the most used ports within the Dominion, and to any changes in navigational "aids" which may have taken place since its last publication. Also, it contains tide and tidal-stream tables, sunrise and sunset tables and astronomical ephemeris used in navigation. The tide-tables were extended so as to provide daily tidal predictions for the fast-growing port of New Plymouth, and these predictions, in addition to those for Auckland, Bluff, Dunedin, Lyttelton, Wellington, and Westport, will be continued annually. This publication has, as is usual, been well received, and has had a ready sale.

WIRELESS TELEGRAPHY ON SHIPS.

During the year seventy deck officers passed the Wireless Signaller Examination, making a total of 251 deck officers who have become so qualified since the 1st January, 1926, the date on which the regulations as to ships being provided with wireless-telegraph installations came into force.

SURVEY OF SHIPS.

Certificates of survey issued to ships during the year were as follows: To seagoing steamships and auxiliary-powered vessels, 203; steamships and auxiliary-powered vessels plying within restricted limits, 537; sailing-vessels, 17. The total number of certificates issued is 757, as compared with 816 for the previous year. Included in this total are nine sea-going vessels and thirty restricted-limit vessels surveyed for the first time. The new seagoing vessels comprise one cargo-steamer of 1,600 tons register, one steam-tug, one motor-tug, one oil-tanker, one wooden motor-vessel built at Auckland, and four smaller craft. The new restricted-limits vessels are mostly launches. A small steam-tug of steel is at present being constructed at Auckland. The type of propelling-engine most favoured for launches is the petrol-engine, but as the so-called semi-Diesel engine is now obtainable in the smaller sizes, this type of engine, on account of its low running-costs and lesser fire hazard, will no doubt be more extensively adopted in the future. Under section 226 of the Shipping and Seamen Act 307 vessels were surveyed for seaworthiness and efficiency. Extensive repairs to the hull of the "Northumberland" estimated to have cost over £8,000 were carried out at Auckland.

The Board of Trade have called attention to the proper loading of coal-carrying vessels and the necessity of such vessels having prescribed proportions of breadth and draught to ensure stability. Their instructions are based on the recommendations of an informal committee on coal-carrying vessels. Recently a collier of 143 tons register was lost when on a voyage from Blyth to Dundalk. It is interesting to note that the Court of Inquiry found that, having regard to the type, design, and proportions, and to the loading of the vessel for the intended voyage, the estimated metacentric height of 9.6 in. was insufficient. Since the 1st January last it has been compulsory for all new types of seagoing vessels to be inclined, and shipowners have been requested by the Board of Trade to furnish their masters with information regarding stability to guide them in the loading of their ships. It has been the practice in England for many years to incline the larger passenger-vessels. It is hoped that the extension of the practice to all types of vessels will encourage further study of stability with a view to the presenting of the information in a form conveniently applicable to the practical problems arising in the loading of ships.

Motor-vessels and oil-burning steamships are increasing in numbers each year, and it is necessary that these vessels should carry proper fire-extinguishing appliances. It does not appear to be generally known that no one type of extinguisher is effective for all classes of fire. There are three types of extinguishers in common use—the tetrachloride extinguisher, the froth or foam extinguisher, and the ordinary CO₂ extinguisher discharging water. The tetrachloride type is the most effective for oil fires in closed compartments, as the gas can penetrate to places inaccessible to froth. The froth or foam type is most effective in open spaces, as tetrachloride gas may be dispersed by draughts. In closed passenger-spaces where fire of woodwork may occur the ordinary CO₂ extinguisher discharging water will be most effective.

Survey of Launches.—The Department's requirements in regard to the survey of launches have in the past year given rise to what may appear to be a great deal of objection. In actual fact the statement of requirements was issued in 1915 in accordance with advice received from the Imperial Board of Trade, but, owing to war conditions then existing, it was found impossible to enforce the requirements, and the matter was left more or less in abeyance. The Imperial Board of Trade is regarded in New Zealand and elsewhere in the Empire as the parent authority, and the Marine Department endeavours as far as possible to follow the practice in Great Britain.

It is to be understood in the first place that private launches do not come under the Department's survey, and that therefore the Department's requirements extend only to launches plying for hire, either with passengers or cargo. Furthermore, by the Shipping and Seamen Amendment Act of 1925 it was provided that if a ship did not exceed 6 tons register and was owned by a person engaged in some agricultural or pastoral pursuit and employed in carrying the produce or other goods of the owner, she should not be subject to the provisions of the Shipping and Seamen Act relating to survey

and to the carrying of certificated officers. This exception, however, does not apply to a ship whose length exceeds 40 ft. This class of vessel is found mostly in districts where, owing to lack of road or railway communications, farm-produce is carried by launches.

The Department's requirements to which objection has been taken relate to the insulation of engine-rooms with asbestos-board and metal sheathing, and the provision of adequate whistle or other form of apparatus for use in fog and to enable one vessel to indicate to another any change of course.

In considering the reasonableness of the Department's requirements it must be borne in mind that the Board of Trade will not allow a petrol-engine to be used at all in a passenger-launch plying for hire. This is an indication of the opinion of the Board of Trade that a petrol-engine in a passenger-launch is unsafe.

Arising out of the conference which was held with hire-launch owners in Auckland, it has been decided to amend the requirements in the following direction :—

- (1) To cancel the requirement to use asbestos-board in the engine-room, except in the case of small engines totally enclosed in a wooden box or casing. The reason for this is that as the vessels are run the asbestos-boarding is saturated by bilge-water and collapses on to the wall of the vessel, thus preventing a free flow of air and causing rot to occur.
- (2) To accept metal lining on the floor and half-way up the walls as sufficient for engine-rooms entered from a cockpit, instead of metal lining throughout.
- (3) To require the air intake of carburettor to be turned upwards, where this has not already been done by the makers of the carburettor, and fitted with gauze to damp the " back-fire " and to in any case direct the " backfire " should it pass through the gauze away from where loose petrol or vapour may be lying and away from woodwork.
- (4) To require a small tray, also covered with gauze, to be fitted under the carburettor to catch any petrol which may leak therefrom.
- (5) To require two fire-extinguishers to be carried, one tetrachloride, and one foam or froth. The reason for this is that the tetrachloride is most efficient for fires in enclosed, draught-free spaces, from which the gas cannot be dispersed. In open or partly open spaces the foam or froth extinguisher would be most effective.
- (6) To permit existing whistles or foghorns to be used, for the reason that there is not available on the market in New Zealand at the present time a whistle or foghorn of reasonable size and cost which can comply with requirements.

EXAMINATION OF MARINE ENGINEERS.

During the year 166 (168) candidates passed their examinations and 90 (121) failed. Of those who passed, 75 (70) were engineers of seagoing steamships, 7 (8) were engineers of steamers plying within restricted limits, 18 (21) were engineers of seagoing motor-vessels, and 66 (69) were engineers of motor-vessels plying within restricted limits. The figures in parentheses are those for the previous year.

REGULATIONS AS TO SAFE WORKING-LOADS FOR CARGO GEAR.

These regulations have now been in full operation since the 1st June, 1927, and only minor difficulties have been encountered in securing compliance therewith. Shipowners generally show a desire to obtain a good class of article for replacements to cargo gear. Although the effect of the regulations has been to increase the first cost of some items of cargo gear, the shipowner will ultimately receive the advantage by the longer period of service of improved-quality material. The regulations, of course, were introduced primarily to ensure safety, and there is no doubt that conditions are much more safe than hitherto. Many instances of lifting-tackle unduly loaded, badly proportioned chain slings, and neglect in annealing have been noted. Up to the end of the year fifty-eight guarantee certificates for fibre ropes were issued. Owing to the demand by shipowners for fibre ropes with a higher-grade certificate some ropemakers have improved the quality of their brands of ropes formerly classed as ordinary grade and have obtained higher-grade certificates for them.

During the year a report was received from the Home Office of experiments carried out by the National Physical Laboratory to test the efficiency of correcting the brittleness of chains by annealing. The report states that low-temperature annealing, when properly carried out, is the most practical method of correcting brittleness due to surface or skin hardening, a condition caused by repeated small blows on the chain links due to interlink action, bumping or dropping on hard ground, and chafing under hatch-coamings. Extracts from the report have been printed and distributed to users of chains and other interested persons, and copies have been enclosed in the regulations on sale. Several firms have installed small plants for the proof testing of chains. A number of tests, proof and breaking, have been carried out at the Engineering Colleges at Christchurch and Auckland.

INSPECTION OF MACHINERY.

During the year the number of inspections amounted to 40,957, which is an increase of 1,734 over last year's total. The number of new lifts installed is sixty-seven, and of new cranes twenty-six, an increase of twenty-eight and six respectively compared with last year's numbers. Pending the preparation of more comprehensive instructions regarding the safe working of lifts, it was considered desirable to issue instructions during the year dealing with gates and doors for lift-wells and cages. There were ten accidents to lifts during the year, three of which resulted in the death of a like number of persons. There is a noticeable improvement in the safety-devices now being fitted by first-class makers to passenger-lifts, but the Department encounters difficulties in obtaining reasonable protection for some types of goods-lifts.

There were nine persons killed in accidents to machinery. Three were caught by revolving shafting, one was struck by belting, one was struck by the flying fragments of an oil-tank which exploded during an experiment, one was struck by flying metal from a hydro-extractor, and three deaths were due to lift accidents.

There were seventy-four non-fatal accidents in connection with machinery. The machinery at which these accidents occurred is as follows: Woodworking machinery, 21; shafting, 9; lifts, 7; rollers, 6; meat-mincers, 4; belting and platen machines, each 3; gearing, 2; and miscellaneous machinery, 19. Many of the accidents were due to operators failing to exercise due caution in operating the machines. In some cases improvements in guarding were indicated, and suitable additional safeguards for the prevention of further accidents have in such cases been fitted. In the design of cranes a common defect is the small ratio of the pulley and rope diameters. Many cases have been noted where there is no obstacle to the use of large pulleys, and it would seem that some crane-users are not aware that, in order to obtain full value from a rope, it is essential that it should run over pulleys properly proportioned for the diameter of the rope, its construction and quality, and for the speed at which it is working. An indication of the increased service which may be expected from a rope running over large pulleys may be obtained by reference to a report of a special committee of the Institution of Mechanical Engineers. A rope 6/19 construction and of 80/90 tons per square inch breaking-strength, working at a factor of safety of 8, required 100,000 bends to fracture it when running over a pulley 22 times the diameter of the rope. When working over a pulley of 30 diameters the number of bends to fracture amounted to 250,000.

INSPECTION OF BOILERS.

The number of new boilers inspected during the year is slightly less than last year's total, and amounted to 261. The total number of boilers inspected is 7,681, as against 7,986 for the previous year. Our regulations for boiler design and construction require revision. The drafting of new regulations has been under way for some time, but, as this is a work of some magnitude and difficult to accomplish by intermittent effort, the work will have to stand over until other more pressing matters have been dealt with.

The following table shows the rapid increase during recent years in the number of inspections of both machinery and boilers:—

Year.		Number of Inspections.	Year.		Number of Inspections.
1915-16	..	17,857	1922-23	..	33,124
1916-17	..	19,362	1923-24	..	32,891
1917-18	..	21,118	1924-25	..	35,797
1918-19	..	22,614	1925-26	..	42,529
1919-20	..	25,824	1926-27	..	47,209
1920-21	..	28,553	1927-28	..	48,638
1921-22	..	31,876			

From this it will be seen that the number of inspections has increased by practically 100 per cent. since 1919-20.

During last session the Inspection of Machinery Amendment Act, 1927, was passed by Parliament. There had not been an amendment of the Inspection of Machinery Act since 1914, and the main object of the 1927 amendment was to bring the law on this subject up to date and to clear up some anomalies that existed previously. There has been considerable progress in mechanical engineering during the last decade, and every year sees new applications of mechanical power to industrial processes. As a consequence interest in "safety-first" movements is world-wide.

Authority was obtained in the 1927 amendment to make regulations as to the safe working of boilers, lifts, and cranes. Previously, lifts and cranes were dealt with as machinery generally, but the time has now come for treating these separately. The guarding of machinery is now a specialized subject, and it is necessary that those who have to do business with the Department should know what requirements they have to comply with in order to obtain the Department's certificate.

It is with feelings of deepest regret that I report the death during the year of Mr. W. G. Scott, who served this Department in the capacity of Surveyor of Ships and Inspector of Machinery at Invercargill. I desire to place on record the Department's high appreciation of his services and of the conscientious manner in which his duties were invariably carried out. To his widow and daughter the staff of the Department extend their deep sympathy.

EXAMINATIONS OF LAND ENGINEERS, ENGINE-DRIVERS, AND ELECTRIC-TRAM DRIVERS.

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

The full list of places where the examinations were held is shown in an appended return, as also is the number of candidates examined at each place. The classes of certificates for which examinations were held were—First-class engine-driver, second-class engine-driver, steam 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 474; of this number 330 passed and 144 failed in their examinations.

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 numbers engaged and discharged were 15,397 and 15,313 respectively, as against 17,188 and 17,069 respectively during the previous financial 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	4,660	(5,606)	4,754	(5,608)	854	13	0	(991	19	0)
Wellington	5,378	(6,429)	5,300	(6,504)	954	7	0	(1,156	18	0)
Lyttelton	1,255	(1,262)	1,232	(1,319)	215	11	0	(221	8	0)
Dunedin	1,751	(1,392)	1,644	(1,161)	310	19	0	(236	4	0)

Captains S. G. Stringer and T. H. Dykes, Superintendents of Mercantile at Wellington and Lyttelton respectively, retired on superannuation during the year, consequent on having reached the retiring-age. Both these gentlemen have rendered valuable service to the Department during their terms of office, and I desire to place on record my appreciation of the capable and conscientious manner in which their duties have always been carried out.

INSPECTION OF SEAMEN.

This service has been maintained. A record of men applying for work is kept for the purpose of filling vacancies as they occur.

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 £21,649 2s. 1d., as against £24,445 15s. 3d. in the previous year, a decrease of £2,796 13s. 2d.

REGISTRATION OF SHIPPING.

On the 31st December last there were on the register of vessels in the Dominion 90 sailing-vessels, of 11,418 tons register; 261 steamers, of 101,972 tons register; and 214 motor-vessels, of 4,414 tons register; as compared with 92 sailing-vessels, of 11,634 tons register, 262 steamers, of 101,594 tons register, and 204 motor-vessels, of 4,109 tons register, at the end of the previous year. The number of seamen and boys employed on board was 3,593, as compared with 3,545 at the end of 1926.

LIGHTHOUSE-TENDER.

The s.s. "Tutanekai" continued to perform her regular function throughout the year, with the exception of a brief period in December, 1927.

During March and April, 1927, the vessel cruised round the southern islands. All the castaway depots, boats, sheds, and stores were examined and found intact. There were no signs of any one having used the depots since the previous visit of the vessel.

I mentioned in my last report that, owing to the age of the s.s. "Tutanekai" and her heavy maintenance costs, the purchase of a new lighthouse-vessel had been recommended. It was subsequently decided to proceed with purchase, and the drawing-up of plans and specifications was completed during the year. Tenders, returnable by the 31st October next, have now been called for the construction of the new vessel, which has been specially designed to meet the requirements of the lighthouse service.

PROSECUTIONS.

During the year it became necessary to institute legal proceedings for offences under the various statutes administered by the Department in ninety-four cases. The number of prosecutions under each Act was as follows: Fisheries Act, 57; Harbours Act, 11; Inspection of Machinery Act, 7; Shipping and Seamen Act, 19.

WHALING IN ROSS DEPENDENCY.

This year marked the fifth successive whaling season in Ross Dependency. The Norwegian whaling expedition, comprising the floating factories "Sir James Clark Ross" and "C. A. Larsen," each having five whale-catchers, met with a successful season. The former factory left the company's shore base at Stewart Island for Ross Dependency on the 13th November, 1927, returning to the base on the 21st February, 1928. The latter factory departed on the 16th November, 1927, returning in a damaged condition on the 21st February, 1928, having struck an obstruction when approaching Paterson Inlet.

After the return of the expedition the ten whale-catchers were left at the shore base for overhaul by the company's shore staff; and the "Sir James Clark Ross," after a week's stay at Stewart Island, proceeded to New York for discharge of her cargo of whale-oil, and onwards to Norway to refit for next season. The "C. A. Larsen" transhipped her undamaged oil to a tanker for delivery at New York. She underwent temporary repairs at Port Chalmers sufficient to enable her to proceed to Europe for complete repair and refit for next season.

The first three whaling seasons in Ross Dependency were worked only by the whale-factory "Sir James Clark Ross" and her five whale-catchers; and the last two by the addition of the "C. A. Larsen" and her five whale-catchers. Both of these factories operate under a license now controlled by this Dominion.

This season the expedition was not attended by an official representative, but investigation indicate that the licensees have conformed to the conditions of the license, which among its provisions requires the whole of the whale-carasses shall be utilized in the production of oil, and that whale-carasses shall not be discarded.

The amount of whale-oil procured during this season has exceeded that of any earlier season. The results of each of the five seasons' operations which usually terminate in March, actually were:—

Season.	Factory.	Number of Whales.	Barrels of Oil.
First (1923-24)	"Sir James Clark Ross" ..	221	17,791
Second (1924-25)	"	427	32,165
Third (1925-26)	"	531	37,700
Fourth (1926-27)	{ "Sir James Clark Ross" .. "C. A. Larsen" .. "Sir James Clark Ross" ..	254	22,800
		532	47,500
Fifth (1927-28)		616	48,000
	"C. A. Larsen"	839	76,000

NOTE.—1 barrel=40 imperial gallons.

The unlicensed whale-factory, "N. T. Neilson-Alonso," with her five whale-catchers, again operated in Ross Dependency during this season, this being her second season there. From information obtained she is said to have procured approximately 46,000 barrels of oil, but it is not known actually how many whales were taken by that factory. This unlicensed factory, which uses Hobart, Tasmania, as her base, operated continuously in proximity to the factories of our licensees, and she was frequently seen by them during the whaling season.

The entire season's operations by all the whale-factories were carried out beyond the territorial waters on Ross Dependency, and mostly beyond sight of land; therefore, the unlicensed factory could not be interfered with. It was observed by our licensees that the unlicensed factory practised wasteful methods of procuring oil, and when whales were in abundance many carcasses were not completely utilized, but were abandoned after the blubber had been stripped from them. Our licensees are required to utilize the carcasses of all whales taken, and not only the blubber, in the production of oil. Therefore our licensees have to compete unfairly—that is, to carry out their whaling operations in competition with an unlicensed factory upon which restrictions cannot be imposed. The question of regulating the operations of unlicensed factories is a matter calling for international agreement, and overtures in this direction have already been made, but it would appear that some time must elapse before complete agreement in this direction will be achieved.

Reports have already reached this Department that at least one more unlicensed factory intends to visit Ross Dependency during the coming season, doubtless owing to the success of last season's operations. If this eventuates our licensees will be faced with further competition, such as may cause their operations to become unprofitable. This will be unfortunate, but pending international agreement being accomplished we shall be unable to extend to our licensees any protection whatsoever, provided the unlicensed factories continue to operate as they have already done—that is, confine their operations without the territorial waters of Ross Dependency. Our experience of past seasons shows the most profitable whaling operations to be those carried out beyond the territorial waters, and mostly beyond sight of land.

An abundance of whales during this season enabled our licensees' factories, also the unlicensed factories, to complete their operations and depart from Ross Dependency before unfavourable weather conditions or a shortage of whales occurred. This would seem to show that whales have not become unduly depleted, but it is not an indication that the next will not be a lean season, or that whales may be scarce in Ross Dependency and more plentiful at other Antarctic whaling-grounds. Further, this season's operations in Falkland Island Dependency do not show the plentitude of whales in our dependency to have adversely influenced whaling operations in that portion of the Antarctic.

FISHERIES.

The Chief Inspector of Fisheries has submitted a comprehensive report on fisheries, which is attached hereto, and further discussion is not necessary in this part of the report. The report of the Chairman of the Board (Hon. G. M. Thomson, M.L.C.) of the Portobello Marine Fisheries Investigation Station is also appended.

CONCLUSION.

In conclusion, I desire to express my appreciation of the manner in which members of the staff have performed their official duties throughout the year. Their co-operation has made it possible to successfully carry out the varied functions of the Department, and has been the means of maintaining the efficient conduct of business.

G. C. GODFREY, Secretary.

FISHERIES.

SIR,—

29th June, 1928.

I have the honour to submit the following report on the work of the Fisheries Branch and on the condition of the fisheries of the Dominion for the year ended 31st March, 1928.

It may be useful at the outset to touch upon the subject of the purpose to be served by such reports and on the features which are essential in a statement on the fishery conditions which is published year by year. The proper administration of the fisheries depends upon an adequate and enlightened knowledge of the facts pertaining to the operations of the industry and to the condition of the natural resources constituting its products. A real understanding of the significance of present conditions can be obtained only by comparison with conditions of the past. Therefore every annual report upon a nation's fisheries should provide data for that analytical and comparative study which some future fishery administrator is certain to make—or desire to make. It follows, therefore, that the subject-matter of most importance consists of the concrete facts as to the resources in question—their productivity in relation to the agents and instruments employed in their exploitation and to all other important circumstantial factors. That aspect of an annual report which regards it as a record of duties done, whereby the staff renders an account of its service and thereby justifies its existence to Parliament and to the public whose servants we are, is a matter of temporary and ephemeral importance. A fisheries report should have a lasting value—a value, in fact, which increases with age, as the conditions of which it is a record recede further into the past.

A proper fisheries report, then, must be sound as regards its statistical matter. The present report, though I trust to a less degree than previous ones, is admittedly defective in this respect, and much uphill work lies ahead before our annual statistical statement can be brought to such a standard as to satisfy the requirements above mentioned. The data obtained from different fishing-ports are not at present of uniform standard, and the good qualities of the best of them are lost so far as this publication is concerned because they cannot be blended with other returns in the general tables in which the statistical matter is shown.

This year the form of tabular statements containing statistical information has been somewhat modified. A distinction is now made between vessels, and also men, engaged in fishing throughout the year and those whose employment in the industry is only part-time. But we still lack the data to indicate with some degree of approximation the quantities of fish caught in a definite period and with reference to the character and number of fishing-instruments employed.

During the last year a scheme has been in operation for obtaining statistical information on the fisheries of the Auckland District by the issue of log-books to skippers of fishing-vessels for the entry of fishing results. This system is being extended to other ports, and in addition an attempt will be made to obtain more frequent returns as to port landings, which should ensure not only a nearer approach to accuracy in the annual totals, but will bring out the effect of seasonal variation. It is possible that legislation may be necessary before satisfactory results can be obtained; and some addition to the present fisheries staff will be required to deal with the collection and collation of such statistics.

A comparison of the figures showing the total quantity of fish landed during the year 1927–28 with those of previous years shows that on the whole the past year has been the most productive year in the history of New Zealand fisheries. Lack of detailed records from past years does not permit of a very satisfactory analysis of the particular features of the increments, but it is possible to point out some of the factors which have contributed to produce the increased total yield of the fisheries. In the first place the weather all round the coast has been more favourable for fishing operations than was the case during 1926–27, and possibly for some few years previous. The summer and autumn months were especially fair, and the smaller boats benefited by the increased time available for fishing. The figures for the Auckland landings show a very decided increase—134,045 cwt. (exclusive of Thames) compared with 120,128 cwt. (inclusive of Thames) in the previous year. The greater portion of this is due to the increased efficiency of the Auckland steam trawlers, assisted, doubtless, by the fact that the continued fine weather facilitated the exploitation of the relatively virgin grounds off the west coast by a steam trawler operating from Manukau Harbour. The adoption of a new form of trawl (the Vigneron-Dahl pattern), which under certain conditions possesses greater catching-power than the ordinary otter trawl, has also apparently enabled the Auckland steam trawlers to land increased supplies of fish.

The Auckland fleet of motor-launches operating the Danish seine have also had better fishing than in the previous season, not only owing to finer weather allowing more time for fishing, but also to an increased quantity of snapper on the grounds which they exploit. These grounds, however, are of relatively limited extent, and until more light has been thrown upon the extent and rate to which natural recruitment by immigration takes place it is advisable in the regulation of this fishery to pursue a policy which inclines to protection, rather than exploitation, of the more confined fishing-grounds. Danish seining, under the present regulations as to mesh of the net, cannot result in undue destruction of undersized fish, and I am convinced that its effect upon fish-food organisms is negligible, but it is a method so efficient in its catching-power that its concentration beyond a certain limit on relatively confined areas must inevitably result in the rapid depletion of the resident stock of fish. The continuance of the policy of limiting the scope of the operation of Danish seines is therefore desirable, but I am by no means in favour of taking steps that would result in their banishment from the Gulf, which would lead to the extinction of the Auckland Danish seining fleet.

It may be recalled that the Danish seining method of fishing was begun on the Auckland fishing-grounds late in 1923. Until 1926–27, when one steamer commenced to use the Danish seine on the Napier grounds with satisfactory results and one or two motor-launches began to operate from Port Nelson, it was confined to the fisheries of the Hauraki Gulf, though some of the Auckland launches

had occasionally voyaged to the coastal grounds beyond the Hauraki Gulf to the north and round the land to the Bay of Plenty. Such ventures were especially stimulated by the unsatisfactory fishing on the Hauraki Gulf grounds in the year 1926-27. In the past year the field for the operation of Danish seining has been appreciably extended. Auckland fishermen, transferring their operations to Nelson and to Lyttelton, were the pioneers of this expansion. The returns for the year under review show that vessels using this mode of fishing have been operating out of Auckland, Thames, Russell, Tauranga, Napier, Nelson, Picton, Blenheim, Lyttelton, and Akaroa.

Danish seining is an excellent method of fishing, and by its use a small launch with a crew of two or three men can, under favourable weather conditions, make catches which compare favourably with those made by a trawling-vessel of much greater tonnage and carrying twice or thrice the crew. Moreover, it is not so destructive of undersized fish as the trawl. Though many small fish were undoubtedly taken in the small meshed seines which were formerly in use, with the present regulation mesh in the cod-end, wastage of this kind has, I believe, been reduced to a degree that is practically negligible. The very efficiency of the Danish seine, however, makes its use highly undesirable in such restricted waters as harbours, sounds, and small bays, and it was for this reason that further regulations prohibiting this method of fishing in such areas have been recommended and made.

The activities of the Thames fishing fleet were suspended for a time by a dispute over prices between the fishermen and the merchants of that port, one outcome of which has been the reformation of a fishermen's co-operative association.

Turning to the Wellington fisheries, an interesting recent development has been the extension of the operations of the Auckland firm of Sanford's Ltd. to this port. The steam trawler "James Cosgrove" has been fishing out of Wellington since February, 1928, apparently with satisfactory results. Another very interesting feature in the recent history of the Wellington fishing industry was the discovery of a new and very productive hapuku (groper) reef in Cook Strait, about half-way between Mana Island and the Brothers, upon which the Wellington lining-boats began to concentrate in September, 1927. Here, for several weeks, remarkably big catches of groper were made by launches from Picton and from Island Bay, with the result that the markets became glutted and the prices paid to the fishermen fell so low that their labours were scarcely remunerative.

OYSTERS.

Rock oysters.—The season of 1926 was not a good one, but the 1927 season must be recorded as still less satisfactory. The dominating cause was undoubtedly the stormy and unsettled weather (with probably subnormal sea temperatures) which had been prevalent in the Auckland region, where this species of oyster occurs. The species—*Ostrea gloermata* Gould (*O. cucullata* Borne)—has a natural distribution in the world which extends into much warmer climates than is typical of Auckland, this province in fact representing the extreme southern limit of the range of the species. (The other kind of rock-oyster found in colder parts of the Dominion belongs to a different and less prolific species—*Ostrea tatei* Suter. It will thus be readily understood that when climatological factors undergo a change which for a time brings the environment of these oysters to a condition which is appreciably more rigorous than average they will be detrimentally affected by such factors, just as certain plants may be cultivated in a higher latitude than that of their natural habitat but fail to produce fruit except when weather conditions are especially favourable, and are apt to be killed by a casual "cold snap." Without going into biological details, it may be mentioned that successful oyster-reproduction is absolutely dependent upon the water attaining a certain requisite temperature; and the fattening of oysters is dependent upon warm and genial weather conditions, and in the case of rock-oysters is held back by such factors as lack of sunshine and the prevalence of boisterous winds. The application of the above-mentioned considerations to the state of the Auckland oyster-beds provides an explanation of the fact that the ungenial summer of 1926-27 was responsible for a poor fixation of spat, and the unsettled autumn and winter which followed resulted in delayed fattening of the adult oysters. There were local exceptions here and there where certain beds enjoyed the benefit of the extra warmth found in the water of shallow bays. A slight fixation of spat was thus brought about in odd localities, but there was no successful general spawning of the oysters such as occurs in favourable seasons. Similarly, when the picking season opened it was found that only in certain localities were the oysters well filled and of good colour, while a large proportion remained deficient in fat, with some individuals decidedly poor, until the season was far advanced. This rendered the work of the pickers, and especially that of the overseers, on the beds more difficult than usual, and certainly reacted adversely on the market demand, and introduced unwonted complications in the duties of those in charge of sales. The season was opened on the 1st June and closed on the 15th September.

The following is a statement of the number of sacks of oysters picked from the different areas in the 1927 season: Bay of Islands, 2,283; Kaipara Harbour, 767; Takatu to Gull Point, 338; Tamaki (south shore, strait and river), 117; Coromandel coast, 223; Kawau Island, 189; Rakino Island, 228; Rangitoto Island, 454; Motutapu Island, 316; Waiheke Island, 153; Ponui Island, 211; Pakihi Island, 21; Great Barrier Island, 571; Manukau Harbour, 150: total, 6,021.

With a view to providing data for the better understanding of the productivity of the different oyster-beds in the future, and especially to ascertain the relation between the yield of the cultivated beds and the amount of capital sunk in the different kinds of cultivation work, all oyster beaches have now been subdivided into numbered areas and subsections, so that in future a precise record may be kept as to the expenditure upon and the produce from the several subsections.

Oyster-cultivation.—A survey of the cultivation work carried out prior to 1927 has been made and its amount and location placed on record under the subsections above described. The new cultivation

will be placed on record as a matter of routine. Between October, 1927, and February, 1928, the following work was carried out under the supervision of Senior Inspector Flinn. (1) The moving-down of oyster-bearing rock to the tide-zone of most favourable growth (*a*) from the natural beach, and (*b*) from the capstones of oyster-walls; (2) the destruction of "borers." No new wall-building was included in this year's programme, as, in view of the general depletion, it was desired to concentrate upon work which would be productive of earlier yields of marketable oysters.

The following gives the amount and area location of the different classes of work carried out (with costs):—

Area.	Number of "Borers" destroyed	High-water Oyster-rock removed.	Other Work.	Cost.
				£ s. d.
I (Bay of Islands)	402,800	11,145	6 trays and stakes	267 10 8
IV (Mahurangi)	790,000	..	3 new walls; 375 yards wall recapped; 4 trays and 200 stakes	56 3 8
VI (Coromandel)	252,300	3,202	..	69 14 0
VII (Kawau)	496,600	450	2 new walls (35 yards); 534 yards wall recapped; 8 trays and 400 stakes	98 14 0
IX (Rangitoto)	13,700	5,643	..	77 8 0
XIII (Waiheke)	1,292,100	..	..	113 0 8
XIV (Ponui)		..	..	38 14 0
XVI (Great Barrier)	44,300	1,785	..	721 5 0
	3,291,800	22,771	Transport expenses..	26 5 3
				747 10 3

It will be noticed that "borer" destruction constituted an important item in the past year's cultivation programme. The "borer" is a species of gastropod mollusc having the scientific name of *Thais scobina*, which resembles a small whelk and has similar habits to those of the dog-whelk (*Purpura lapillus*), which is a notorious pest on European oyster-beds, or the "drill," which is similarly obnoxious to American oyster-cultivators. It is armed with a proboscis which enables it to bore a hole through the shell of an oyster, and, having thus gained access to the soft flesh within, it proceeds to obtain the nourishment it seeks. The thin-shelled oysters of one to two years old are principally preyed upon in this way, and considerable destruction is wrought by the great numbers of these pests occurring on many of our oyster-beds. In some places whole beds of oysters have been devastated. In periods when the reproduction of oysters is subnormal the depredations of natural enemies will obviously be a more serious and more patent factor, but whether this pest has become considerably more abundant of late years is a question upon which I am not in a position to express an opinion. The unmistakable evidence of its destructiveness, together with the encouraging signs of benefits brought about by the clearing-up of the pest from certain beds, mainly by the personal efforts of our local inspectors, provided good reason for declaring war against the "borer," and for including a general campaign against it as a principal item in the year's cultivation programme.

In addition to the routine cultivation operations above described, a commencement was made on an experimental scale with what are new methods of oyster-cultivation for New Zealand, though they are methods which have been in successful operation in Australia for some years. These methods are particularly suitable for employment on flat muddy beaches, and they have not hitherto been tried in this country because the abundance of natural rock on most of our oyster beaches has been regarded as a sound reason for adding to the superficial extent of available oyster-beds by the construction of rock walls. As regards the yield of marketable oysters, some of these walls have been satisfactorily productive and some have failed to secure a spat-fall and have remained barren for a considerable time. All of them have the drawback that they provide extremely advantageous breeding-places for the pestilential "borer." Unfortunately, past record of oyster cultivation and picking do not include any data from which one may estimate either the cost or the product of this class of work. My own policy of introducing the Australian method has been induced by the contemplation of miles of mud-flats on the foreshores of the eastern ramifications of Kaipara Harbour, which appear to be admirably suited to this kind of oyster-cultivation. The method consists of the construction of trays of galvanized wire attached to wooden frames and mounted on wooden piles at a suitable height above low-water level. On these trays individual oysters of small size are placed, and in such a situation growth and fattening are considerably accelerated, so that marketable oysters of good quality are quickly obtained. In Australia a supply of half-grown oysters for tray cultivation is obtained from spat which has been caught on wooden stakes arranged in series of clusters. In Kaipara, however, there occur large quantities of undersized oysters growing in clusters one above another on the harder parts of the foreshore near high-water mark, which, left in their natural position, would never grow into marketable oysters. These can be used for tray cultivation. The experiment,

however, was started in the first instance in places having the character above described, in the Bay of Islands (six trays and several stakes in clusters and rows), in Mahurangi (two trays and six clusters of stakes), and in Kawau (eight trays and five clusters of stakes), for the reason that these localities are accessible to the permanent Inspectors of Fisheries and can be periodically visited without difficulty, while in the branches of the Kaipara Harbour suitable for the experiment we have no officer to exercise surveillance. The small oysters used in these experiments were taken from the mangroves in proximity to the sites of the trays. As a result of the interest taken by the local Maoris having authority over the Native oyster reserve at Karakanui, however, it has subsequently been possible to set up a few trays and some clusters of stakes for the collection of spat on the foreshore of their reserve. The outcome of these experiments, in terms of practical and profitable results, remains to be seen, but already very promising signs of greatly augmented growth of oysters on the trays are evident.

The more favourable weather of the recent summer has afforded better conditions for the reproduction of rock-oysters than have occurred for the past few years, and this gives us some ground for expecting an increased supply for marketing after the 1927-28 spat has had time to grow to a suitable size.

TOHEROAS.

On the principal beds of North Auckland well-grown toheroas continue to be in satisfactory abundance, but a relative lack of intermediate sizes points to the possibility of a shortage in the next year or two unless the demand of the industry can be mainly met by the five-year-old generation which is at present abundant. There are local signs of a satisfactory spawning last summer, which, if general, should provide a good harvest in about three years' time. On much-frequented beaches, such as Muriwai, there are very evident signs of depletion of the beds.

QUINNAT SALMON.

On the recommendation of Mr. C. L. Ayson, trapping operations for the capture of fish for stripping were this year confined to the Hakataramea River. The results were entirely satisfactory, and a considerable saving was effected in the cost of the hatchery-work. The run of spawning fish in the Waitaki River was equal to the best years in the past as regards number of fish in the river, but the average size was reported to be smaller. The total number of salmon captured by the hatchery staff at Hakataramea in the winter of 1927 was 528, of which 237 were males and 291 females. Some of these were females already spawned, which were taken for curing. The total number of eggs collected and put down to incubate was 1,013,000. 600,000 were forwarded to the Maori Creek hatchery for the stocking of the Wairau River; 200,000 were sent to Tasmania to the order of the Tasmanian Fresh Water and Salmon Fisheries Commissioners; the remainder were hatched out and liberated in the Hakataramea River.

The numbers of those fishing with rod and line for quinnat salmon during the past season showed a considerable increase over the numbers who have previously followed this branch of angling. This may have been due to some extent to the lowness of the rivers, which reacted adversely on trout-fishing. But quite apart from this there is no doubt but that quinnat-salmon angling has become much more popular than was at first anticipated. During the late season the banks of the Canterbury rivers near their mouths were frequently thronged with people plying their rods. The Rangitata yielded the biggest catches, and it has been estimated that the number killed by rod fishermen in this river exceeded 3,000. The Waimakariri, being easily accessible from Christchurch, was most exploited, but did not apparently yield the best sport to the angler. Failure to catch fish was ascribed to the presence of the net fishermen, and doubtless if the nets had not been there some proportion of the 2,515 fish taken by this method would have been captured by rod and line. Arising out of this, some criticism of the Department has been voiced by a certain section of disappointed anglers, and letters and articles have been published in a Christchurch newspaper condemning what was described as the Department's "policy of unrestricted netting." It may therefore be worth while to state exactly what the position is. The four nets operating on this river were the only nets fishing for quinnat in the whole Dominion. Three of these were fished by license-holders who were *bona fide* professional fishermen. The fourth net was operated by employees of the Department in connection with a scheme of experimental netting which was undertaken for the purpose of obtaining a representative sample of the quinnat run to provide data for a biological study of the quinnat, and also in order that we might acquire a practical knowledge of the fishery conditions. As a result of these netting operations, quinnat salmon were put on the market and were obtainable in the shops at prices which ranged, according to supply, from 1s. (occasionally under this price) to 2s. a pound. In view of the fact that the original object of the Government in acclimatizing this fish was for commercial purposes, it is clear that anglers, who have been enjoying quite gratuitous benefits from this fishing, have no legitimate grounds for complaint. Certainly unrestricted fishing of any species is a danger to be guarded against, but the fact is that whereas the quinnat are now annually running in considerable abundance up the Clutha, Waitaki, Rangitata, Rakaia, and Waimakariri Rivers, as well as in other smaller rivers, it is only on the Waimakariri that netting has been carried on. And though three years ago as many as eight nets were in operation on this river, in the past season there were only four. To assert that the Department pursues the policy of allowing unrestricted netting is therefore untrue, and such statements must either be based on ignorance of facts or made with the deliberate intention of misleading the public.

It is to be recognized that we have a great deal to learn about these fish in their New Zealand environment, and as to the conditions relative to their reproduction and their rate of survival from

human and other enemies; and it is very necessary to shed the optimistic views formerly so freely expressed as to the early development of a big salmon industry, and rather to pursue a cautious and conservative policy. One significant fact about the salmon of the Waimakariri is that this river, like all the Canterbury rivers, has been stocked entirely by the natural migration of adult salmon which had been spawned in the more southern rivers. It is reasonable to assume that this recruitment is still taking place, and unless the abstractions by fishing can be shown to result in an undue check upon the increase of the stock in this river, there appears to be no ground for the further restriction of the netting at present allowed. It may be, and probably will be, necessary to modify our administrative policy with respect to the quinnat fishing, and to alter the regulations for both net and rod fishing in accordance with future needs. A more scientific study of the whole conditions with the object not only of conserving but of increasing the stock is our first duty. The prevention of illegal and unsportsmanlike methods of taking these fish is a further necessity. The restriction of netting licenses to the *bona fide* professional fisherman and the cutting-out of the amateur net man has certainly been a step in the right direction. But to abolish netting entirely for the benefit of anglers and on the ground that special rod licenses would yield a bigger revenue is not a policy to be recommended.

ATLANTIC SALMON.

The winter run of fish to the Upokororo River was again depended upon for the capture of salmon required for purposes of artificial propagation. A total of 411 fish was taken for stripping—200 males and 211 females. The conditions for trapping spawners were rendered difficult by the prevalence of floods throughout the greater part of the season; but in spite of this the results showed an improvement on those of the previous year. The salmon were reported to be on the whole slightly larger in size and in better condition than in any season previous, and the yield of eggs per fish averaged 3,300, as against 2,800 for the preceding season. The total number of eggs collected was 659,000. The eggs were apparently not up to the usual standard of vitality, the loss of incubation amounting to 61,000. Of the fry hatched out and liberated 571,000 were planted in the Kakahi River and other tributary streams for the stocking of the Wanganui, and 27,000 were liberated in the Mararoa River for the purpose of helping the run of smolts to the tidal waters of the Wairau. In addition 15,000 fry were hatched out and liberated by the Southland Acclimatization Society at the head of little Lake Mavora. Of the stripped fish 150 were marked with tags obtained through the High Commissioner. These tags are of the pattern used in Scotland and England. Being more difficult to apply, and thus causing more distress to the fish, they did not commend themselves to the hatchery staff, who expressed a preference for the Irish pattern previously used. During the fishing season some 700 to 800 Atlantic salmon were taken by anglers in Te Anau Lake. The majority, as usual, were caught at the outlet of the Waiau, but this season the lake at the mouth of the Upokororo River has also been successfully fished. A few fish were caught in tidal waters near the mouth of the Waiau.

WHITEBAIT.

Generally speaking the 1927 season was much more productive than the average of recent years. Especially good catches were reported from the west coast rivers of the South Island. The fishing in the North Island also showed an improvement on recent years. Most of the east coast rivers of the South Island, however, yielded comparatively poor results. Owing to the difficulty of collecting data it is impossible to give comprehensive statistical returns, but the following returns give an approximate idea of the yield from some of the localities where whitebaiting is carried on as an industry: Napier, 27 cwt.; Westport, 538 cwt.; Greymouth, 160 cwt.; Hokitika, 925 cwt.; Ashley River (partial return—five nets only), 21 cwt.; Kaiapoi, 340 cwt.; Invercargill, 100 cwt. The returns show an average market value per hundredweight varying between £3 15s. and £13 16s. for different ports.

Early in the year a questionnaire was sent to acclimatization societies with a view to obtaining information as to the necessity for instituting a close season for this fishing. Owing to the inaccessibility of many whitebait-fishing localities the information so obtained is not so complete in many cases as is desirable as a basis for regulations. The matter is further complicated by the seasonal and local variations in the run of whitebait, and by the widely differing conditions under which the fisheries are carried on. Compared with the conditions in earlier years there is no doubt but that depletion has been almost universal, but its effects are more evident in some rivers than in others. I think there can be no doubt about the benefits to be derived from a limited fishing season. Most of the acclimatization societies and many of the whitebait-fishers are in agreement with this policy. Proposals for a comprehensive modification of whitebait-fishing regulations will be submitted at an early date.

SCIENTIFIC INVESTIGATIONS.

Mr. M. W. Young, who was appointed as Marine Biologist to the Marine Department in April, 1926, while engaged at the Marine Biological Station, Portobello, was transferred in September, 1927, to Wellington, where he has been enabled to work in closer touch with departmental headquarters and within easier access to the north, where the more urgent of our fishery biological problems are to be found. His services have been of considerable benefit to the Department, especially in view of the fact that administrative duties have in the last twelve months left me very little time for the continuous and detailed work necessitated by scientific research.

Danish Seining Investigations in Hauraki Gulf.

As mentioned in my previous reports, an inquiry into the condition of the snapper fishery in Hauraki Gulf was commenced at the end of 1925, when, with the help of the Auckland Inspectors of Fisheries, measurements and other observations of the catches of commercial fishing-vessels were

made, which, together with a special study of the spawning snapper and their pelagic eggs, and of data as to the seasonal catches of commercial vessels, helped to throw light on the problems involved. During the past year we were able to pursue the inquiry along more practical as well as more particular lines by the carrying-out of fishing trips in a vessel over which we had the control.

The fishing-launch "Viola" (AK 1872), equipped with Danish seining-gear, was hired, together with the services of the skipper-owner, Mr. J. McKay, for a period of sixteen weeks commencing 23rd November, 1927. 117 hauls of the Danish seine were made in various parts of the Hauraki Gulf. Special attention was given to snapper, but all the fish caught were measured and so far as possible examined with reference to the condition of the sex organs and the contents of the alimentary tract. The length-weight ratio was also ascertained for certain of the species. The numbers of each kind caught and measured were as follows: Snapper, 9,169; gurnard, 657; dabs, 609; john-dory, 352; dogfish, 275; trevally, 66; lemon soles, 61; rays and skates (stingrays), 32; flounders, 26; sharks, 10; kahawai, 10; kingfish, 8; parore, 8; horse-mackerel, 8; porcupine or globe fish, 5; warehou, 4; common soles, 3; wrasse, 3; mackerel, 2; moki, 2; total fish measured, 11,303.

517 female and 475 male snapper were examined as to sexual condition, the period of the observations covering the spawning season of this species.

The food, as indicated by the contents of the alimentary tract, was determined for 821 individual fishes, of which 785 were snapper. From these observations the food of snapper for the period of the investigation was shown to consist principally of crustaceans, usually represented by small crabs. 427 out of the 785 snapper examined (or 54.4 per cent.) had eaten crustacea; 199 individuals (25.4 per cent.) had eaten molluscs, which usually consisted of bivalves (16 per cent. pipis and mussels); only 2.4 per cent. of the snapper examined showed signs of having fed on other fishes.

Particulars of the investigation will form the subject of a special report which is in process of being made.

For thirteen weeks out of the sixteen the biological observations were in charge of Mr. M. W. Young. Captain Daniel, Inspector of Fisheries, who was in charge of the vessel at sea, very efficiently assisted both in operating the fishing-gear and in the biological observations. The investigation has provided information of value to the administration of the fishery, both from the practical aspect, with regard to the productivity of the grounds and the catching-power of the Danish seine, and from the biological aspect, in relation to the stock of fish which inhabits the fishing-grounds of the Gulf. But the problems of the life-history and occurrence of snapper in the Hauraki Gulf have by no means been finally elucidated, and it is to be hoped that provision will be made for further research. The data which we have for four months of the year require to be extended to the other seasons. Especially desirable is some definite indication as to the nature of snapper migrations in this region—to show whether and to what extent the Hauraki Gulf stock is recruited from outside, and to what extent the different classes of snapper recognized by the fishermen are biologically distinct. A scheme of "tagging" experiments would be the best, if not the only, way of elucidating these problems. It is suggested that such experiments should be undertaken at a later stage.

Quinnat Salmon Experimental Netting on the Waimakariri River.

With the twofold purpose of obtaining data for the biological analysis of the run of quinnat salmon in the Waimakariri River, and in order to obtain a practical understanding of the conditions under which salmon-netting operations in this locality are carried on, arrangements were made for a scheme of experimental netting during the past season. Two netsmen were engaged to carry on netting at Kairaki, near the mouth of the Waimakariri, from the 6th February to the 28th April. Favoured by fine weather and a low river until the last fortnight of the season, a very satisfactory catch was made, totalling 454 fish, having an aggregate weight of 4,885 lb. The fish thus averaged 10.7 lb. in weight. The first fish was caught on the 6th February, the last on the 12th April. The most productive month was March, the best days being the 1st (twenty-eight fish caught), the 9th (thirty-six fish), the 12th (twenty-nine fish), the 14th (thirty-six fish), and the 21st (twenty-three fish). Records were kept as to the weather conditions, height of river, and state of tide, besides precise particulars as to the results of individual hauls of the net. The sex, length, and weight of each fish was noted, and from each individual a scale sample was taken for the purpose of providing data for age-determination. The details and results of the investigation will be dealt with in a separate special report. The fish caught were consigned to the wholesale market of P. Feron and Son, Ltd., Christchurch. The gross proceeds of sales amounted to £177 7s. 11d., which represented an average wholesale price of approximately 10½d. per pound for the fish marketed.

Atlantic Salmon.

The publication of papers on the Atlantic salmon of New Zealand by various contributors in recent numbers of the *Salmon and Trout Magazine** (which is the organ of the Salmon and Trout Association of Great Britain) is evidence of the interest taken by British ichthyologists in the biology of this species in its antipodean surroundings. It should be mentioned, however, that the material which formed the data for these papers was scanty in amount and not extensive in its scope, and until much more comprehensive data are available very little further light on the problems connected with this newly established fish-stock can be forthcoming. The desirability of this is more than a matter

* Atlantic Salmon in New Zealand: (1) "Tasmanian and New Zealand Salmon at the Natural History Museum," by C. Tate Regan, F.R.S., with a Note on the Scales, by J. A. Hutton; (2) "The Salmon of Lake Te Anau," by W. L. Calderwood, I.S.O., F.R.S.E.; (3) "The Effect of the New Habitat on Spawning and Migration," by A. E. Hefford; (4) "The Local Conditions," by A. E. Tapper. *Salmon and Trout Magazine*, No. 48, July, 1927.

"Atlantic Salmon in New Zealand," by W. L. Calderwood. *Salmon and Trout Magazine*, No. 50, January, 1928.

of mere biological interest: it is necessary for the proper handling of material problems connected with the conservation and development of this fishery. The carrying-out of the required comprehensive scheme of research still remains an undertaking for the future. All that could be done in the year under review was to continue the tagging experiments by marking stripped fish taken for hatchery purposes; to add to our collection of scale samples to afford material for the study of the age and growth of these fishes; and to make a biological examination of such specimens as came to hand. What is particularly needed for a more complete elucidation of the Atlantic-salmon problem are scales from salmon collected at every stage of growth, together with evidence as to their migration at different stages (obtainable by special fishing and marking experiments), and as to the character of their food-supplies. The recapture of eight tagged fish, of which the particulars are given in the accompanying table, was reported during this year. The table also includes two recaptures noted in last year's report.

TAGGED SALMON (*Salmo salar*).

Table showing Particulars of Salmon tagged after Stripping on the Upokoro River (Te Anau) and subsequently recaptured.

Tag No.	Liberation Particulars.					Recapture Particulars.					Increment.		Period between Liberation and Recapture.
	Date.	Place.	Length.	Weight.	Sex.	Date.	Place.	Length.	Weight.	C.F.	Length.	Weight.	
			In.	lb.				In.	lb.		In.	lb.	Months.
MD 17	June 25	Upok. R.	25	5	?	18/12/26	L. Te Anau	26	6	34.5	1	1	18
MD 238	July 25	"	28	8	Female	23/12/26	"	29	6	26	2	2	17
MD 387	July 25	"	24	5	?	28/2/27	Upok. R.	26	5½	32	2	½	19
MD 267	July 25	"	25	5	Female	3/10/27	L. Te Anau	31¾	7½	24	6¾	2½	27
MD 489	6/6/26	"	30	7	Female	13/11/27	"	31	8	27	1	1	17½
MD 486	6/6/26	"	22	2½	Female	16/11/27	"	30½	7	25	8½	4½	17½
MD 474	31/5/26	"	26	4	Female	17/11/27	"	31	8½	30	5	4½	17½
MD 488	6/6/26	"	28	7	Female	23/12/27	"	31	8½	29	3	1½	18½
MD 14	June 25	"	27	4	Female	31/12/27	Mouth of Upok. R.	29	6	26	2	2	18
MD 471	27/6/26	"	30	7	Female	19/1/28	"	30	8	30	0	1	7

The figures under the last column ("C.F.") of the "Recapture Particulars" give what is called by English salmon investigators the "condition factor" of each fish on recapture. This figure represents the relationship between weight and length according to the formula—

$$\text{Condition-factor} = \frac{W}{L^3} \times 100,000.$$

By this formula a good average salmon in the British Isles has a condition factor of about 40. The condition-factor of grilse is lower (usually about 30).

Scale samples from each of the above fish were obtained which afforded additional information as to the life-history of the specimen besides that given by the marking experiment. This is scarcely the place for a detailed discussion (which will be dealt with in a special report), but it may be mentioned that of the eight fish four had spawned for a second time subsequent to the occasion on which they were marked, and one had spawned once before being marked. The three others would have spawned in 1928 if they had escaped capture. Thus three showed a one-year interval between spawning and five a two-year interval. Spawning in successive winters is considered to be the usual habit of the species, and one wonders whether the biennial spawning of these Te Anau salmon may be due to the effects of artificial stripping or whether it is caused by inadequate food-supplies in the fresh water. It will be noted that three fish only showed an appreciable increment in length during the period between marking and recapture. It is possible that these fish were sea-run, for it is a fact that a proportion of these salmon go down to the sea. It is equally certain that a large proportion remain and feed in fresh water. Two scale samples from fish caught in tidal water have been received up to date. The whole subject needs far more investigation before any clear-cut conclusions can be drawn.

In addition, the recapture of a tagged fish (MD 604) marked on the 30th July, 1927, has been reported. The only particulars given state that the fish was caught in Lake Te Anau on the 24th February, 1928, and that its weight was 5½ lb. The particulars recorded on liberation were—length, 26 in.; weight, 4 lb. The fish was a female. It will be noticed that not a single male fish has so far come to light again.

We take this opportunity to express our thanks for the assistance rendered by the staff and members of the Southland Acclimatization Society, to whom we are indebted for the collection of scale samples and information and for forwarding evidence of the recapture of tagged fish.

Oysters.

The cultivation experiments with rock-oysters on the Australian system have been mentioned above in connection with the general subject, but it may be added here that it is intended to make these experiments on as scientific a basis as our facilities allow. Results are to be determined in a precise and quantitative manner and not appraised by general impressions. A method has been devised by which the actual increase in growth can be measured, the Marine Biologist being responsible for making periodical observations.

The temperature of the water in various rock-oyster localities in the Bay of Islands and in the Hauraki Gulf is being regularly taken by the local Inspectors. It is expected that from a continuous series of these observations some light may be thrown on the causes of variability in the fattening and propagation of the oysters in different localities and in different years, and that information may be obtained to afford a basis for improved cultivation methods.

In connection with the Foveaux Strait oyster-fishery the special survey and biometric work carried out last year has been followed up by a scheme for obtaining statistical returns from the dredging-vessels showing the quantities brought in from the various beds.

Toheroas.

Additions to the material required for a study of the rate of growth and the relative abundance of different generations of this bivalve have been made by the measurement of samples from the North Kaipara, Muriwai, and Otaki beaches, and a preliminary study of the food of the toheroa has been made, but a comprehensive investigation of the biology of the toheroa, its distribution, rate of growth, feeding and spawning habits, still remains an undertaking for the future. The results obtained confirm the indications from last year's observations, that the average annual increase in the length of the shell of this species is approximately 1 in. It is also found that the species spawns on the northern beds in late spring or early summer, and feeds and grows most vigorously in autumn and winter.

Other Fishery Research.

It is a matter for satisfaction to be able to record an extension of scientific research on fisheries subjects in the Dominion during the past year.

Dr. H. J. Finlay, with the assistance of a grant from the Department of Scientific and Industrial Research, has been making an investigation of the food of various marine fishes, and has examined samples of plankton taken off the Otago coast. He has also made a preliminary investigation of the otoliths and scales of certain fishes with a view to assessing their value for purposes of age-determination. The material has been provided by the Portobello Fisheries Investigation Station.

Mr. J. S. Phillipps, B.A., who was appointed to the Fellowship of Victoria University College for Fresh-water Fishery Research, founded by means of a grant made by the Wellington Acclimatization Society, has been investigating the fauna of rivers in the Wellington District. More recently a similar scheme of investigation directed towards the elucidation of trout problems in Canterbury has been commenced by the co-operation of the North Canterbury Acclimatization Society and the Biological Department of Canterbury College.

With the assistance of a small grant from the Marine Department, Mr. L. T. Griffin, of the Auckland Museum, has continued his investigation of the big-game and other fishes of the Auckland District, some of the results of which have been published in the "Transactions of the New Zealand Institute," Vol. 58, (Parts 1, 2). In the same volume appears a paper on New Zealand fishes by Mr. W. J. Phillipps, of the Dominion Museum.

Professor Johannes Schmidt, of Carlsberg Laboratory, Copenhagen, the eminent authority on the fresh-water eels of the world, has published a paper on the "Fresh-water Eels of New Zealand" in the "Transactions of the New Zealand Institute," Vol. 58, Part 4. Much of the material for this research was provided with the help of collectors in various localities through the agency of the Marine Department and through the co-operation of the staffs of the Dominion, Auckland, Canterbury, and Otago Museums. In the same number appears a paper by Mr. D. Hope, Curator of the North Canterbury Acclimatization Society, on "The Whitebait (*Galaxias attenuatus*); its growth and Value as Trout-food."

During the year the Department has published, as Fisheries Bulletin No. 1, a "Bibliography of New Zealand Fishes," compiled by Mr. W. J. Phillipps, of the Dominion Museum. This bibliography will be of considerable assistance to any one interested in the general study of New Zealand fish fauna. It is proposed to follow this with a series of bulletins on fishery subjects of a more special character as the material from different inquiries and investigations can be collected and worked up into a form suitable for publication.

A report by the Chairman of the Board of Management of the Marine Fisheries Investigation Station, Portobello, on the work of that institution has been submitted to the Department.

I have, &c.,

A. E. HEFFORD,

The Secretary, Marine Department, Wellington.

Chief Inspector of Fisheries.

MARINE FISHERIES INVESTIGATION STATION.

SIR,—

Portobello, Dunedin, 5th June, 1928.

I have the honour to submit the report of the Marine Fisheries Investigation Station Board for the year ending 31st March, 1928.

On the 9th August last Mr. C. S. W. Chamberlain, who has held the position of Honorary Secretary and Treasurer to the Board since its inception in 1903, asked to be relieved from these duties. The Board accepted his resignation with regret, and expressed its great appreciation of the valuable services rendered by him during his long association with the establishment and work of the station. Mr. Chamberlain remains an active member of the Board. Mr. W. G. Howes has been elected to the position of Honorary Secretary and Treasurer.

In October last His Excellency the Governor-General appointed Dr. John Malcolm, Professor of Physiology in the University of Otago, a member of the Board. Dr. Malcolm has been engaged for some years in a research on the food-values of New Zealand fishes, and has been working in conjunction with the Portobello Station.

INTRODUCTION OF EUROPEAN LOBSTERS.

As mentioned in last year's report, the Board communicated with the High Commissioner in London on the subject of introducing a shipment of European lobsters, and ascertained from him that the Shaw, Savill, and Albion Co. very generously offered to carry these crustaceans to New Zealand free, as they had done on previous occasions. At a meeting of the Board held on the 15th June last it was resolved that a further attempt should be made, and on the 17th the Chairman wrote to the High Commissioner and to Dr. E. J. Allen, Director of the Plymouth Biological Laboratory, asking them to procure a supply of lobsters, and to arrange for their shipment to Port Chalmers. The offer of the Shaw, Savill, and Albion Co. to provide all the space required, the necessary supply of cooled water on the voyage, and the conveyance of the shipment free of cost, was accepted by the High Commissioner with thanks. The large tank which was used on a former occasion was taken to pieces, shipped to London from Port Chalmers, and was put together on the s.s. "Matatua," the necessary cooling-apparatus and piping was fitted, and the vessel sailed on 23rd December, 1927, and called in at Plymouth on her way down the English Channel. Meanwhile, Dr. Allen had secured forty-two live lobsters, and these were transferred to the "Matatua," and were placed in separate compartments in the tank. The voyage out to New Zealand was a protracted one, the vessel reaching Port Chalmers on the 13th February. Owing to the extreme care exercised by Mr. E. Hyde, chief officer, and Mr. W. Brown, chief engineer, only three lobsters were lost on the voyage, and no fewer than thirty-nine arrived in good condition. These were at once transferred to the prepared pond at Portobello, and quickly established themselves under the shelters provided for them. They are smaller and younger than those of preceding shipments, which is a very distinct advantage, but they are a fine, vigorous lot. The experiment, so far, has been a complete success, and the Board has expressed its thanks to the High Commissioner and to Dr. Allen for their assistance, and to the Shaw, Savill, and Albion Co. for their very generous action in promoting this interesting biological experiment.

The larvæ of lobsters swim on or near the surface of the sea for about three weeks after liberation from the egg, as the following table shows:—

Stages of Larval Lobsters.					
Length in Millimetres.				Average Time.	
1st stage	..	..	7.84	..	3 days up to 5 days
2nd stage	..	..	9.3	..	3 " 5 "
3rd stage	..	..	11.1	..	5 " 5 "
4th stage	..	..	12.6	..	12 " 19 "
(At this stage the majority go to the bottom.)					
5th stage	..	..	15.8	..	9.5 days (a few still swimming).
6th stage	..	..	18.6	..	12.7 days.
7th stage	..	..	18.6 to 22.5	..	14.3 days
8th stage (at this stage the lobsterling drops out of sight).					

At the end of the three weeks, after they have undergone four moults, the larval lobsters mostly all sink to the bottom of the sea, and take refuge under stones, rocks, &c.

It has been the policy of the Board in the past to liberate the larvæ from the ponds on the beginning of the ebb tide, so that they were swept out to sea. It has been found that most floating bodies which were lost or set adrift in the harbour drifted round into Blueskin Bay, the set of the northerly current which passes Otago Heads being mostly round the North Head into the bay. In a former experiment with drift-bottles it was ascertained that a large proportion of the bottles which were liberated within three miles of the heads went round into Blueskin Bay, while if liberated farther out at sea they were swept to the north, and were picked up at various points along the coast as far north as Cape Turnagain, and even far into Cook Strait.

In order to verify the results of the previous experiment the Board, on the suggestion of Mr. Hefford, has recommenced to liberate drift-bottles just outside Otago Heads, and this policy will be continued for a few months. One reason for the Board's strongly expressed opinion that the experiment of lobster naturalization is likely to prove successful is based on this fact, that the majority of the larvæ probably come to rest at the sea-bottom, at a comparatively short distance from the point of liberation, partly in Blueskin Bay and partly in sheltered localities (such as north of Shag Point, Moeraki, &c.) within three weeks of liberation. It must further be borne in mind that from the time that lobster larvæ sink to the bottom until they are sexually mature, a period of probably at least eight or nine years, they are scarcely ever seen.

PILCHARDS AND SPRATS.

For the past three years a very close lookout has been kept for surface shoals of these fish, but their occurrence on this part of the coast of Otago is proved to be so erratic that the idea of utilizing them commercially as brisling or sardines may be quite abandoned. Both species, but sprats especially, are found in the water outside Otago Peninsula all the year round, for the stomachs of blue and red cod and other shore-haunting fish very frequently contain them. But shoals seldom come to the surface, and then only for limited periods. It is probable that they swim to the surface only

when disturbed by larger predatory fish, especially barracouta. Twice in January, Mr. Scofield, lightkeeper at Cape Saunders, rang up the station by telephone to say that large shoals of sprats were in the surf close under the cliffs at the cape, but the heavy weather which prevailed at the time prevented the launch from going out. During February last, when Mr. Broadley visited the southern fishing-ports, he reported that sprats were exceptionally plentiful for a considerable distance both north and south of Nugget Point. Mr. Adams stated in his annual report that "there is no doubt that large numbers of sprats pass and repass the coast from Cape Saunders to Moeraki many times during the season. It would appear, however, that the strong current, running north, which flows close to Cape Saunders and then shoots off the Peninsula, carries the sprats some distance off the coast. The velocity of the current varies, running at times almost slack, while again, though less frequently, the flow is in a southerly direction. It is possible, therefore, that when the current is not running strong, small fish would more easily get clear of the flow and so work closer to the shore. During the past four years the appearance of sprats on the surface between Cape Saunders and Otago Heads has been very rare."

BIOLOGICAL WORK.

Owing to Mr. Young's transfer from the employment of the Board to the Fishery Branch of the Marine Department, that gentleman left Portobello for Wellington in September, and the Board is now without the assistance of a resident biologist. Meanwhile the material which the biologist has hitherto handled is being regularly forwarded to Dr. Harold Finlay, who—thanks to the kindness of Professor Benham—is working in the laboratory of the University Museum, Dunedin. This material consists of surface tow-nettings, contents of fish-stomachs, scales and otoliths, the two last for estimation of the ages of the fish examined. In previous years, as recorded in the bulletin published in 1921, the food of the local fishes has been noted to a very considerable extent. Dr. Finlay's work in this direction is a continuation of that formerly done by the late Mr. T. Anderton and by Mr. Young.

In regard to the scales and otoliths, Dr. Finlay reports as follows: "Scales and otoliths (from the same fish) have been received and examined from the common sole (*Peltorhamphus novae-zealandiae*), sand-flounder (*Rhombosolea plebeia*), greenback flounder (*Rhombosolea tapirina*), lemon sole (*Pelotretis flavilatus*), brill (*Ammotretis guntheri*), and kelp-fish (*Coridodax pullus*). It has been found impossible, with the methods available, to make any headway in the study of these scales. Those of the common sole and kelp-fish at first sight seem to be readable, and occasional scales are met with which seem to indicate a definite number of zones. But under ordinary high-power microscope examination these prove to be quite inconstant even in scales from the same fish, and scales from different fishes vary hopelessly in their appearance. I am unable to feel certain of any readings so far on these scales. Different methods of staining (eosin, silver nitrate, &c.) decalcifying and mounting in gum arabic, glycerine jelly, or water-glass preparation, have been tried, also examination by reflected light under a binocular microscope and by polarized light, but without success. It is possible that a method such as Creaser's, whereby the image of the scale, enormously magnified, is thrown on to a screen where the successive distances between rings can be accurately measured, might be successful, but there are no facilities available for this as yet.

"The otoliths are, on the whole, much more promising, and are generally fairly clear, the inmost ring being sometimes obscure. Sixteen examples from the common sole, from fish 10 in. to 19 in. long, give readings rising more or less uniformly from two years and a half to four years. Ten examples from the sand-flounder (8 in. to 14 in.) rise from two to three years; three from the greenback flounder (12 in. to 14 in.) all indicate about two years and a half; eight from the lemon sole (10 in. to 13 in.) increase from three to four years; and two examples from the brill (10 in. to 15 in.) show two to four years. The only two otoliths seen from the kelp-fish have been too obscurely marked to read. All the otoliths have been read either completely immersed in eosin solution, or else lying on a dead-black surface."

HYDROGRAPHIC WORK.

The collection of water-samples, recording of thermometric readings, and observation of ocean currents have been carried on weekly throughout the year, except for interruptions due to heavy weather. These interruptions were somewhat frequent for the four months April to July. The Board's launch, the "Karoro," though an excellent sea-boat, is not sufficiently heavily engined to work in rough water.

In August last Mr. Scofield, lightkeeper at Cape Saunders, kindly undertook to co-operate with the station, and he has carried on both branches of the work regularly. Up to the time of his leaving for Wellington Mr. Young titrated all the sea-water samples for estimation of salinity. This work has, since September, been undertaken by the officers of the Dominion Laboratory, and is being carried out at present by Mr. James, who is in charge of the Branch Laboratory in Hanover Street, Dunedin. As stated in last year's report, these samples have been titrated for salinity only, as there is no provision for full water-analysis yet.

The Chairman of the Board has recently brought before the notice of the Chief Inspector of Fisheries the desirability of obtaining samples of sea-water for salinity from points right round the New Zealand coasts. At the present time the vessels of the New Zealand Navy take observations of marine temperature every six hours during their cruises. The results of these observations, if communicated to the Department of Fisheries, could ultimately be worked out, and would be of great value. It would also be quite easy to get samples of water at the same time, and the officers of the Navy Department have expressed to the Chairman their willingness to further this scheme. It depends, however, in the first place on the supply of a sufficient stock of collecting-bottles. It is to be hoped that this question will be followed up, as the co-operation of the Navy in marine scientific work would be of great value.

GENERAL STATION WORK.

Messrs. Adams and Broadley have made excursions every week, weather permitting, to the observation station two miles east of Otago Heads, and either down the coast to Cape Saunders or north to Blueskin Bay. Trawling to a depth of 15 fathoms was carried out on all the ground worked by the local trawlers. Line fishing, mostly in the vicinity of Cape Saunders, was also carried out in order to obtain blue cod, red cod, wrasse, &c. From the fish captured, stomach-contents, otoliths, and scales were secured, preserved, and handed over to Dr. Finlay for examination. A sharp lookout was kept for pilchards and sprats, but the fish were not seen on the surface, though the latter especially were commonly found in the stomachs of the larger fish which were taken. Mr. Adams's observations on these fish are recorded elsewhere. He reports further as follows: "Whale-feed (*Munida gregaria*) first made their appearance in the harbour during the latter part of November, and have since been more plentiful than during the past three years. Red cod, no doubt following the whale-feed, have also been in the harbour in larger numbers than for some time past. The set-net was put down in the deep-water channel close to the station for the first time early in August, but it was not until the 28th September that a kelp-fish was caught, and a moki was not taken before the 1st December. The continued stormy weather and low temperature of the sea-water would no doubt account for the scarcity of school-fish until well on in the summer months. During the last three months both kelp-fish and moki were plentiful in most parts of the harbour. Stormy weather prevailed throughout the spawning season of the flat fish. The trawling-grounds in August and September were foul with loose weed, and in consequence the catches taken by the trawlers were poor. Although soles have by no means been plentiful during the year, the catches have been larger than those of the previous three years. In May soles were fairly plentiful in the shallow water between Hayward's Point and the Heads. The trawlers being prohibited from trawling on the inside of these two points, the greater part of the grounds where the fish were could not be worked except with seine nets worked from the beach."

Owing to the weather conditions referred to, the collection of eggs of flat fish was not undertaken to any extent last spawning season.

In regard to the kelp-fish, the ovaries are scarcely developed during the whole time the fish are in the harbour—that is, through the summer months. To arrive at some knowledge of the spawning habits of this fish it would seem to be necessary to take them during the winter months, if possible. This could only be done outside the harbour in the warmer water of the open sea, and, as the fish do not take bait, and are chiefly caught in set-nets, this is not a means which can be readily used by the staff of the station, as set-nets should be always taken up within twenty-four hours of setting.

Mr. W. J. Philipps, in "Notes on the Edible Fishes of New Zealand" (*Journal of Science and Technology*, Vol. 4, p. 115), states that he "has found examples with fully developed ova during February and August." As a rule fish have a somewhat limited spawning season, and this occurrence of mature eggs both in the middle of winter and the middle of summer is very unusual.

Mr. Broadley, in his capacity of Inspector of Fisheries for the Otago District, periodically visits the fishing-stations from Moeraki to the Nuggets. He also visits the Dunedin Fish-market regularly, recording the supply, prices, &c. Owing to illness he was incapacitated from work for the greater part of September.

The library of the station has received several additions during the year, notably a complete set of the hydrographic papers and pamphlets issued by the Scripps Institution of Oceanography of the University of California. These were forwarded through the kindness of Dr. T. Wayland Vaughan, Director of the Institution. The card-cataloguing of the pamphlets has been kept up to date. These number about one thousand eight hundred, and are stored in nearly a hundred cases. In addition, Mr. Young, while at the station, card-catalogued all articles dealing with marine and fishery matters in such publications as the Bulletin of the British Marine Biological Station, the annual volumes issued by the New Zealand Institute, the *New Zealand Journal of Science and Technology*, the annual reports of the Royal Societies of South Australia and of Tasmania, and many other periodicals.

During the year a great deal of repair and renewal work has been carried out at the station to buildings, launch, and plant, and the whole is kept in a very satisfactory and excellent working condition.

I have, &c.,

GEO. M. THOMSON,

Chairman of the Board.

The Hon. the Minister of Marine, Wellington.

TABLES.

STATEMENT OF REVENUE FOR THE YEAR ENDED 31ST MARCH, 1928, IN COMPARISON WITH THE TWO PREVIOUS YEARS.

Item.	1925-26.	1926-27.	1927-28.
Shipping Branch—	£ s. d.	£ s. d.	£ s. d.
Light dues	82,875 6 3	81,064 9 8	81,247 11 8
Engagement and discharge of seamen, &c.	3,664 15 3	3,124 13 3	2,790 2 6
Survey of ships	6,137 16 11	5,371 7 8	5,144 7 6
Examination fees	429 10 0	379 5 0	321 5 0
Miscellaneous receipts	823 14 3	505 18 3	427 5 11
Harbours—			
Port dues, &c.	870 11 8	920 17 1	1,801 18 10
Foreshore revenue	5,704 2 4	5,988 17 4	6,212 2 3
Inspection of machinery—			
Inspection fees	18,001 19 4	19,523 5 3	19,503 0 9
Examination fees	657 5 0	556 4 0	497 5 0
Miscellaneous receipts	3 9 6	8 3 0	46 16 0
Fisheries—			
Net profit from sale of oysters	2,517 3 11	1,347 11 7	1,003 17 11
Fishing-boat license fees, &c.	505 2 6	443 17 5	483 16 5
Rental of toheroa areas	300 0 0	300 0 0	300 0 0
Sale of trout-ova, &c.	70 2 10	185 18 4	361 3 8
Government steamers—			
Fares, freights, &c.	3,185 17 8	5,134 9 6	1,458 9 2
Ross Sea Dependency—			
Royalties on whale-oil	1,720 12 6	2,921 5 0	7,176 15 0
Miscellaneous revenue—			
Sale of charts, books, and forms	1,447 1 4	1,336 4 4	1,228 19 4
Sale of "New Zealand Nautical Almanac"	146 16 4	137 6 4	160 12 0
Rents of buildings and reserves	207 17 8	199 13 0	185 19 5
Miscellaneous receipts	16 6 6	20 8 6	40 12 10
Totals, general accounts	129,285 11 9	129,469 14 6	130,392 1 2
Westport Harbour Account	57,539 12 11	62,976 13 10	65,909 8 1
Totals	£186,825 4 8	£192,446 8 4	£196,301 9 3

N.B.—The figures quoted for 1927-28 are subject to audit.

SUMMARY OF EXPENDITURE FOR THE YEAR ENDED 31ST MARCH, 1928, IN COMPARISON WITH THE TWO PREVIOUS YEARS.

Branch.	1925-26.	1926-27.	1927-28.
	£ s. d.	£ s. d.	£ s. d.
Head Office	9,626 13 9	10,007 16 10	9,721 15 2
Harbours	4,295 13 3	3,938 6 0	7,790 0 0
Lighthouses	24,220 2 2	24,157 5 4	24,266 9 2
Meteorological	6,124 12 6	..	..
Mercantile marine	24,626 5 5	25,021 18 8	24,792 14 9
Inspection of machinery	20,793 2 9	22,288 13 8	21,842 2 1
Fisheries	3,179 2 6	3,385 5 11	3,389 19 10
Government steamers	24,309 19 11	22,605 0 4	20,733 16 9
Miscellaneous services	2,189 17 10	2,861 17 4	2,161 11 7
Grants and subsidies	540 0 0	290 0 0	594 0 0
Depreciation	8,862 19 6	9,032 5 3	9,158 5 10
Interest on capital	17,811 11 0	18,005 6 0	18,119 18 0
Totals, general accounts	146,580 0 7	141,593 15 4	142,570 13 2
Westport Harbour Account	51,909 4 11	52,769 12 6	65,828 1 7
Totals	£198,489 5 6	£194,363 7 10	£208,398 14 9

N.B.—The figures quoted for 1927-28 are subject to audit.

TABLE SHOWING THE NUMBER OF SEAMEN ENGAGED AND DISCHARGED IN NEW ZEALAND, AND THE FEES COLLECTED, FOR THE YEAR ENDED 31ST MARCH, 1928.

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.						
..	2,378	£ 228 12 0	2,386	£ 228 0 0	2,282	£ 193 3 0	2,368	£ 204 18 0	4,660	£ 421 15 0	4,754	£ 432 18 0	9,414	£ 854 13 0
Auckland	1,285	118 8 0	1,186	111 1 0	466	40 12 0	458	40 18 0	1,751	159 0 0	1,644	151 19 0	3,395	310 19 0
Dunedin	..	0 2 0	4	0 8 0	231	14 15 0	223	14 5 0	232	14 17 0	227	14 13 0	459	29 10 0
Gisborne	21	2 2 0	21	2 2 0	44	3 2 0	42	3 0 0	65	5 4 0	63	5 2 0	128	10 6 0
Grey mouth	5	0 10 0	4	0 8 0	..	..	..	..	5	0 10 0	4	0 8 0	9	0 18 0
Hokianga	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Invercargill	50	5 3 0	74	6 2 0	36	3 9 0	49	3 14 0	86	8 12 0	123	9 16 0	209	18 8 0
Lyttelton	471	45 18 0	515	50 18 0	784	63 2 0	717	55 13 0	1,255	109 0 0	1,232	106 11 0	2,487	215 11 0
Napier	40	3 7 0	59	4 12 0	347	24 11 0	355	26 9 0	387	27 18 0	414	31 1 0	801	58 19 0
Nelson	4	0 8 0	5	0 10 0	800	61 15 0	801	60 11 0	804	62 3 0	806	61 1 0	1,610	123 4 0
New Plymouth	28	2 12 0	29	2 10 0	115	8 2 0	115	7 18 0	143	10 14 0	144	10 8 0	287	21 2 0
Oamaru	3	0 6 0	2	0 2 0	2	0 4 0	2	0 4 0	5	0 10 0	4	0 6 0	9	0 16 0
Onehunga	..	..	..	..	351	29 7 0	331	27 19 0	351	29 7 0	331	27 19 0	682	57 6 0
Patea	..	..	..	..	38	2 3 0	40	2 7 0	38	2 3 0	40	2 7 0	78	4 10 0
Pictou	2	0 4 0	2	0 4 0	8	0 16 0	5	0 10 0	10	1 0 0	7	0 14 0	17	1 14 0
Russell	1	0 2 0	..	..	..	..	..	..	1	0 2 0	..	..	1	0 2 0
Timaru	12	1 4 0	10	1 0 0	39	3 8 0	37	3 4 0	51	4 12 0	47	4 4 0	98	8 16 0
Wairau	..	..	..	..	53	1 16 0	51	1 12 0	53	1 16 0	51	1 12 0	104	3 8 0
Wanganui	..	..	..	..	45	3 17 0	41	3 9 0	49	4 5 0	43	3 13 0	92	7 18 0
Wellington	3,309	297 9 0	3,148	284 8 0	2,069	182 8 0	2,152	190 2 0	5,378	479 17 0	5,300	474 10 0	10,678	954 7 0
Westport	10	0 16 0	11	0 18 0	62	5 4 0	64	5 8 0	72	6 0 0	75	6 6 0	147	12 6 0
Whangarei	1	0 2 0	4	0 8 0	..	..	..	..	1	0 2 0	4	0 8 0	5	0 10 0
Totals	7,625	707 13 0	7,462	693 15 0	7,772	641 14 0	7,851	652 1 0	15,397	1,349 7 0	15,313	1,345 16 0	30,710	2,695 3 0

TABLE SHOWING TOTAL COST OF MAINTENANCE (EXCLUDING INTEREST ON CAPITAL AND DEPRECIATION)
OF NEW ZEALAND COASTAL LIGHTHOUSES FOR THE YEAR ENDED 31ST MARCH, 1928.

Name of Lighthouse.	Salaries and Wages.	Oil consumed.		Stores and Maintenance.	Totals.
		Gallons.	Value.		
	£ s. d.		£ s. d.	£ s. d.	£ s. d.
Akaroa Head	454 9 10	647	47 3 10	120 13 9	622 7 5
Brothers	723 10 5	778	56 15 4	285 19 1	1,066 4 10
Cape Brett	775 10 6	726	52 18 5	381 13 5	1,210 2 4
Cape Campbell	497 15 11	742	54 2 7	177 4 4	729 2 10
Cape Egmont	477 1 8	617	45 0 2	164 9 9	686 11 7
Cape Maria	808 0 1	839	61 3 7	308 17 1	1,178 0 9
Cape Palliser	604 17 7	671	48 18 2	144 5 0	798 0 9
Cape Saunders	455 12 3	672	48 19 5	148 10 10	653 2 6
Castlepoint	510 8 4	645	47 0 3	102 8 10	659 17 5
Centre Island	726 16 8	698	50 18 5	217 10 7	995 5 8
Cuvier Island	722 8 6	818	59 12 3	182 7 0	964 7 9
Dog Island	472 9 4	746	54 8 8	159 0 7	685 18 7
East Cape	477 6 2	806	58 14 10	217 17 5	753 18 5
Farewell Spit	765 10 8	761	55 9 10	165 6 3	986 6 9
French Pass	227 4 5	123	8 19 0	50 1 7	286 5 0
Godley Head	526 15 10	811	59 2 4	148 0 11	733 19 1
Jack's Point	285 9 11	281	20 10 0	101 8 4	407 8 3
Kaipara Heads	769 1 5	971	70 16 1	247 13 10	1,087 11 4
Manukau Heads	486 13 2	624	45 10 4	126 12 7	658 16 1
Moeraki	473 11 10	684	49 16 9	113 18 0	637 6 7
Moko Hinou	759 19 9	710	51 15 11	243 15 10	1,055 11 6
Nugget Point	510 15 0	664	48 8 4	97 18 4	657 1 8
Pencarrow Head	541 13 5	749	54 11 11	175 14 4	771 19 8
Portland Island	714 2 9	827	60 6 3	254 15 5	1,029 4 5
Puysegur Point	780 13 6	741	54 0 8	166 14 10	1,001 9 0
Stephen Island	755 10 8	759	55 6 2	251 4 9	1,062 1 7
Tory Channel	100 0 0	184	22 5 7	21 16 8	144 2 3
Waipapapa Point	498 9 7	714	52 1 7	201 19 2	752 10 4
Automatic lights	..	..	..	1,659 7 11	1,659 7 11
Fog signals	..	..	..	185 14 4	185 14 4
Totals	15,901 19 2	19,008	1,394 16 8	6,823 0 9	24,119 16 7

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, 1928.

Name of Seaman.	Balance to Credit of the Estate on 31st March, 1927.	Amount received.	Amount paid.	Balance to Credit of the Estate on 31st March, 1928.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Baker, J. T.	..	8 10 0	8 10 0	..
Bedwell, E.	..	14 3 9	..	14 3 9
Carr, J. D.	..	2 18 4	2 18 4	..
Clarke, J.	..	47 0 10	..	47 0 10
Dacey, T.	0 11 9	..	0 11 9	..
Dore, C. H.	..	129 5 2	129 5 2	..
Douglas, L. J.	..	8 12 0	8 12 0	..
Hickey, E. H.	..	172 18 0	172 18 0	..
Kake, Jioni	..	11 10 5	..	11 10 5
Karsikas, N.	..	55 18 2	55 18 2	..
Lowe, E.	46 15 8	583 14 6	630 10 2	..
Mahon, Thos.	..	23 15 10	23 15 10	..
Morris, J.	..	3 4 11	3 4 11	..
Murray, G.	..	11 9 0	11 9 0	..
Murray, J. J.	..	6 11 11	..	6 11 11
McMahon, S. G.	..	10 11 3	..	10 11 3
Niuetama, J.	..	5 15 6	5 15 6	..
O'Brien, J. W.	..	54 16 11	54 16 11	..
Ogle, W. A.	..	0 10 2	0 10 2	..
Reid, W. A.	..	13 7 8	13 7 8	..
Roff, P.	..	9 14 2	9 14 2	..
Symons, R. C.	..	13 14 1	13 14 1	..
Thomassen, T.	6 7 4	..	6 7 4	..
Trapp, O.	15 19 4	..	15 19 4	..
	69 14 1	1,188 2 7	1,167 18 6	89 18 2

RETURN SHOWING AMOUNTS RECEIVED PRIOR TO 1ST APRIL, 1927, STANDING TO CREDIT OF ESTATES
OF DECEASED SEAMEN, AND FOR WHICH CLAIMS HAVE NOT BEEN PROVED.

Alexander, S., late trimmer, s.s. "Moeraki"	£ s. d.
Cliffe, F., late A.B., s.s. "Storm"	0 9 2
Darling, J., late deck hand, s.s. "Aotea"	5 10 6
Fowler, C., late A.B., s.s. "Kokiri"	1 8 8
King, C., late A.B., scow "Herald"	5 18 4
Lancaster, J. A., late A.B., s.s. "Gale"	8 5 2
Manchin, J., late fireman, s.s. "Maori"	50 1 11
Morley, J., late fireman, s.s. "Waimarino"	26 12 9
Nelson, R., late fireman, s.s. "Ripple"	1 11 10
Peterson, F., late A.B., s.s. "Tiroa"	1 1 7
Small, T., late fireman, s.s. "Arahura"	34 10 1
Welsh, T. B., late second cook, s.s. "Marama"	12 15 6
	8 7 0
	£156 12 6

TABLE 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, 1928.

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.		Cray-fishing 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.
	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.
Mongonui	..	..	..	..	..	..	..	..	2	..	1	..	..	2	..	..	..	..	2	..	3	2	..	..	3	2
Hokianga	..	..	..	..	..	..	..	..	..	..	..	..	17	..	..	..	..	..	..	..	..	37	..	..	37	37
Russell	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	5	..	..	48	..	6	..	54
Kaipara	..	..	..	..	..	..	..	..	30	44	..	..	..	10	..	..	..	..	..	..	..	..	15	80	..	15
Whangarei	..	..	..	..	..	..	..	..	8	11	..	..	..	1	..	..	..	..	..	..	..	23	..	31	..	23
Auckland*	4	..	..	..	1	..	21	..	169	..	4	..	112	..	..	..	..	2	30	..	..	..	..	820	..	..
Thames	..	..	..	..	..	..	..	7	39	..	..	..	..	5	..	2	..	2	..	..	..	..	..	150	..	..
Tauranga	..	..	..	..	..	..	1	..	12	27	2	3	..	5	..	..	..	..	..	..	..	..	..	..	..	..
Gisborne	1	1	..	..	..	..	..	..	4	..	..	..	..	6	..	..	..	6	..	..	..	..	..	4	18	91
Napier ..	10	1	..	..	..	1	..	..	2	22	..	..	..	63	..	..	..	..	12	..	..	9	..	..	53	13
New Plymouth	..	..	..	..	..	..	..	..	..	15	..	..	..	13	..	..	..	..	15	..	..	48	..	30	..	78
Wanganui	..	..	..	..	..	..	..	..	2	14	..	..	..	6	..	..	..	..	..	..	..	43	..	4	..	47
Foxton	..	..	..	..	..	..	..	..	..	5	..	..	..	20	..	..	..	..	35	..	..	108	..	100	162	208
Wellington	2	..	..	..	..	..	..	2	40	16	7	3	24	12	..	..	..	..	..	..	..	87	..	..	87	..
Pictou ..	..	..	6	6	..	1	..	..	8	40	..	..	..	..	..	..	..	..	..	..	..	23	..	8	..	31
Blenheim	..	..	..	..	..	..	7	..	4	14	..	..	..	1	..	..	..	..	2	..	..	46	..	10	56	..
Nelson ..	..	..	1	8	..	..	..	..	..	..	..	2	..	..	..	..	..	..	2	..	..	9	..	9	..	9
Westport	..	..	..	..	..	..	..	..	..	6	..	..	..	10	..	..	..	..	1	..	..	21	..	4	..	25
Greymouth	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..
Hokitika	..	..	..	..	..	..	..	..	15	..	..	..	..	6	..	..	..	..	..	..	..	..	..	26	3	27
Kaikoura	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	7	..	..	27	..	..	25	5
Kaipoi	..	..	..	..	..	1	..	..	12	..	..	..	..	4	1	..	..	..	..	..	..	5	..	..	3	27
Akaroa	..	1	..	4	..	..	..	..	33	..	26	..	85	..	..	..	..	..	..	..	..	..	..	..	25	5
Lytelton	1	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	315	..
Timaru	..	..	23	..	..	2	..	..	..	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36	..
Oamaru (including Moeraki)	..	..	..	..	..	..	..	..	38	..	..	..	..	2	..	..	..	..	..	..	..	..	..	60	..	..
Dunedin and Otago District	4	..	8	11	..	..	..	..	72	..	..	..	24	..	..	..	..	..	10	..	..	..	..	7	317	..
Invercargill	..	..	..	..	..	..	..	..	..	30	..	6	..	4	..	..	..	..	8	..	..	85	..	25	..	110
Bluff ..	..	..	..	..	..	..	..	..	44	..	..	..	3	..	..	..	..	..	..	..	..	..	..	174	..	..
Stewart Island	..	..	..	..	..	..	..	..	..	39	..	..	..	..	..	..	..	..	..	..	..	93	..	11	..	104
Totals ..	22	4	21	52	2	4	29	11	534	337	40	15	254	216	5	..	12	..	131	..	835	199	2,473	1,034	31	..

* Including Manukau, Mercury Bay, and Coromandel.

TABLE SHOWING THE VARIOUS KINDS OF FISH CAUGHT AND APPROXIMATELY THE TOTAL QUANTITIES OF FISH AND SHELL-FISH LANDED AT THE DIFFERENT FISHING-PORTS FOR THE YEAR ENDED 31ST MARCH, 1928.

Name of Port.	Principal Kinds of Fish caught.	Quantity landed.	Shell Fishery.					Grand Total Value.
			Mussels.	Value.	Oysters (Dredge).	Value.	Crayfish.	Total Value.
				£		£		£
Mongonui	Snapper, flounder, rock-cod, tarakihi, hapuku, mullet, kahawai, kingfish	Cwt. 135	..	..	..	..	..	89
Hokiana	Snapper, mullet, flounder, kahawai (no other records)	60	..	..	..	..	..	..
Russell	Mullet, flounder, hapuku, snapper, crayfish	12,000	..	..	..	..	..	7,800
Kaipara	Snapper, mullet, flounder, trevally, gurnard, toheroa	4,400	..	150	..	..	..	2,000
			950C.	1,850	..	..	..	11,300
Whangarei	Snapper, hapuku, flounder, mullet, tarakihi, blue cod	2,900	..	..	..	..	..	2,800
Auckland	Snapper, tarakihi, flounder, dabs, sole, hapuku, gurnard, mullet, trevally, john dory, kingfish, cod, moki	134,040	550C.	832	..	2,500C.	2,750	123,877
			2,950S.	813	..	..	..	..
Thames	Snapper, flats, hapuku, gurnard, trevally, john-dory, butterfish, cod, kingfish, mullet, moki, tarakihi	19,370	240S.	72	..	..	..	20,223
Tauranga	Hapuku, kahawai, snapper, moki, tarakihi, flounder, mullet, blue cod, rock-cod, red cod, gurnard, garfish, barracouta, trevally, kingfish	2,000	..	..	..	..	..	5,600
Gisborne	Tarakihi, gurnard, snapper, hapuku, sole, flounder, kahawai, crayfish	3,761	..	..	..	..	..	4,467
Napier	Flat fish, round fish, whitebait, crayfish, shell-fish	18,912	400S.	250	..	480S.	895	24,652
New Plymouth	Snapper, flounder, mullet, hapuku	950	..	..	..	..	..	1,770
Wanganui	Snapper, hapuku, flounder	374	..	..	..	..	..	455
Foxton	Snapper, hapuku, flounder, kahawai, mullet, whitebait	700	..	..	..	..	..	2,000
Wellington	Hapuku, warehou, tarakihi, moki, crayfish, butterfish, flounder, sole, haake, barracouta, ling, snapper, cod, bass, gurnard, whitebait	38,163	..	..	..	..	..	71,965
Pictou	Hapuku, blue cod, moki, ling, crayfish, kingfish, kahawai (bait), herring (bait), snapper, tarakihi, warehou, butterfish, flounder, sole	13,920	..	..	..	..	..	19,487
Blenheim	Sole, flounder, red cod, moki, mackerel, hapuku, tarakihi, ling, crayfish	2,100	..	..	..	..	..	4,000
Nelson	Flat fish, snapper, bream, hapuku, gurnard, blue cod	2,870	..	..	..	..	..	4,607
Westport	Whitebait, groper, sole, kahawai, flounder, turbot, snapper, crayfish, cod, skate, ling, barracouta, herring, gurnard	911	..	..	..	..	..	2,511
Greymouth	Hapuku, herring, snapper, sole, flounder, cod, ling	81	..	..	..	..	..	320
Hokitika	Whitebait, herring, trevally, kahawai	1,438	..	..	..	..	..	8,445
Kaikoura	Hapuku, ling, kingfish, trumpeter, tarakihi, stony-eye, blue cod, crayfish	2,832	..	..	..	..	..	7,892
Kaipoi	Whitebait only	340	..	..	..	..	..	1,700
Lyttelton	Hapuku, crayfish, flounder, sole, ling, moki, butterfish, barracouta, kingfish	3,143	..	..	..	..	..	7,333
Timaru	Hapuku, sole, flounder, kingfish, tarakihi, ling, gurnard, moki	10,026	..	..	..	..	..	14,036
Oamaru	Flounder, sole, brill, groper, ling, red cod, gurnard, kingfish, barracouta	7,400	..	..	..	..	..	17,020
Moeraki	Hapuku, blue cod, moki, red cod, barracouta, ling, crayfish	2,076	..	..	..	..	..	3,012
Dunedin and Otago Districts	Hapuku, blue cod, red cod, ling, barracouta, moki, crayfish, ling, red cod, barracouta	3,663	..	..	..	..	..	5,408
	Hapuku, flat fish, blue cod, kingfish, tarakihi, trevally, moki, bream, trumpeter, ling, red cod, barracouta	47,340	..	..	..	..	..	47,340
Invercargill	Blue cod, hapuku, whitebait, flounder, sole, kingfish, ling, mullet, moki, barracouta, green-bone, crayfish	2,500	..	..	..	..	..	4,500
Bluff	Blue cod, hapuku, flounder, oysters	3,126	..	..	21,009S.	15,757	..	26,211
Stewart Island	Blue cod, hapuku, trumpeter, moki, green-bone	9,320	..	..	..	..	..	14,257
Chatham Islands	Blue cod, groper	4,955	..	..	..	..	..	13,585
	Totals	355,806	5,090	3,967	21,009S.	15,757	2,500C. 480S.	7,612 478,662

C. = cases; S. = sacks.

* Fresh in Shell.

TABLE SHOWING THE NUMBER OF SACKS AND VALUE OF THE OYSTERS DISPOSED OF IN THE DOMINION FOR THE YEAR ENDED 31ST DECEMBER, 1927.

Locality.						Disposed of in Dominion.	Total Value (Wholesale).		
DREDGE-OYSTERS.						Sacks.	£	s.	d.
Foveaux Strait	..	..	..	..	..	21,009	15,757	0	0
ROCK-OYSTERS.									
Bay of Islands	..	..	..	..	..	2,285	6,924	0	0
Kaipara Harbour	..	..	..	..	..	767			
Hauraki Gulf	..	..	..	..	..	2,027			
Coromandel ..	..	..	..	..	..	223			
Great Barrier	..	..	..	..	..	571			
Manukau Harbour	..	..	..	..	..	150			
Total	..	..	..	..	..	6,021	6,924	0	0
Grant total	..	..	..	..	..	27,030	22,681	0	0

TABLE SHOWING NUMBER AND SPECIES OF WHALES TAKEN ON NEW ZEALAND COAST, AND VALUE OF PRODUCTS FOR THE YEAR ENDED 31ST MARCH, 1928.

Whaling-station.	Number of Whales taken.	Species.	Yield of Oil.	Quantity of Bonedust or Fertilizer.	Total Value.
Whangamumu (Russell)	74	Humpback ..	Tons. 388	Tons. 70	£ 7,210
Marlborough Sounds (Picton)	{ 53 1	Humpback .. Right Whale ..	{ 325	..	6,500
Totals	128	..	713	70	13,710

TABLE SHOWING THE TOTAL QUANTITY AND VALUE OF FISH IMPORTED INTO AND EXPORTED FROM NEW ZEALAND DURING THE YEAR ENDED 31ST DECEMBER, 1927.

Fish imported.

Description of Fish.	Quantity.	Value.
Fish, preserved in tins	3,622,769 lb.	£ 163,296
Fish, frozen, smoked, dried, pickled, and salted	1,875 cwt.	6,310

Fish exported.

Description of Fish.	New Zealand Produce.		Not New Zealand Produce.	
	Quantity.	Value.	Quantity.	Value.
Oysters, fresh.. .. .	51,826 doz.	£ 561		£
Fish, preserved in tins	147,985 lb.	17,417	44,910 lb.	1,996
Fish, frozen, smoked, dried, pickled, and salted	21,245 cwt.	56,757	4 cwt.	20

SUMMARY OF EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS MASTER, MATE, OR ENGINEER.

Class of Certificate.	Auckland.			Wellington.			Lyttelton.			Dunedin.			Other Places.			Totals.		
	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.
Foreign - going masters and mates	2	5	7	19	20	39	3	4	7	..	..	..	..	..	..	24	29	53
Voluntary examination in compass deviation	..	..	..	4	3	7	..	..	..	..	..	..	..	..	..	4	3	7
Home - trade masters and mates	1	4	5	3	4	7	1	..	1	..	..	..	..	..	..	5	8	13
Masters of river steamers ..	6	1	7	4	3	7	..	..	..	..	..	..	..	..	..	10	4	14
Seagoing engineers (steam) ..	19	18	37	11	7	18	10	9	19	7	8	15	28	18	46	75	60	135
River-steamers engineers ..	2	..	2	..	..	..	1	..	1	..	1	1	4	2	6	7	3	10
Marine engine-driver ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Seagoing engineers (oil) ..	9	3	12	2	5	7	..	..	..	..	..	..	7	..	7	18	8	26
River engineers (oil) ..	29	10	39	1	..	1	3	1	4	1	..	1	32	8	40	66	19	85
Totals	68	41	109	44	42	86	18	14	32	8	9	17	71	28	99	209	134	343

RETURN OF STEAMERS AND OIL-ENGINE VESSELS TO WHICH CERTIFICATES OF SURVEY WERE
ISSUED IN NEW ZEALAND DURING THE YEAR ENDED 31ST MARCH, 1928. (RIVER-LIMIT VESSELS
NOT INCLUDED.)

Name of Vessel.	Tons Register.	Nominal Horse-power of Steam-engines and Brake Horse-power of Oil-engines.	Indicated Horse-power of Steam-engines.	Nature of Engines.	Nature of Propeller.	Class of Certificate.	Minimum Number of following Classes of Crew Law requires to be carried.			
							Able Seamen.	Firemen.	Trimmers.	Greasers.
Ahuriri ..	33	17	70	Compound ..	Screw ..	Home trade ..	2	1	..	..
Akaroa ..	24	28	121	" ..	" ..	" ..	1	1	..	..
Alexander ..	185	72	329	" ..	Twin screw ..	" ..	4	3	..	..
Alma ..	21	45	..	Oil-engine ..	Screw ..	" ..	1	..	..	..
Altair ..	30	48	..	" ..	Twin screw ..	" ..	2	..	..	..
Alwin G. ..	4	20	..	" ..	Screw ..	" ..	1	..	..	..
Apanui ..	135	28	215	Triple expansion	" ..	" ..	4	2	..	..
Arahura ..	796	145	960	" ..	Twin screw ..	" ..	7	3	2	3
Aratapu ..	68	170	..	Oil-engine ..	Screw ..	" ..	2	..	..	..
Arapawa ..	128	47	245	Triple expansion	" ..	" ..	4	2	..	..
Awahou ..	152	74	265	Compound ..	Twin screw ..	" ..	4	3	..	..
Baroona ..	54	24	149	" ..	Screw ..	" ..	2	2	..	..
Breeze ..	275	84	358	Triple expansion	" ..	" ..	4	3	..	..
Britannia ..	10	12	..	Oil-engine ..	" ..	" ..	1	..	..	..
Calm ..	523	550	682	Triple expansion	" ..	" ..	5	3	..	..
Canopus ..	835	250	1,108	" ..	" ..	" ..	6	3	2	3
Clansman ..	338	99	579	Compound ..	" ..	" ..	5	3	..	..
Claymore ..	119	54	410	Triple expansion	" ..	" ..	4	3	..	..
Comet ..	9	20	..	Oil-engine ..	Twin screw ..	" ..	1	..	..	..
Corinna ..	791	141	862	Compound ..	Screw ..	" ..	6	3	2	3
Coronation ..	59	100	..	Oil-engine ..	" ..	" ..	2	..	..	..
Cowan* ..	30	24	140	Compound ..	" ..	" ..	2	2	..	..
Cygnat ..	70	43	202	" ..	" ..	" ..	2	2	..	..
Daphne* ..	100	55	257	" ..	" ..	" ..	4	3	..	..
Dominion ..	5	30	..	Oil-engine ..	" ..	" ..	1	..	..	..
Dredge 350 ..	488	117	644	Triple expansion	Twin screw ..	" ..	5	3	..	..
Dunedin ..	125	500	1,028	" ..	" ..	" ..	4	3	2	3
Echo ..	100	95	..	Oil-engine ..	" ..	" ..	4	..	..	..
Elsie* ..	16	30	..	" ..	Screw ..	" ..	1	..	..	..
Elsie Mary ..	60	100	..	" ..	" ..	" ..	2	..	..	..
Excelsior* ..	6	46	..	" ..	Twin screw ..	" ..	1	..	..	..
Express ..	36	25	86	Compound ..	Screw ..	" ..	2	1	..	..
Fairburn ..	60	90	..	Oil-engine ..	Twin screw ..	" ..	2	..	..	..
Futurist ..	90	385	463	Triple expansion	Screw ..	" ..	2	3	..	..
Gael ..	55	20	93	Compound ..	" ..	" ..	2	1	..	..
Gale ..	287	450	325	Triple expansion	" ..	" ..	4	3	..	..
Glenelg ..	156	75	215	Compound ..	" ..	" ..	4	2	..	..
Gunbar ..	196	89	585	" ..	Twin screw ..	" ..	4	3	..	..
Haere ..	59	60	..	Oil-engine ..	" ..	" ..	2	..	..	..
Hananui II ..	44	58	278	Triple expansion	Screw ..	" ..	2	3	..	..
Hawera ..	92	31	211	Compound ..	" ..	" ..	2	2	..	..
Herekino ..	185	76	444	Triple expansion	" ..	" ..	4	3	..	..
Hikurangi ..	163	64	230	" ..	" ..	" ..	4	2	..	..
Hinemoa* ..	282	150	576	Compound ..	" ..	Foreign ..	5	3	..	..
Holmdale ..	295	99	488	Triple expansion	" ..	Home trade ..	4	3	..	..
Huanui ..	56	60	..	Oil-engine ..	" ..	" ..	2	..	..	..
Huia ..	166	160	..	" ..	" ..	Foreign ..	4	..	..	..
Huon Belle ..	20	30	..	" ..	" ..	Home trade ..	1	..	..	..
Inaha ..	116	300	..	Motor ..	Twin screw ..	" ..	4	..	..	..
Invercargill ..	123	41	247	Compound ..	Screw ..	" ..	4	2	..	..
Isabella de Fraine ..	76	90	..	Oil-engine ..	Twin screw ..	" ..	2	..	..	..
James Cosgrove† ..	114	61	480	Triple expansion	Screw ..	" ..	4	3	..	..
Jane Gifford ..	6	24	..	Oil-engine ..	Twin screw ..	" ..	1	..	..	..
Jean Gordon* ..	5	40	..	" ..	Screw ..	" ..	1	..	..	..
John ..	134	90	254	Compound ..	" ..	" ..	4	3	..	..
John Anderson ..	34	25	80	" ..	" ..	" ..	2	1	..	..
Kahanui ..	70	170	800	Triple expansion	Twin screw ..	" ..	2	3	2	3
Kahika ..	528	103	673	" ..	Screw ..	" ..	5	3	..	..
Kaiaia ..	24	55	..	Oil-engine ..	Twin screw ..	" ..	1	..	..	..
Kaipoi* ..	1,246	201	1,004	Triple expansion	Screw ..	Foreign ..	7	3	2	3
Kaikorai ..	1,860	430	1,740	" ..	" ..	" ..	8	6	3	3
Kaimai ..	784	126	693	" ..	" ..	Home trade ..	6	3	..	..
Kaimanawa ..	1,247	213	1,234	" ..	" ..	Foreign ..	7	3	2	3
Kaitangata ..	1,195	200	865	" ..	" ..	" ..	7	3	2	3
Kaitoa ..	141	65	298	Compound ..	Twin screw ..	Home trade ..	4	3	..	..
Kaituna ..	1,208	200	1,017	Triple expansion	Screw ..	Foreign ..	7	3	2	3
Kaiwarra ..	1,847	358	1,793	" ..	" ..	" ..	8	6	3	3
Kamo ..	725	150	747	" ..	" ..	" ..	6	3	..	..
Kamona ..	903	117	724	" ..	" ..	" ..	6	3	..	..
Kanna ..	1,049	158	1,141	" ..	" ..	" ..	7	3	2	3
Kapiti ..	114	35	207	Compound ..	" ..	Home trade ..	4	2	..	..
Kaponga ..	1,167	274	1,245	Triple expansion	" ..	Foreign ..	7	3	2	3
Kapua ..	6	31	..	Oil-engine ..	" ..	Home trade ..	1	..	..	..
Kapuni ..	97	30	184	Compound ..	" ..	" ..	2	2	..	..
Kartigi ..	1,167	274	1,247	Triple expansion	" ..	Foreign ..	7	3	2	3
Katie S. ..	6	12	..	Oil-engine ..	" ..	Home trade ..	1	..	..	..
Katoa ..	1,382	335	1,559	Triple expansion	" ..	" ..	7	6	3	3
Kawan ..	53	20	93	Compound ..	Twin screw ..	" ..	2	1	..	..

* Surveyed twice.

† Surveyed three times.

RETURN OF STEAMERS AND OIL-ENGINE VESSELS TO WHICH CERTIFICATES OF SURVEY WERE
ISSUED, ETC.—*continued.*

Name of Vessel.	Tons Register.	Nominal Horse-power of Steam-engines and Brake Horse-power of Oil-engines.	Indicated Horse-power of Steam-engines.	Nature of Engines.	Nature of Propeller.	Class of Certificate.	Minimum Number of following Classes of Crew Law requires to be carried.			
							Able Seamen.	Firemen.	Trimmers.	Greasers.
Kawau ..	17	50	80	Compound ..	Screw ..	Home trade ..	1	1	..	..
Kekeno ..	19	50	..	Oil engine ..	..	..	1	..	..	..
Kennedy* ..	131	38	156	Compound ..	Twin screw ..	..	4	2	..	..
Kiritona ..	75	150	..	Oil-engine ..	Screw ..	..	2	..	..	..
Koau ..	77	170	..	..	Twin screw ..	..	2	..	..	..
Kohi ..	20	90	..	..	..	..	1	..	..	..
Komata ..	1,294	260	1,234	Triple expansion	Screw ..	..	8	3	2	3
Kotare ..	83	20	119	Compound ..	..	..	2	2	..	..
Kotiti ..	18	58	..	Oil-engine ..	..	..	1	..	..	..
Kotunui ..	98	26	148	Compound ..	Twin screw ..	..	2	2	..	..
Kurow ..	1,540	330	1,657	Triple expansion	Screw ..	Foreign ..	8	6	3	3
Lady Eva ..	3	120	..	Oil-engine ..	..	Home trade ..	1	..	..	..
Lyttelton ..	24	108	285	Compound ..	Paddle ..	..	1	3	..	..
Maggie ..	6	8	..	Oil-engine ..	Screw ..	..	1	..	..	..
Maheno ..	3,318	600	6,188	Turbines ..	Twin screw ..	Foreign ..	12	18	9	3
Mahurangi ..	95	80	239	Compound ..	Screw ..	Home trade ..	2	2	..	..
Mako ..	247	65	503	Triple expansion	..	..	5	3	..	..
Manuka ..	2,813	357	3,025	..	Twin screw ..	Foreign ..	11	9	6	3
Maori ..	1,567	5,600	5,859	Turbines ..	Triple screw ..	Home-trade ..	9	15	9	3
Mararoa ..	1,329	530	3,430	Triple expansion	Screw ..	..	8	9	6	3
Margaret W.* ..	290	160	..	Oil-engine ..	..	Foreign ..	5	..	..	..
Maroro ..	176	120	..	..	..	..	4	..	..	..
Matangi ..	635	233	1,116	Triple expansion	Twin screw ..	Home trade ..	7	3	2	3
Maui ..	251	78	560	..	..	..	4	3	..	..
Miro ..	29	60	..	Oil-engine ..	Screw ..	..	1	..	..	..
Motiti ..	24	33	..	..	..	..	1	..	..	..
Motu ..	109	160	..	..	Twin screw ..	..	4	..	..	..
Muriel ..	22	18	134	Compound ..	Screw ..	..	1	2	..	..
Murihiku* ..	369	70	498	Triple expansion	Twin screw ..	..	4	3	..	..
Ngaio ..	712	130	1,084	..	Screw ..	..	7	3	2	3
Ngapuhi ..	311	160	900	..	Twin screw ..	..	5	3	2	3
Ngatiawa ..	220	55	423	..	..	..	5	3	..	..
Nikau ..	98	55	292	Compound ..	..	..	2	3	..	..
Nora Niven* ..	66	40	187	Triple expansion	Screw ..	..	2	2	..	..
Nor West ..	5	20	..	Oil-engine ..	..	..	1	..	..	..
Oban ..	24	20	..	..	Twin screw ..	..	1	..	..	..
Opawa ..	54	110	..	..	Screw ..	..	2	..	..	..
Opihi ..	638	116	621	Triple expansion	..	..	6	3	..	..
Orepuki ..	237	78	334	Compound ..	..	..	4	3	..	..
Oreti ..	72	30	154	..	..	..	2	2	..	..
Orewa ..	35	17	73	..	..	..	2	1	..	..
Otimai ..	111	160	..	Oil-engine ..	Twin screw ..	..	4	..	..	..
Owhitu ..	6	30	..	..	Screw ..	..	1	..	..	..
Pakura ..	304	115	516	Triple expansion	..	..	4	3	..	..
Parera ..	251	85	356	..	..	..	4	3	..	..
Paroto ..	48	120	..	Oil-engine ..	Twin screw ..	..	2	..	..	..
Pearl Kasper ..	16	60	..	..	Screw ..	..	1	..	..	..
Pegasus ..	10	30	..	..	..	..	1	..	..	..
Piri* ..	115	200	..	..	..	Foreign ..	4	..	..	..
Pono ..	30	52	..	..	Twin screw ..	Home trade ..	2	..	..	..
Poolta ..	933	176	684	Triple expansion	Screw ..	Foreign ..	6	3	..	..
Progress* ..	181	28	160	Compound ..	..	Home trade ..	4	2	..	..
Putiki ..	168	60	305	..	..	..	4	3	..	..
Rahiri ..	6	16	..	Oil-engine ..	..	..	1	..	..	..
Rakanui ..	6	120	..	..	..	..	1	..	..	..
Rakiura ..	13	10	..	..	..	..	1	..	..	..
Rarawa ..	460	140	1,114	Triple expansion	Twin screw ..	..	6	3	2	3
Regulus ..	232	150	549	Compound ..	..	..	4	3	..	..
Resolution ..	29	30	..	Oil-engine ..	Screw ..	Foreign ..	1	..	..	..
Ronaki ..	129	270	..	..	Twin screw ..	Home trade ..	4	..	..	..
Ruru ..	62	50	194	Compound ..	Screw ..	..	2	2	..	..
Scot ..	16	16	..	Oil-engine ..	..	..	1	..	..	..
Serfib ..	82	58	340	Triple expansion	..	..	2	3	..	..
Southern Cross ..	403	117	364	..	Twin screw ..	Foreign ..	6	3	..	..
Southland ..	186	1,200	..	Oil-engine ..	..	Home trade ..	4	..	..	..
Storm ..	371	94	478	Triple expansion	Screw ..	..	4	3	..	..
Tamahine ..	803	440	2,996	..	Twin screw ..	..	7	9	6	3
Te Aroha ..	56	125	..	Oil-engine ..	..	..	2	..	..	..
Te Awhina ..	87	99	483	Triple expansion	..	..	2	3	..	..
Tees* ..	247	78	372	..	Screw ..	Foreign ..	5	3	..	..
Terawhiti ..	91	99	692	..	..	Home trade ..	2	3	..	..
The Portland ..	39	60	..	Oil-engine ..	Twin screw ..	..	2	..	..	..
Theresa Ward* ..	75	95	458	Triple expansion	Screw ..	..	2	3	..	..
Thomas Currell ..	84	75	430	..	Twin screw ..	..	2	3	..	..
Thomas Bryan ..	93	74	430	..	Screw ..	..	2	3	..	..

* Surveyed twice.

RETURN OF STEAMERS AND OIL-ENGINE VESSELS TO WHICH CERTIFICATES OF SURVEY WERE
ISSUED, ETC.—*continued.*

Name of Vessel.	Tons Register.	Nominal Horse-power of Steam-engines and Brake Horse-power of Oil-engines.	Indicated Horse-power of Steam-engines.	Nature of Engines.	Nature of Propeller.	Class of Certificate.	Minimum Number of following Classes of Crew Law requires to be carried.			
							Able Seamen.	Firemen.	Trimmers.	Greasers.
Tiroa	94	31	188	Compound ..	Screw ..	Home trade ..	2	2	..	..
Titoki	247	86	563	Triple expansion	Twin screw	.. ..	4	3	..	..
Toa	110	180	..	Oil-engine ..	.. ..	.. ..	4	..	..	..
Tofua*	2,634	355	2,657	Triple expansion	.. ..	Foreign ..	11	9	3	3
Toiler	22	13	54	Compound ..	Screw ..	Home trade ..	1	1	..	..
Torea	28	60	..	Oil-engine ..	Twin screw	.. ..	1	..	..	..
Totara	147	55	270	Compound ..	Screw ..	.. ..	4	3	..	..
Tuatea	58	28	205	.. ..	.. ..	.. ..	2	2	..	..
Tuhoe	98	120	..	Oil-engine ..	Twin screw	.. ..	2	..	..	..
Violet	8	10	..	.. ..	Screw ..	.. ..	1	..	..	..
Wahine	1,798	720	7,938	Turbines ..	Triple screw	.. ..	9	18	12	3
Waihora	2,993	410	1,728	Triple expansion	Screw ..	Foreign ..	10	6	3	3
Waikonini ..	6	60	..	Oil-engine ..	.. ..	Home trade ..	1	..	..	..
Waikouaiti*	2,379	327	1,915	Triple expansion	.. ..	Foreign ..	9	6	3	3
Waimea* ..	207	207	506	.. ..	Twin screw	Home trade ..	4	3	..	..
Waiotahi ..	168	56	356	Compound ..	.. ..	.. ..	4	3	..	..
Waipahi	1,019	134	1,080	Triple expansion	Screw ..	Foreign ..	7	3	2	3
Waipiata ..	1,603	230	1,446	.. ..	.. ..	Home trade ..	8	6	3	3
Waipori	1,221	180	1,022	.. ..	.. ..	Foreign ..	7	3	2	3
Waipu	76	50	217	Compound ..	Twin screw	Home trade ..	2	2	..	..
Wairau	56	20	126	.. ..	Screw ..	.. ..	2	2	..	..
Waitomo	2,719	372	1,584	Triple expansion	.. ..	Foreign ..	10	6	3	3
Waterlily* ..	23	20	..	Oil-engine ..	.. ..	Home trade ..	1	..	..	..
Waverley ..	93	25	120	Compound ..	Twin screw	.. ..	2	2	..	..
Wetere	45	22	140	.. ..	Screw ..	.. ..	2	2	..	..
Whakari	10	125	..	Oil-engine ..	.. ..	.. ..	1	..	..	..
Whakarire ..	449	120	589	Compound ..	Twin screw	.. ..	5	3	..	..
Wingatui ..	1,344	1,300	1,063	Triple expansion	Screw ..	Foreign ..	7	3	2	3
Zingara	53	220	..	Oil-engine ..	.. ..	Home trade ..	2	..	..	..

* Surveyed twice.

RETURN OF SAILING-VESSELS SURVEYED DURING THE YEAR ENDED 31ST MARCH, 1928, WITH
PARTICULARS OF TONNAGE, ETC.
(River-limit vessels not included.)

Name of Vessel.	Tons Register.	Class of Certificate.	Minimum Number of Seamen required by Law to be carried.		
			Able Seamen.	Ordinary Seamen.	Appren- tices or Boys.
Alert	98	Home-trade ..	2	1	..
Combine	24	.. ..	1	..	..
Esme	20	.. ..	1	..	..
Ethel Wells ..	19	.. ..	1	..	..
Glenae	13	.. ..	1	..	..
Herald*	73	.. ..	2	1	..
Hero	25	.. ..	1	..	..
Kiatia	20	.. ..	1	..	..
Kitty Fraser ..	25	.. ..	1	..	..
Moa	99	.. ..	2	1	..
Pahiki	20	.. ..	1	..	..
Rangi	86	.. ..	2	1	..
Rewa	7	.. ..	1	..	..
Seagull	25	.. ..	1	..	..
Talisman	70	.. ..	2	1	..
Waiti	17	.. ..	1	..	..

* Surveyed twice.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT, ETC.—continued.

Date of Casualty.	Vessel's Name, Age, and Class.	Rig.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Finding of Court of Inquiry.	Name of Master.
			Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1927. April 9	Isabella de Fraine, o.e.v., 25 years	F. and A.	76	8	80 tons general	Damaged rudder	..	Hokianga bar, N.Z.	S.W.	Light	After safely negotiating bar, a sea struck vessel on starboard quarter, damaging the rudder. Vessel beached and rudder repaired.	J. R. Kennedy.
April 24	Ophi, s.s., 43 years	F. and A.	638	22	150 tons general	Struck wharf	..	Timaru, N.Z.	N.W.	Strong	When approaching No. 2 wharf a heavy squall struck vessel, causing her to bump heavily into wharf, splitting a plate	F. G. Warren.
April 29	Invercargill, s.s., 42 years	Schooner	123	12	9 tons bitumen in casks	Struck wharf	..	Wanganui, N.Z.	S.	Gale	While slewing vessel to turn up river at Castle-cliff Wharf she was carried on to the wharf, bumping and cracking a stem-plate about 5 ft. above water-line	J. J. Smith.
April 29	Kennedy, s.s., 61 years	F. and A.	131	12	80 tons general	Struck wharf	..	Wellington, N.Z.	S.	Gale	When berthing with a heavy southerly gale blowing, vessel bumped heavily against wharf, bursting several rivets in frame and fore hold	A. McP. Stuart.
April 30	Edna White, o.e.v., 15 years	F. and A.	6	1	..	Burnt; total loss	..	Auckland, N.Z.	S.E.	Light	While lying alongside wharf, vessel burst into flames: cause unknown. Vessel total loss	F. P. H. White.
May 5	Somerscet, s.s., 8 years	Schooner	5,381	50	4,300 tons general	Fire	..	Wellington, N.Z.	S.E.	3	Copra in No. 2 and No. 3 bridge deck burst into flames, which were extinguished by vessel's fire appliances. Copra slightly damaged	J. H. Price.
May 7	Baron Ruthven, s.s., 2 years	Schooner	1,904	32	4,802 tons sugar	Fouled a hulk	..	Auckland, N.Z.	E.	5	When intending to anchor for medical inspection, the reversing-gear jammed and the vessel refused to go astern, with the result that she drifted across the bows of the hulk "Gladbrook," the latter's stem head piercing the "Baron Ruthven's" side above water-line	A. Macdonald.
May 13	Scot, o.e.v., 22 years	Ketch	16	3	34 tons sand	Grounded	..	Waipu River, N.Z.	N.E.	Fresh	Rudder-chain parted and vessel became unmanageable. No room to let anchor go, as ship was still in the river. Slight damage to bulwarks	J. Williams.
May 22	Wainui, s.s., 42 years	F. and A.	684	30	260 tons general	Struck wharf	..	Auckland, N.Z.	N.W.	3	While berthing the port bow came in contact with fender piling, damaging same and knocking one small hole in starboard bow above main-deck line. Could not be avoided, as the tide caught vessel	W. H. W. Gardner.
May 23	Hikurangi, s.s., 38 years	Schooner	163	11	160 tons coal	Struck wharf	..	Auckland, N.Z.	S.W.	2	Vessel broke against helm by eddy inside deflector, and, coming astern on engines, caused her to swing more. She only hit a very light glancing blow on a protruding fender pile-head	G. H. George.
May 24	Hawera, s.s., 15 years	F. and A.	92	10	84 tons cheese	Grounded	..	Patoka River, N.Z.	N.	Light	Grounded in river through meeting two blind rollers and sagging towards the eastern wall	P. McLachlan.
May 29	Coronation, o.e.v., 25 years	Ketch	59	6	50 tons general	Grounded	..	Awanui, N.Z.	N.W.	Moderate	Struck rock entering Awanui Harbour. Casualty could not have been avoided had the rock been seen	A. Berridge.

1927. June 1	Maryland, s.s. ..	Schooner	2,962	40	..	1,100 tons sugar	Fouled a lighter ..	..	Auckland, N.Z.	..	Calm	..	Owing to hook on mooring-buoy straightening out, the vessel broke adrift, fouling a lighter astern. Slight damage to vessel	J. G. Hutebin- son.
June 4	Sappho, o.e.v., 15 years	Cutter ..	3	1	1	35 milk-cans ..	} Collision	..	Auckland, N.Z.	..	Calm	..	The Court found that owing to a fog the vessels did not sight each other until within a distance of about 120 ft. on opposite courses. The Court was of opinion that when the master of the "Wynona" saw the "Sappho" going to starboard when about 50 ft. ahead of him he still could have avoided a collision by going to starboard. Instead of doing so he endeavoured to reverse his engines and stalled them. Had the master of the "Wynona" put the helm to port in addition to reversing the collision would have been avoided. The Court was also of opinion that whether or not the master of the "Wynona" was justified in considering he could pass the "Sappho" with safety on the course he was on, and therefore in not following the rule of the road to go to starboard, he erred in his judgment at a late time in not going to starboard when he saw the "Sappho" doing so, but the Court was of opinion that his not doing so was due to the effect upon his mind of the imminence of a collision and the responsibility of the large number of passengers in his care. The course he took was one which, whatever the effect upon the other vessel, safeguarded the lives of his passengers, and the Court therefore made no order of any kind	M. Garnaut. A. E. Patterson.
June 4	Wynona, o.e.v., 4 years	Cutter ..	6	2	60	..		..		..		..		
June 8	Kohi, o.e.v., 16 years	Schooner	20	5	..	95 tons general ..	} Collision	..	Wellington, N.Z.	..	N.	3	When the "Kohi" was leaving the wharf the "Duchess" was coming into berth. On account of the master of the "Duchess's" vision being obscured by another vessel, she collided with the "Kohi." Slight damage to both vessels	R. Goldie. E. Cartner.
June 8	Duchess, s.s., 30 years	Cutter	137	5	16	..		..		..		3		
June 9	Kennedy, s.s., 61 years	F. and A.	131	12	..	85 tons general ..	Grounded	..	Manawatu bar, N.Z. ...	..	S.S.W.	Moderate	When entering the river, vessel took the ground and remained fast on North Spit, and when backed off grounded again on South Spit, owing to run-out of river. One blade of propeller broken, rudder-stock bent, and lower gudgeon broken	A. M. Stuart.
June 14	Tekoa, s.s., 4 years	Schooner	5,328	52	..	9,330 tons general	Blade of low-pressure turbine damaged	..	Off Auckland Harbour, N.Z.	..	S.	2	Vessel stopped to pick up pilot outside Rangitoto Beacon and when restarted it was found that blades of low-pressure turbine were damaged	H. Barnett.
June 16 June 16	Toroa, s.s., 2 years Iris, O.H.M.S. ..	F. and A. Cable-ship	1,917 ..	4 ..	50 ..	Passengers ..	} Collision	..	Auckland, N.Z.	..	Calm	..	Collided with H.M. cable-ship "Iris" during heavy fog in Auckland Harbour. Very slight damage to both vessels	W. Croll. W. G. Hughes.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT, ETC.—*continued.*

Date of Casualty.	Vessel's Name, Age, and Class.	Rig.	Register.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Finding of Court of Inquiry.	Name of Master.
				Crew.	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1927. June 17	Melville, o.e.v., 15 years	..	3	3	..	..	Fire: total loss	..	Hokianga Harbour, N.Z.	E.	Light	Launch high and dry. Master went into engine-room with lighted lamp, when explosion took place and fire broke out. Used fire-extinguishers, but of no avail. Vessel totally burnt	G. Wright.
June 20	Makura, s.s., 19 years	F. and A.	4,921	166	201	210 tons general	Leaking	..	Cook Strait, N.Z.	E.	8	On taking soundings at 7 a.m., 14 ft. 6 in. of water was found in No. 1 hold; all other compartments dry. Easterly gale with heavy sea experienced on 19th instant, and rivets were presumably started in the pounding of a head sea. No cargo in hold. Slight damage to ship	J. Mawson.
June 20	Waikouaiti, s.s., 13 years	Schooner	2,379	42	..	General	Struck wharf	..	Dunedin, N.Z.	N.E.	6	When approaching wharf, vessel took a sheer against her helm. Starboard anchor let go and engines put astern, but owing to strong wind and effect of tide, vessel struck wharf before she could be straightened up. Shell-plating pierced below port house-pipe and frame damaged	A. B. Sizer.
July 5	Tekoa, 5 years	Schooner	5,328	51	..	2,500 tons general	Grounded	..	Lyttelton, N.Z.	W.	4½	When leaving Lyttelton, too wide a sweep was taken, causing vessel to take the bottom for about twenty minutes, but without any damage to prevent her proceeding on her voyage to Dunedin	H. Barnett.
July 9	Sierra, o.e.v., 12 years	..	5	1	3	Mail	..	..	..	..	..	Both vessels approaching wharf at reduced speed, and did not see each other until contact, owing to misty rain. Damage to "Victory" about £25; no damage to "Sierra"	S. H. Watkins.
July 9	Victory, o.e.v., 16 years	..	3	1	..	..	Collision	..	Hokianga River, N.Z.	N.E.	Gale	Damage to propeller-blade	J. Watkins.
July 10	Canadian Seigneur, s.s., 8 years	Schooner	3,554	42	..	4,000 tons general	Lost propeller-blade	..	Lat. 36° 5' S., long. 178° 3' E. off N.Z. coast	N.	Gale	An abnormal shock was felt, and on investigation it was found that vessel had cast a	W. G. McConnechy.
July 26	Kaitoke, s.s., 9 years	Schooner	1,862	39	..	4,339 tons coal and timber	Steering-chain carried away	..	4 miles off North Cape, N.Z.	N.W.	Moderate	At 10.20 p.m. port steering-chain on main deck carried away. Hand gear brought into operation, and repairs effected by 11.26 p.m.	F. L. G. Jaunay.
Aug. 12	Isabella de Fraine, o.e.v., 25 years	F. and A.	76	8	..	25 tons general	Damaged port bulwarks	..	Hokianga, N.Z.	S.W.	Light	While crossing outwards over Hokianga bar a blind roller caught vessel, damaging the port bulwarks	J. R. Kennedy.
Aug. 12	Tutoe, o.e.v., 8 years	Schooner	98	8	..	1½ tons general	Fouled a bridge	..	Whangarei, N.Z.	S.W.	Light	While working through the bridge at Whangarei the smoke from engine-exhaust obscured the vision and vessel got too close to bridge before action could be taken. Bowsprit carried away	F. G. Shirley.
Aug. 16	Norna, o.e.v., 5 years	Yawl	8	3	..	..	Foundered	..	Pencarrow Heads, N.Z.	N.W.	Light	On passing Barrett's Reef vessel struck a submerged object and sunk shortly after in about 10 fathoms of water. She was subsequently refloated and repaired	A. G. Tait.

Aug. 26	Lena, o.e.v., 22 years	Ketch ..	4	2	..	25 tons granite ..	Capsized	..	Near Black Rocks, Coromandel, N.Z.	S.W.	Strong	H. A. Kasper.
Aug. 26	Wairua, s.s., 14 years	Cutter ..	220	14	20	30 tons general ..	Grounded	..	Kaipara Harbour, N.Z.	Calm	..	Rough seas rising suddenly, vessel took a list, cargo shifted and cracked stanchion, causing vessel to leak. One mast, centre-board, bowsprit, and windlass carried away, also bulwarks. As soon as dinghy was launched the vessel capsized. She was eventually righted, and brought to Auckland for repairs
Aug. 27	Parera, s.s., 6 years	Schooner	251	17	..	900 tons general	Struck wharf	..	Wellington, N.Z.	S.	Strong	Coming through a narrow passage against a strong tide, vessel sheered off her course and ran aground on soft mud. Vessel refloated after three hours. No damage
Aug. 30	Kanna, s.s., 16 years	Schooner	1,049	31	..	1,400 tons general	Grounded	..	Otago Harbour, N.Z.	Light	Airs	While working ship round with no room to use engines, wind blew vessel's head against wharf and broke hawse-pipe
Sept. 7	City of Batavia, s.s., 20 years	Schooner	3,572	71	..	5,000 tons general	Lost portion of propeller-blade	..	Lat. 29° 50' S., long. 150° 58' W., Pacific Ocean	S.S.E.	6	After leaving Dunedin Wharf vessel commenced steering widely, and, after taking three alternative sheers, took a fourth and grounded in the soft mud, with her bow on eastern side of the channel. Vessel refloated with the first of the flood tide
Sept. 9	Waimea, s.s., 18 years	Schooner	207	16	..	30 tons general ..	Lost one propeller-blade	..	Off Portland Island, N.Z.	E.	Light	Owing to play on shaft at after plunger-block stern gland, the engineer was of opinion that something was amiss with propeller. On examination it was found that a large portion of one of the propeller-blades was missing
Sept. 9	Hikurangi, s.s., 38 years	Schooner	163	11	..	35 tons coal ..	} Collision	..	Auckland, N.Z.	N.	3	While on a voyage from Napier to Auckland and off Portland Island, vessel shook one blade off port propeller
Sept. 9	Tiroa, s.s., 10 years	Schooner	24	10	..	..		..	..	..	..	While the "Hikurangi" was coming alongside the "Tiroa" the engines of the former were put astern, but vessel did not at once respond, with the result that she crashed into the "Tiroa," port side forward of the main rigging. Estimated damage to "Tiroa," £750; no damage to "Hikurangi"
Sept. 10	Somersets, s.s., 8½ years	Schooner	5,430	54	..	8,500 tons general	Fractured steam-pipe	..	Wellington, N.Z.	Various	2	Fractured steam-pipe in forward well deck, supplying steam to windlass. Cause, wear-and-tear. No damage to ship or cargo
Sept. 13	Anamba, s.s., 25 years	Schooner	1,159	idle	..	..	Fire	..	Wellington, N.Z.	N.	Light	Vessel laid up at wharf. At about 10.55 p.m. a fire was observed in the firemen's mess-room. The brigade was called and fire-extinguished. Slight damage to deck
Sept. 13	Alwyn G., o.e.v...	Schooner	4	3	..	65 tons sand ..	Grounded	..	Auckland, N.Z.	Calm	..	Vessel rested on a stone while berthed at Nelson Street wharf. The stone made a hole in her bottom 2 ft. square. About £60 worth of damage done
Sept. 13	Lancia, o.e.v., 50 years	Cutter ..	6	2	20	..	Engine trouble	..	Hauraki Gulf, N.Z.	S.W.	5	Gasket leaked, allowing water to get under cylinder. Passengers arrived home safely in tow of s.s. "Kawan"
Sept. 17	Moa, sail, 20 years	Schooner	99	5	..	..	Masts carried away	..	Off Awamui Heads, N.Z.	E.N.E.	Gale	A heavy squall struck vessel, carrying away the foremast, fore and main topmasts. No damage to other gear

E. C. Lannan.

F. Jensen.

F. M. Glass.

..

J. Howell-Price.

D. L. Clark.

G. H. George.

W. Wahlstrom.

H. E. Nancollas.

J. Green.

W. E. Barnes.

W. F. Coutts.

RETURN OF VESSELS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT, ETC.—continued.

Date of Casualty.	Vessel's Name, Age, and Class.	Rig.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Finding of Court of Inquiry.	Name of Master.	
			Register Tonnage.	Crew.	Passengers.	Cargo.			Casualty.	Direction.			Force.
1927. Sept. 19	Ngairo, s.s., 13 years	Schooner	139	4	50	..	Struck wharf	..	Auckland, N.Z.	N.E.	Breeze	Owing to engines being late in reversing, vessel collided with wharf. Part of stem carried away	W. Croll.
Sept. 23	Putiki, s.s., 22 years	Schooner	167	17	..	Steel in bundles	Boiler manhole blew out	..	Auckland, N.Z.	Calm	..	Joint of bottom manhole door blew out. Accident could not be avoided	P. A. Miles.
Sept. 23	Progress, s.s., 45 years	Schooner	181	12	..	General	Grounded	..	Waikato Heads, N.Z.	S.W.	Light ..	While crossing the bar at Waikato Heads, vessel stranded about midway over the bar and remained fast for about an hour, during which time she did considerable damage by bumping, causing her to leak. Temporary repairs were effected, and vessel proceeded to Wellington for permanent repairs	H. L. Hay.
Sept. 25	Coronation, o.e.v., 25 years	Ketch ..	59	6	..	General.	Stranded	..	S.E. end of Kawau Island, N.Z.	N.W.	Light ..	The Court found that the casualty was caused by the wrongful act of Ordinary Seaman John Fitten leaving the wheel for the purpose of going to the galley to make some coffee and leaving the ship with no one in charge. The Court thought the master was acting in accordance with the general custom on the coast with this class of vessel when he left the vessel in charge of the ordinary seaman, having given him instructions to be called in the event of any unusual happening or on the vessel nearing Kawau. They further thought that regulations should be made providing for a second certificated officer to be carried in vessels of this class. No order for costs made against the master	T. Monaghan.
Sept. 27	Speedwell, o.e.v., 12 years	Launch	4	1	..	..	Missing	..	Between Whangarei and Cape Brett, N.Z.	S.	Strong to gale	Vessel left Auckland for Russell with only the master aboard. It is supposed the vessel foundered near Elizabeth Reef, on Wide Berth Island, about half-way between Whangarei and Cape Brett, as there is a treacherous bottom on this part of the coast, and it is possible the launch struck and filled	E. Walker.
Oct. 1	Waiteka, o.e.v., 20 years	..	5	3	..	Timber and case oil	Sunk at wharf	..	Wanganui, N.Z.	Calm	..	Accident caused through vessel resting on bottom of river owing to extremely low tide, and failing to rise when tide began to make owing to vessel being caught in one of the wharf-piles	A. Anderson.
Oct. 9	Kent, s.s., 9 years	Schooner	5,451	56	..	2,000 tons general	Struck breakwater	..	New Plymouth, N.Z...	S.S.W.	6	When berthing with Harbourmaster in charge, squally conditions with engines going full astern, vessel struck Breakwater with a glancing blow, twisting stem, damaging several plates, and making water slightly in fore peak	C. Matthews.

Oct. 18	Tremeadow, s.s., 8 years	F. and A. 3, 231	40	..	5,000 tons general	Engine trouble	..	Lat. 32° 25' S., long. 162° 30' W., South Pacific	S.E.	3	At 3.30 a.m. front forward column of engines was found to be fractured and one bolt broken, which was replaced, and two extra- long stay-bolts put in to replace others in fractured portion	T. Tregoning.
Oct. 19	Duchess, s.s., 30 years	Schooner	137	5	47	} Collision	..	Wellington, N.Z.	N.	6	While the "Duchess" was rounding up to berth at the wharf the "Cobar" was backing out, and when nearing the "Duchess" the wind caused the "Cobar's" stern to swing towards the "Duchess's" bow, causing both vessels to collide slightly	J. W. Gower.
Oct. 19	Cobar, s.s., 25 years	Schooner	69	5	..		..	..	..	..	Engine not running satisfactorily, on ex- amination it was found that the propeller was against the rudder-post. Vessel was put on slip at Lyttelton, and it was found that a nut had come loose, allowing pro- peller to shift back	E. Cartner.
Oct. 19	Kotiti, o.e.v., 29 years	Cutter ..	18	5	..	Propeller trouble	..	Kaikoura, N.Z.	Calm	..	..	C. Anderson.
Oct. 19	Waipori, s.s., 26 years	Schooner	1,220	32	..	Rudder cross-head carried away	..	Between Westport and Dunedin, N.Z.	N.	3	Shackle connecting chain from steering-engine to rod carried away. Five minutes later a heavy sea struck the rudder and carried away rudder cross-head. Helm secured by relieving tackles, and repairs effected	W. H. D. Gard- ner.
Oct. 20	Thomas Currell, s.s., 10 years	Ketch ..	84	10	..	Grounded	..	Manukau Harbour, N.Z.	W.	Light ..	When steaming up channel with a strong sun right ahead, making it difficult to see the buoys, vessel went on a soft mudbank.	F. Johnson.
Oct. 22	Miro, o.e.v., 2 years	Ketch ..	29	5	..	Jib-boom carried away	..	10 miles off Castle Point, N.Z.	N.W.	9	Refloated next day. No damage	M. Himainen.
Oct. 23	Maroro, o.e.v., 23 years	Schooner	175	12	..	Stranded; total loss	..	Black Head, N.Z.	W.S.W.	Gale ..	The Court found that the "Maroro" was beached through stress of weather, there being no evidence whatever of any negligent act, default, or omission on the part of the captain or first officer which in any way caused or contributed to the casualty	J. W. Jones.
Oct. 24	Huanui, o.e.v., 27 years	Ketch ..	56	7	..	Fire	..	Auckland, N.Z.	S.W.	Strong	Galley and mainsail destroyed by fire and main boom scorched. If thick or softer asbestos had been attached to the match- lining the fire might not have occurred	N. A. Olsen.
Aug. 28	John Townley, s.s., 23 years	Dredge	83	7	..	Grounded	..	Gisborne, N.Z.	W.	Light ..	While engaged in dragging for moorings near mouth of diversion cut, the vessel was struck by three large swells coming sud- denly, which forced the vessel into shallow water, where she grounded. Very slight damage to ship	A. H. Kay.
Oct. 29	Storm, s.s., 7 years	Cutter ..	371	17	..	Grazed reef	..	Wellington Harbour, N.Z.	N.	Light ..	While proceeding from Miramar Wharf to No. 6 Wharf and rounding Point Jernin- ham, the port bilge grazed the reef inside the buoy. Apparently no damage to ship	L. B. Sheppard.
Nov. 2	Waipata, s.s., 1 year	Schooner	1,603	35	..	Struck wharf	..	Wellington, N.Z.	S.	Moderate	While berthing at Taranaki Street Wharf the wind caught vessel on port quarter, causing her to strike the wharf end on, doing damage to wharf and loosening a few rivets	C. Elders.
Nov. 5	Te Toa, o.e.v., 9 years	Launch	6	4	..	Fire	..	Manukau Harbour, N.Z.	S.W.	3	Fire caused by blockage in fuel-pipe, causing backfire in carburettor. Wiring of lighting- system destroyed, one magneto and engine- room walls slightly scorched	W. Douglas.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT, ETC.—*continued.*

Date of Casualty.	Vessel's Name, Age, and Class.	Reg.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Finding of Court of Inquiry.	Name of Master.
			Crew	Passen- gers.	Cargo.	Casualty.			Dirrec- tion.	Force.		
1927. Nov. 17	Ngapuhi, s.s., 26 years	Schooner	311	33	12 tons general and 11 horses	Grounded	..	Manukau Harbour, N.Z.	S.	Light ..	When rounding one of the buoys, vessel swung quicker than usual and took the ground on soft mud. No damage to ship while steaming up river between 3 and 4 knots, and after passing No. 5 pile at Mitchell's Reach, the vessel took the mud, and the flood-water catching her on star-board bow, swung her on to the bank. No damage to ship or cargo	W. Bark.
Nov. 17	Storm, s.s., 7 years	Cutter ..	371	17	500 tons general	Grounded	..	Wanganui River, N.Z.	S.E.	Light ..	While on a voyage from Wellington to Wanganui, vessel found to be leaking badly, caused through vessel straining in heavy weather	L. B. Sheppard.
Nov. 24	Hawera, s.s., 15 years	F. and A.	74	10	100 tons general	Leaking ..	..	Between Wellington and Wanganui, N.Z.	N.N.W.	Fresh ..	The "Thistle" was loading at Castlecliff Wharf when the "Breeze," which was berthing at same wharf, struck her a slight blow, doing slight damage. No damage to "Breeze"	P. MacLachlan.
Dec. 1	Thistle, aux., 29 years	Schooner	77	10	300 crates cheese	} Collision	..	Wanganui River, N.Z.	S.	Fresh ..	While proceeding down the harbour on way to Westport the chief engineer reported that the forward bracket of the rocking-shaft had cracked, necessitating the vessel's return to the wharf for repairs	D. Connor.
Dec. 1	Breeze s.s., 18 years	Schooner	275	17	..		..	Wellington Harbour, N.Z.	N.	Strong	On the way from Whatipu to Onehunga the Primus stove flared up and took the master's attention from helm; being close to the rocks, an eddy caught the launch and caused her to sheer on to rocks, which she struck with her forefoot. Slight damage to forefoot	J. S. McKenzie. H. S. Whyborn.
Dec. 6	Komata, s.s., 20 years	Schooner	1,294	34	300 cases oil and 3 tons general	Bracket on rocking-shaft cracked	..	Wellington Harbour, N.Z.	N.	Strong	Rudder-stock twisted, caused by vessel being blown around with the wind when turning round at New Plymouth wharf	C. W. White.
Dec. 11	Awhitu, o.e.v., 3 years	Cutter ..	4	2	..	Struck rock	..	Manukau Harbour, N.Z.	Calm	..	When the vessel was loading shingle on the beach the wind shifted in, blowing very hard, raising heavy sea, which carried her in higher up on the beach, and she landed on a boulder, which went through her	E. A. Eden.
Dec. 12	Totara, s.s., 2 years	F. and A.	147	15	4 tons general ..	Rudder-stock twisted	..	New Plymouth, N.Z.	S.W.	Moderate	When the "Thistle" was leaving the Castle-cliff Wharf, and rounding the bow of the hulk "Te Anau," the ebb tide caught her, causing her to collide with the "Regulus," abait the bridge. The stem of the "Thistle" was damaged, and the damage to the "Regulus," consisted of some torn plates and helting and some rivets off gussets in engine-room	A. W. Bryant.
Dec. 12	Waiti, sail, 35 years	Schooner	17	3	50 yards shingle	Stranded	..	McDonald's Beach, Coromandel, N.Z.	S.W.	Moderate gale		C. McLeod.
Dec. 12	Regulus, s.s., 19 years	F. and A.	232	18	3 tons general ..	} Collision	..	Wanganui River, N.Z.	S.W.	Light ..		D. Connor.
Dec. 12	Thistle, o.e.v., 29 years	F. and A.	77	10	..		..					
Dec. 14	Komata, s.s., 20 years	Schooner	1,294	33	..	6 in. crack in port side	..	Wellington, N.Z.	Calm	..	While loading railway-iron one rail slipped through sling and pierced a 6 in. crack in port side	H. S. Whyborn.

1928.
Jan. 7

6—H. 15.

Jan. 7	Kamona, s.s., 24 years	903	25	..	2,000 tons coal..	Boiler leaking	..	Off North Cape, N.Z...	Calm	..	Boiler found to be leaking. On examination it was found to be cracked at neck of low furnace	D. McDonald.
Jan. 7	Ngatiawa, s.s., 23 years	220	20	4	15 tons general..	Broken shaft	..	Houhora, N.Z.	Calm	..	When about to berth at Houhora Wharf, and going astern with port engine, the shaft snapped and the propeller dropped off	A. Pert.
Jan. 9	Kotiti, o.e.v., 20 years	18	5	..	15 tons wool ..	Broken shaft	..	Between Kaikoura and Lyttelton, N.Z.	N.E.	4	When proceeding from Kaikoura to Lyttelton the tail-shaft carried away just outside boss, and the propeller was lost	C. Anderson.
Jan. 18	Altair, o.e.v., 23 years	30	4	..	3 tons general ..	Foremast and fore-boom carried away	..	Off Cape Colville, N.Z.	E.	6	While jibing off Cape Colville the foremast and foreboom carried away	J. D. Bell.
Jan. 19	Kiwi, s.s., 33 years	78	5	..	..	Collision	..	Auckland, N.Z.	N.E.	6	While the "Ronaki" was backing out from the wharf she collided with the "Kiwi" through the engines stalling. The fore part of the bridge and about 20 ft. of bulwarks of the "Kiwi" were carried away	T. Eady.
Jan. 19	Ronaki, o.e.v., 5½ years	128	10	..	Ballast							K. Brink.
Jan. 24	Invercargill, s.s., 50 years	123	12	4	40 tons general	Cotter-pin broken	..	Between Wanganui and Wellington, N.Z.	N.W.	2	While on a voyage from Wanganui to Wellington the cotter-pin through air-pump rod broke. Repairs effected and vessel proceeded on voyage	J. J. Smith.
Jan. 26	Fairburn, o.e.v., 21 years	60	6	..	10 tons wool and sleepers	Tail-shaft starboard engine carried away	..	Pinohia Reach, Pelorus Sound, N.Z.	N.W.	6	While on a voyage from Havelock to Wellington the tail-shaft of the starboard engine carried away. Vessel beached at Te Rawa, propeller secured, and voyage resumed	W. H. Sawyers.
Jan. 28	Invercargill, s.s., 50 years	123	12	..	40 tons general..	Air-pump cover broken	..	Between Wellington and Wanganui, N.Z.	N.	Light ..	While on a voyage from Wellington to Wanganui the air-pump cover broke; probably caused through the repairs to the cotter-pin on 24th instant not being efficiently carried out	J. J. Smith.
Jan. 30	Gunbar, s.s., 17 years	196	14	..	..	Grounded	..	Inner Harbour, Napier, N.Z.	Calm	..	On leaving port at last of the ebb tide the vessel grounded on the Pipi Bank and damaged the rudder. Had vessel left an hour sooner or an hour later, probably no stranding would have taken place	J. Farrell.
Jan. 31	Motiti, o.e.v., 29 years	23	3	..	45 tons shingle	Collision	..	Auckland, N.Z.	N.	Light	The "Motiti" was lying alongside the wharf when the fishing-launch "Almond," which was approaching the wharf, collided with her. The accident was caused through the engine of the "Almond" stalling and not having sufficient room to answer her helm in order to avoid a collision. Damage to "Motiti" about £15	H. Carey.
Jan. 31	Almond, o.e.v., 36 years	4	3	1	..							J. L. Durin.
Feb. 5	Herald, sail, 30 years	73	4	..	112 yards sand	Stranded	..	Whangapoua Harbour, N.Z.	Calm ..	..	When crossing the bar the wind fell away and vessel set on to shallows. Kedges were run out, but, owing to falling tide, failed to heave her off. The wind changed to north-east, causing the sea to make on flood tide, vessel straining, and sprung the stempost. Vessel eventually hove off. Slight damage to vessel	E. Seallars.

RETURN OF WRECKS AND CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT FROM 1ST APRIL, 1927, TO 31ST MARCH, 1928.

Date of Casualty.	Vessel's Name, Age, and Class.	Rig.	Number of		Nature of		Number of Lives lost.	Place where Casualty occurred.	Wind.		Finding of Court of Inquiry.	Name of Master.
			Crew	Passengers.	Cargo.	Casualty.			Direction.	Force.		
1928. Feb. 5	Wairua, s.s., 14 years	Cutter ..	14	25	30 tons general	Struck submerged object	..	Northern Wairoa River, N.Z.	Calm	..	Vessel struck a submerged object on her way up river. Next day, as she was leaving Mangawhare Wharf, the tail-shaft propeller and bracket fell off, probably caused through vessel striking the object the day before. While vessel was proceeding down harbour outward bound, smoke was observed rising from ventilators. No. 2 hold. Fire-hoses were connected up and flames extinguished. About 45 cases tobacco damaged.	W. F. Coutts.
Feb. 6	City of Bath, s.s., 2 years	Schooner	65	..	General	Fire ..	..	Otago Harbour, N.Z. ...	E.N.E.	5	Launch struck submerged rock off the western side of Waimate Island. Rock covered by 4 ft. of water. Vessel drawing 5 ft. Damage to launch about £50. Master navigating on N.Z. Chart No. 2 instead of on Coromandel Chart, which is on a larger scale.	W. S. Coughlan.
Feb. 8	Muriwai, o.e.v., 20 years	Cutter ..	2	..	..	Grounded	..	Waimate Island, Coromandel, N.Z.	N.	Light ..	Launch struck submerged rock off the western side of Waimate Island. Rock covered by 4 ft. of water. Vessel drawing 5 ft. Damage to launch about £50. Master navigating on N.Z. Chart No. 2 instead of on Coromandel Chart, which is on a larger scale.	F. G. R. Brocas.
Feb. 8	Dauntless, o.e.v., 19 years	F. and A.	1	..	..	Fire; total loss	..	Off Maraetai Point, Auckland, N.Z.	S.	1	Vessel caught fire owing to ignition of benzine and benzine-fumes caused by engine back-firing. Vessel beached on Maraetai Reef and burned to water's edge, becoming a total loss.	A. Cole.
Feb. 9	Kestrel, s.s., 47 years	Barge ..	4	16	..	Grounded	..	Auckland, N.Z.	S.W.	Light ..	When approaching the Northcote Wharf and when a line had been made fast, owing to the engineer mistaking an order, the vessel drifted past the wharf and grounded in the mud, remaining there until the next morning.	T. F. Jeathart.
Feb. 10	Huon Belle, o.e.v., 64 years	Ketch ..	4	..	60 tons sand	Stranded	..	Whangapua bar, Bay of Islands, N.Z.	S.W.	Light ..	When crossing the bar at night the vessel was caught on the bow by the tide and turned a little to port. Owing to the narrow bar, vessel struck a rock and partially damaged the stem.	J. Carey.
Feb. 16	Waikawa, s.s., 8 years	Schooner	48	..	8,000 tons general	Stranded..	..	Papeete, Tahiti	Calm	..	While entering Papeete vessel touched a submerged object, probably a coral head, at a place where there should have been 10 fathoms of water. Very slight damage to vessel.	E. Harris.
Feb. 17	Huanui, o.e.v., 18 years	Ketch ..	7	..	30 tons empty drums	Foremast sprung	..	2½ miles off Taurakirae Head, N.Z.	N.N.W.	7	A sudden squall struck the vessel and sprung the foremast under the trestle-trees.	T. C. Thomsen.
Feb. 18	Mako, s.s., 15 years	Schooner	21	5	360 tons general	Fractured condenser-door	..	Between Auckland and Napier, N.Z.	N.W.	Light ..	Main condenser - door became fractured through deterioration. No damage to hull of ship, or cargo.	W. S. Clark.

Feb. 18	Enterprise, o.e.v., 27 years	..	2	2	..	Fire : total loss	..	Wairarapa Lake, N.Z.	S.	Light ..	Engine back-fired, causing vessel to catch fire. Vessel burned to water's edge and sank	W. J. Busch.
Feb. 28	Hightgate, s.s., 26 years	Schooner	2,127	26	..	Leaky boiler	..	Wellington, N.Z.	N.	Light ..	Slight leak in combustion-chamber stay, caused by ordinary wear-and-tear. No damage to ship or cargo	J. A. Stubbs.
Mar. 6	Hinemoa, s.s., 52 years	Schooner	282	31	..	Damaged rudder	..	Norfolk Island, Pacific Ocean	S.E.	Light ..	While vessel being heaved towards the jetty the rudder may have touched a submerged object, as it was later noticed that the rudder was slightly displaced	W. H. McDonald.
Mar. 21	Gale, s.s., 9 years	Schooner	287	17	..	Grounded	..	Wanganui River, N.Z.	Calm	..	When proceeding up Wanganui River the ship took a sheer to starboard, and before she could be straightened up grounded between Nos. 7 and 8 piles. Vessel re-floated later. No damage	C. V. Stanish.
Mar. 21	Somerset, s.s., 9 years	Schooner	5,380	53	..	Loose rudder	..	At sea ; discovered at Auckland	..	..	Rudder found loose in neck-bush when vessel reached Auckland ; due to wear-and-tear and heavy weather experienced on the voyage. Repairs effected at Auckland	J. H. Price.
Mar. 23	Gale, s.s., 9 years	Schooner	287	17	..	Struck wharf	..	Wanganui River, N.Z.	W.	3	When vessel leaving Wanganui Wharf and swinging with the flood tide the tide caught her quarter, causing her stern to swing under the wharf, carrying away box covering hand steering-gear, also lug for connecting up hand gear	C. V. Stanish.
Mar. 23	Scot, o.e.v., 23 years	Ketch ..	16	3	..	Fire	..	Auckland, N.Z.	Calm	..	Fire broke out in engine-room ; cause unknown. Roof of engine-room charred	W. E. Aspden.
Mar. 24	Hawera, s.s., 17 years	Schooner	92	10	..	Stranded	..	Patea River, N.Z.	W.	6	When about 100 ft. inside end of eastern wall vessel touched bottom, doing damage to belting, port side. Cause, too much sea with insufficient water	P. McLachlan.
Mar. 25	Presto, s.s., 30 years	..	20	2	..	Struck launch "Regina"	..	Auckland, N.Z.	S.	Light ..	When proceeding to Man-o'-war steps to pick up Health Officer, vessel collided slightly with the launch "Regina." No damage to either vessel	G. Moir.
Mar. 30	Kintyre, s.s., 21 years	F. and A.	3,115	34	..	Boiler-stay blew out	..	Off Tiritiri, N.Z.	Calm	..	Boiler-stay blew out. Furnaces all down on arrival. Donkey-boiler out of commission ; furnace holed at neck. Due to defective construction	D. A. Addison.

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

Nature of Casualty.	Casualties on or near the Coasts of the Dominion.						Casualties outside the Dominion.						Total Number of Casualties reported.		
	Steamers.			Sailing-vessels.			Steamers.			Sailing-vessels.			Total outside Dominion.		
	No. of Vessels.	Tonnage.	No. of Lives lost.	No. of Vessels.	Tonnage.	No. of Lives lost.	No. of Vessels.	Tonnage.	No. of Lives lost.	No. of Vessels.	Tonnage.	No. of Lives lost.	No. of Vessels.	Tonnage.	No. of Lives lost.
Strandings—															
Total wrecks ..	2	179	1	..	..	..	..	..	..	..	..	..	2	179	1
Slight damage ..	16	6,535	..	..	90	..	..	3,525	..	..	..	..	19	10,150	..
No damage ..	10	8,272	..	..	..	..	..	..	..	..	..	..	10	8,272	..
Total strandings ..	28	14,986	1	2	90	..	1	3,525	..	..	..	..	31	18,601	1
Collisions—															
Total loss ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Slight damage ..	18	8,029	..	..	..	..	..	..	..	..	..	..	18	8,029	..
No damage ..	5	235	..	..	..	..	..	..	..	..	..	..	5	235	..
Total collisions ..	23	8,264	..	..	..	..	..	..	..	..	..	..	23	8,264	..
Fires—															
Total loss ..	4	14	..	..	..	..	..	..	..	..	..	..	4	14	..
Slight damage ..	5	6,618	..	..	..	..	..	..	..	..	..	..	5	6,618	..
No damage ..	1	3,154	..	..	..	..	..	..	..	..	..	..	1	3,154	..
Total fires ..	10	9,786	..	..	..	..	..	..	..	..	..	..	10	9,786	..
Miscellaneous, including damage by heavy seas to hull and cargo, loss of masts, sails, &c., and breakdown of machinery	40	39,225	..	1	99	..	4	12,465	..	..	..	..	45	51,789	..
Total number of casualties reported	101	72,261	1	3	189	..	5	15,990	..	..	..	..	109	88,440	1

RETURN OF THE NUMBER OF LAND BOILERS AND MACHINERY INSPECTED DURING THE FINANCIAL YEAR ENDED 31ST MARCH, 1928.

Boilers.

Class.				Not exceeding 5 Horse-power.	Exceeding 5 but not exceeding 10 Horse- power.	Exceeding 10 Horse-power.	Total.
Stationary	..	..	..	1,161	1,600	2,307	5,068
Portable	..	..	..	221	856	402	1,479
				1,382	2,456	2,709	6,547
Digesters and other steam-pressure vessels				..	..	..	1,134
Total	..	..	..	..	..	..	7,681

Machinery.

Class.				Number.	Class.				Number.
Hydraulic lifts	..	..	..	223	Oil-engines	..	..	..	14,204
Electric lifts	..	..	..	942	Gas-engines	..	..	..	743
Gas lifts	..	..	..	1	Electric motors	..	..	..	22,960
Oil lifts	..	..	..	6	Miscellaneous	..	..	..	48
Steam lifts	..	..	..	13					
Gas, hydraulic, and electric hoists	..	..	..	1,350	Total	..	..	..	40,957
Water-engines, peltons, turbines, and water-wheels	..	..	..	467					

RETURN OF NEW BOILERS INSPECTED FOR THE YEAR ENDED 31ST MARCH, 1928.

District.				Made in Dominion.		Imported.		Total.	
				Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.
Auckland	..	..	..	37	305	32	230	69	535
Auckland North	..	..	..	1	..	1	28	2	28
Auckland South	..	..	..	11	14	8	11	19	25
Canterbury North	..	..	..	29	78	7	13	36	91
Canterbury South	..	..	..	2	..	..	..	2	..
Gisborne	..	..	..	1	..	1	10	2	10
Hawke's Bay	..	..	..	3	3	11	43	14	46
Nelson	..	..	..	1	..	..	..	1	..
Otago	..	..	..	11	73	13	1	24	74
Southland	..	..	..	5	9	2	..	7	9
Taranaki	..	..	..	12	21	4	63	16	84
Taranaki North	..	..	..	2	..	..	..	2	..
Wellington	..	..	..	46	251	18	149	64	400
Wellington North	..	..	..	..	..	1	..	1	..
Westland	..	..	..	1	18	1	48	2	66
Totals	..	..	..	162	772	99	596	261	1,368

RETURN OF THE NUMBER OF CERTIFICATES ISSUED TO LAND ENGINE-DRIVERS AND ELECTRIC-TRAM DRIVERS DURING THE YEAR ENDED 31ST MARCH, 1928.

Class.				Number.	Class.				Number.
Service—					Competency—continued.				
First-class engine-driver	..	..	..	3	Locomotive- and traction-engine driver	..	..	..	51
					Locomotive-engine driver	..	..	..	7
Competency—					Traction-engine driver	..	..	..	32
First-class engine-driver	..	..	..	30	Electric-tram driver	..	..	..	65
Second-class engine-driver	..	..	..	190					
Steam winding-engine driver	..	..	..	1	Total	..	..	..	379

RETURN OF LAND-ENGINE DRIVERS' AND ELECTRIC-TRAM DRIVERS' EXAMINATIONS HELD THROUGHOUT NEW ZEALAND DURING THE YEAR ENDED 31ST MARCH, 1928, SHOWING THE NUMBER OF SUCCESSFUL AND UNSUCCESSFUL CANDIDATES.

Place.	First Class.		Second Class.		Steam Winding.		Locomotive and Traction.		Locomotive.		Traction.		Electric-tram Driver.		Total.		Grand Total.
	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	
Auckland	1	4	19	7	..	..	4	..	1	..	..	..	8	..	33	11	44
Blenheim	..	..	1	..	..	..	..	..	..	..	1	1	..	..	2	1	3
Christchurch	1	1	5	1	..	..	..	2	1	..	13	..	14	4	34	8	42
Dunedin	1	2	3	1	..	..	3	2	..	..	3	1	13	2	23	8	31
Gisborne	..	..	4	1	..	..	1	..	..	..	1	..	..	..	6	1	7
Greymouth	3	5	9	4	..	..	3	1	1	1	..	..	..	..	16	11	27
Hamilton	4	..	26	3	1	..	4	1	..	1	..	..	..	..	35	5	40
Invercargill	2	5	23	9	..	..	2	1	1	1	2	2	2	..	32	18	50
Mangonui	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1
Napier	2	2	10	4	..	..	6	..	1	..	1	..	3	..	23	6	29
Nelson	..	..	10	3	..	..	..	..	..	..	1	..	..	..	11	3	14
New Plymouth	1	2	22	20	..	..	2	..	..	..	1	..	1	..	27	22	49
Opotiki	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Palmerston North ..	2	7	12	8	..	..	1	..	..	..	1	1	..	..	16	16	32
Port Craig	..	..	3	..	..	..	..	..	..	..	..	..	..	..	3	..	3
Timaru	..	..	5	..	..	..	..	..	..	..	7	..	..	..	12	..	12
Wanganui	2	3	5	..	..	..	..	..	..	..	..	..	2	..	9	3	12
Wellington	..	5	11	10	..	..	1	1	..	..	2	22	1	..	34	19	53
Whangarei	..	2	7	7	..	..	4	1	2	1	..	..	..	..	13	11	24
Totals	19	38	176	79	1	..	31	9	7	4	31	7	65	7	330	144	474

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