1876.

NEW ZEALAND.

ELEVENTH REPORT OF THE MARINE DEPARTMENT,

FOR THE YEAR ENDED 30TH JUNE, 1876.

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

Office of the Commissioner of Customs,
Wellington, 14th September, 1876.

MY LORD,—

I do myself the honor to transmit herewith, for your Lordship's information, the Report of the Marine Department of this colony for the financial year ended the 30th June last.

I have, &c.,
GEO. MCLEAN.

To His Excellency the Most Honorable
the Marquis of Normanby, K.C.M.G., &c., &c.,
Governor of New Zealand.

REPORT.

Customs Department (Marine Branch),
Wellington, 31st August, 1876.

SIR,—

I do myself the honor to furnish the following report of this department for the year ended on the 30th June last:—

2. *Lighthouses.*—All the lights have been properly maintained during the past year. New cottages have been built at Nelson Lighthouse—one in order to increase the accommodation of the Principal Keeper, and the other to provide quarters for the Assistant Keeper, the necessity for whose appointment I pointed out in my report for 1874. Timber has been supplied to Tiri Tiri for the purpose of building a workshop, fence, &c., at that station. Burners adapted for paraffin oil, by using which a large annual saving will be effected, have been procured from England for Farewell Spit, Cape Campbell, Taiaroa Head, Nugget Point, and Dog Island; these it is proposed to have fitted at an early date.

3. *New Lighthouses.*—I attach hereto a report by the Marine Engineer (Mr. Blackett) on the works executed in the colony in connection with the new lights, and beg to supplement the information given therein by the following particulars:—The lanterns and apparatus for The Brothers, Puysegur Point, Centre Island, and Moko Hinau, and the lantern for Cape Maria Van Diemen, have been received in the colony; the lantern for Portland Island is now on the way from England.

In order to show the cost of apparatus, &c., I may say that the cost in England of the six lights ordered will be about £17,750. Details of the cost of three of these lights, viz. Puysegur Point, Brothers, and Centre Island, are given below, which show the relative cost of First and Second Order Revolving and First Order Fixed Lights.

Name of Light.	Description.	Lanterns.	Apparatus.	Machine and Lamps.	Stores and Sundries.	Totals.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Puysegur Point ...	1st Order Revolving	954 14 6	1,284 0 0	898 4 4	367 8 4	3,504 7 2
The Brothers ...	2nd Order Revolving	509 11 0	800 0 0	761 4 6	327 16 5	2,398 11 11
Centre Island ...	1st Order Fixed	988 9 3	1,250 0 0	168 12 6*	330 18 6	2,738 0 3

* Lamps only.

The works connected with these new lights have been delayed solely from want of a steamer to convey the materials to the various sites, and afterwards to keep up constant communication for the purpose of supplying provisions and stores, as well as for maintaining a proper supervision over the works. Several efforts were made to begin some of the works with the assistance of the "Luna;" but, owing to the frequent demands for her services by other departments, it was found that she could not be relied upon to carry out to completion any work she might undertake in connection with the new lights. The department was therefore reluctantly compelled to suspend operations until the arrival of the lighthouse steamer "Stella," now on her way to the colony; the undivided services of which will enable the works to be pushed on without interruption.

4. *Lighthouse Sites.*—Endeavours have been made for some time past, by the department, to secure clear titles to the land on which lighthouses have been or are to be erected in various parts of the colony. The following is a list of the stations, titles to which have already been secured:—

Tiri Tiri—Whole island, reserved by Order in Council dated 29th December, 1874.
Manukau Heads—618 acres, reserved by Secretary for Crown Lands for lighthouse and other purposes on the 17th December, 1874.
Farewell Spit—600 acres, and right of road the whole length of the Spit, reserved by Order in Council dated 7th January, 1869.
Nelson—1 acre 3 roods 18 perches (Section 1132, City of Nelson), reserved by Waste Lands Board, and surrendered to Crown, by conveyance, by his Honor the Superintendent.
Mana Island—The property of the Provincial Government of Wellington—5 acres set apart for lighthouse purposes.
Pencarrow Head—69 acres purchased from Natives by deed dated 24th September, 1873.
Cape Campbell—161 acres, reserved by Provincial Government.
Godley Head—168½ acres, reserved by Order in Council dated 22nd June, 1876.
Taiaroa Head—Site reserved by Order in Council dated 20th October, 1869.
Nuggett Point—130 acres, reserved by Order in Council dated 23rd June, 1869.
Dog Island—Whole island, reserved by Order in Council dated 19th September, 1875.
Cape Maria Van Diemen—Whole of island off Cape, on which lighthouse is to be erected, reserved by Order in Council dated 5th March, 1875.
Portland Island—36 acres, purchased from Natives at a cost of £150.
The Brothers—Whole of islets reserved by Order in Council dated 16th January, 1875.
Cape Foulwind—84 acres, reserved by Order in Council dated 7th September, 1870.
Centre Island—Whole island, reserved by Order in Council dated 6th November, 1875.
Puysegur Point—Site reserved by Order in Council dated 15th September, 1875.
Moeraki—Nearly 9 acres, purchased from Mr. N. J. B. McGregor at a cost of £100.

The Island of Moko Hinau or Poko Hinau, at the northern entrance to Hauraki Gulf, has not yet been secured; the owner, however, has promised to sell the portion of the island required for the lighthouse site.

5. *Paraffin Oil.*—Reference has been made in previous reports to the saving that would be effected by the use of mineral in the place of colza oil in the lighthouses. One of the principal objections to the use of this oil has been that the shipping firms, whose vessels trade to New Zealand, refused to carry it except on deck at shippers' risk. I am glad, however, to be able to state that this difficulty has been overcome, Messrs. Patrick Henderson and Co. having agreed to take the oil as ordinary cargo. I attach hereto copy of correspondence on this subject.

The mineral oil that we have hitherto obtained in this colony was from the manufactory of Youngs' Paraffin Light and Mineral Oil Company. I attach a copy of a report of an analysis thereon, made by Dr. Stevenson Macadam, Lecturer on Chemistry and Consulting Analytical Chemist, of Edinburgh, from which it will be seen that this oil is of the best description.

As the annual expenditure for oil now amounts to a large sum, it becomes a matter of importance that the oil should be procured from wherever it can be bought at the cheapest rate. With this object in view, I have had a correspondence with Mesrrs Whittemore (Agents for the Oriental Coal Oil Company), of Boston, United States of America, regarding the Oriental 160° fire-test mineral oil, which can be delivered in the colony at about 2s. per gallon. At my request, samples of this oil have been sent to Messrs. D. and T. Stevenson, in order that they may have it analyzed, for the purpose of seeing whether it would be equal in quality to the oil now in use, which costs about 2s. 9d. per gallon in the colony.

6. *Store for Lighthouse Supplies.*—I have on several occasions pointed out the difficulties experienced by the department from want of a suitable building in which the oil and other lighthouse supplies can be stored. The only building the department now has is a small shed in the Custom House yard at Wellington. This shed will not hold more than a third of the annual supply of oil required for existing lighthouses; the remainder, therefore, often at great inconvenience, has to be distributed to the several lighthouses as soon as possible after being landed, or to be stored in private warehouses. Now that mineral oil is to be used in the lighthouses, the difficulty of obtaining storage will be enhanced, as, according to "The Dangerous Goods Act, 1869," oil of this description can only be placed in a store distant fifty yards from the nearest building. It will, therefore, be absolutely necessary that steps should be taken as soon as possible to provide a suitable store in which the large shipments of paraffin annually required for all the New Zealand lights can be placed in security.

7. *Lighthouse Dues.*—The amount received on account of light dues during the year amounted to £11,439 2s. 4d., being £1,197 2s. 10d. more than was collected during the year ended 30th June, 1875, and £6,294 13s. 10d. more than the amount (£5,144 8s. 6d.) expended on the maintenance of lighthouses during the past year. The total amount received from 1st July, 1866, to the 30th June last, for light dues in excess of cost for maintenance of lights, amounts to £25,142 7s. 3d., which sum may properly be regarded as a substantial contribution towards the cost of the new lights now about to be erected.

8. *Surveys.*—During the last year a survey of a shoal off Kiourangi Point, and of that part of the coast between Cape Foulwind and the Buller, was made by Captain Johnson, of this department;

and the result of the survey has since been added to the charts by the Hydrographer to the Admiralty An examination of part of the coast line near Jackson's Bay was also begun, but owing to the "Luna" having to return to Wellington, this work had to remain unfinished.

9. *Examination of Masters, &c.*—Certificates have been issued to 104 candidates, 55 of these being masters and mates, and engineers of sea-going steamers; the remainder were issued to masters and to engineers of river steamers. The Board of Trade Regulations for the issue of Colonial Certificates of Competency, under the provisions of "The Merchant Shipping (Colonial) Act, 1869," have been recently altered, to the advantage of colonial officers. Instead of requiring that a man should have been domiciled in one colony for a period of three years immediately preceding his application to be examined, three years' domicile, during not more than five years preceding his application, in any one or more of the Australian colonies is now only required.

10. *Steam Navigation.*—During last year, certificates have been granted to 103 steamers, with an aggregate tonnage of 9,265, and horse-power of 3,590; being 12 more steamers, of 1,963 tons and 581 horse-power, than had certificates last year.

11. *Wrecks and Casualties.*—During the past year, 107 casualties were reported to this office; of these, 95 occurred at or near the coast of the colony, and 12 at sea. Of the casualties that occurred on or near the coasts of the colony, 30, of a tonnage of 2,534, were total wrecks; 60, of a tonnage of 9,247, were partial losses, and 5 were cases of loss of life only. Of the "partial losses," a great number were of a most trifling description, and are solely reported in order to fulfil the requirements of the Board of Trade Regulations. The number of lives lost by shipwreck and casualties on the coasts of the colony was 36—viz., 6 each in the "Pacific" and "Dauntless," 5 each in the "Pearl" and "Tawera," and 2 each in the "Blanche" and "Emily" (these vessels were lost with all hands); 3 lives were lost from the cutter "Hero," and one each from the "Ethel," "Maiden City," "Gazelle," "Jessie," "Florence," "Atalanta," and "Dante." Thirty lives were reported as having been lost beyond the coast of the colony; of these, 23 were in the missing vessels "Chanticleer" and "Comet," which sailed from this colony for Hobart Town, and have not since been heard of.

An enquiry was held in November last, under the 241st section of "The Merchant Shipping Act, 1854," into the conduct of John Mitchell Williams, second mate the ship "Waikato," who was accused by the master of drunkenness, neglect of duty, and resisting the lawful authority of the master, whilst on a voyage from London to Lyttelton. The charge of drunkenness was not substantiated, but the others were, and his certificate was suspended for six months.

In October last, the attention of the department was called to the conviction of Edward George Couves, second mate of the "City of Auckland," who was, with others, sentenced to imprisonment at Auckland for having stolen three cases of brandy from the cargo of that vessel on the passage from London to New Zealand. In order to reach the brandy they had to use lights, and crawl over a quantity of gunpowder in the hold. This conviction was reported to the Board of Trade, coupled by a recommendation from this department that Couves' certificate should be cancelled, which was accordingly done.

12. *Naval Training School at Kohimarama.*—I enclose Captain Breton's report for the past year, from which it will be seen that the institution continues to work satisfactorily. There were 80 boys on the books on the 30th June. I visited the school in May last, and was much gratified with what I saw there. The boys looked cheerful and healthy, and many of them were making good progress in school. After school, the boys work in the garden, or at any light employment they can be put to about the place. The school is pleasantly situated near the waters of the Waitemata, in a bay facing the entrance to that beautiful harbour, and distant from Auckland about four miles by water and nine miles by land. The buildings are commodious, and well adapted for the purposes of the institution: they comprise a large hall, one-half of which is fitted up with bunks and used as a dormitory, and the other half as a school-room; a smaller building, part of which is used as a hospital, and the remainder for quarters for the seamen instructors and cook; and a large stone building, in which the boys take their meals. The lease for a term of fourteen years from the 4th April, 1875, for the school station and the old mission schooner "Southern Cross," has been signed by the Trustees, and by His Excellency the Governor on behalf of the Queen. The annual rental to be paid is £100, together with cost of insurance on the buildings and schooner, which amounts to about £60. The area of the land attached to the buildings was only 6½ acres. This was found to be too small to allow of the school being satisfactorily and economically managed. A lease of an additional piece of land adjoining the school, of 24 acres, was purchased at a cost of £200; and the Trustees of the Melanesian Mission kindly granted a new lease, with the same currency as that for the school, at the moderate rental of £32 per annum. There is a house on this property, which affords comfortable quarters for the Manager and his family; the land is turned to profitable account for grazing, and for raising crops of potatoes and other vegetables for the use of the school.

When the Government entered into negotiations for the occupation of the Mission Station at Kohimarama, they were led to understand, from the report of a competent surveyor who examined the vessel only a year before, that the "Southern Cross" was sound and seaworthy, and that very little expense would have to be incurred to make her ready for sea. It was intended to alter her into a brig, and to use her for making short trips on the coast, with a number of boys on board, for the purpose of teaching them practical seamanship, so that they might be sufficiently trained on leaving school to be able at once to begin useful work when apprenticed to the sea. Unless this plan be adopted, it will probably be difficult to get shipowners and masters to take the boys in preference to any others. Before incurring the expenditure that would be necessary to fit the "Southern Cross" for sea, it was considered advisable that she should be thoroughly examined. The surveyors reported that the vessel was generally sound and in good order, and recommended that she should be thoroughly repaired and caulked. Tenders for the execution of these repairs were called for, and the work was being proceeded with, when, on removing some of the outside planking close to the stern-post, the vessel was found to be in much worse condition than was expected; and as the cost of repairs would probably run up to more than she would be worth when they were completed, instructions were given to the Manager not to incur more expenditure than was absolutely necessary; and the idea of fitting her for sea had reluctantly to

be abandoned. She has been removed to her old moorings off Kohimarama; and as the sleeping accommodation on shore is insufficient for all the boys, some of them are berthed on board at night; and she is also used for teaching the boys to go aloft, and to do such other duties as can be carried on in a stationary vessel.

As the institution was established for the purpose of preventing neglected and destitute boys from drifting into vicious and criminal habits, and for providing them with an education and training which would fit them to become useful sailors for our rapidly increasing mercantile marine, I submit that any reasonable outlay for these useful objects, and to render the institution thoroughly efficient and complete, could not be objected to. This condition of efficiency and completeness cannot, I believe, be secured unless a sailing vessel be provided for the purposes indicated above. I therefore submit that steps should be taken, whenever a fitting opportunity presents itself, to procure a suitable vessel.

13. *Weather Reporting Service.*—I enclose a report by Captain Edwin on this service. Last year, on his recommendation, mercurial barometers and other instruments, to the value of about £470, were ordered from England; these were recently received in good order. I may here remark that when I was in London, in July of last year, Captain Toynbee, the Marine Superintendent of the Meteorological Office, told me that Mr. Meldrum, the Director of the Observatory at Mauritius, was regarded as a high authority on weather telegraphy, and recommended me to communicate with him, as he would probably be able to afford information on this subject which would be of value in New Zealand. Accordingly, on my way out, I wrote to that gentleman from Aden, and received a most interesting letter in reply, copy of which is appended hereto. It will be seen that he thinks that weather forecasting would be greatly aided if weather telegrams were sent from Hobart Town, Melbourne, or both, to New Zealand. The cost of such telegrams sent daily would amount to about £450 per annum, which is considered to be too great an expense to incur for the present. It is hoped, however, that the Telegraph Cable Company may be induced to reduce their charges for these telegrams. The General Manager of the Telegraph Department is now in communication with them on the subject. The cost of the weather telegrams sent within the colony last year is set down by the Telegraph Department approximately at £800.

14. *Lighthouse Administration.*—In February, 1875, after an uninterrupted service of twenty-nine years, I applied for and obtained leave of absence to visit England. On my return, in the following November, I made a report to the Hon. the Commissioner of Customs, containing information I acquired in the United States, Canada, and Great Britain, respecting lighthouse administration and other matters. The Hon. Mr. Reynolds, before leaving office, suggested that that document should be published with the next annual report of this department. I accordingly append hereto copy of those portions of it which relate to lighthouse management, and other subjects which are under the supervision of the Marine Department.

The usual returns, wreck chart, &c., are appended hereto.

I have, &c.,
WILLIAM SEED,
Secretary of Customs.

RETURN showing the Amount Expended on New Lighthouses up to the 30th June, 1876.

Name of Lighthouse.	Amount Expended up to 30th June, 1875.	Amount Expended during Financial Year 1875–76.	Total Amount Expended up to 30th June, 1876.
	£ s. d.	£ s. d.	£ s. d.
Cape Foulwind	1,452 8 7	5,165 12 8	6,618 1 3
The Brothers	206 10 1	3,224 17 5	3,431 7 6
Portland Island	4 10 0	1,535 0 7	1,539 10 7
Hokitika	1,213 8 0	65 16 7	1,279 4 7
Puysegur Point	501 16 1	3,794 9 1	4,296 5 2
Moko Hinau	1 4 0	55 18 2	57 2 2
Cape Maria Van Diemen	...	1,002 13 3	1,002 13 3
Centre Island	...	160 9 1	160 9 1
Miscellaneous and Unallocated	...	1,235 11 1	1,235 11 1
Totals	3,379 16 9	16,240 7 11	19,620 4 8

RETURN of the Total Ordinary Expenditure of the Marine Department for the Financial Year 1875–76.

Vote 26.	Nature of Expenditure.	Details of Expenditure.	Total Amount Expended.	Total Amount Voted.
Item.	Head Office,—	£ s. d.	£ s. d.	£ s. d.
1	Officer in Charge	...	200 0 0	200 0 0
2	Clerk	...	290 0 0	290 0 0
3	Cadet	...	90 0 0	90 0 0
4	Storeman and Messenger	...	70 0 0	90 0 0
5	Marine Engineer	...	300 0 0	300 0 0
6	Inspector of Steamers and Nautical Assessor ...	...	400 0 0	400 0 0
7	Inspector of Steamers and Engineer Surveyor ...	...	300 0 0	300 0 0
8	Local Inspectors of Steamers	...	117 14 10	125 0 0
9	Examiner of Masters and Mates in Navigation ...	...	100 0 0	100 0 0
10	Local Examiners of Masters and Mates	...	225 0 0	225 0 0
11	Expenses under "Enquiry into Wrecks Act, 1869" ...	...	123 10 10	250 0 0
12–23	Lightkeepers' Salaries	...	3,753 14 10	4,085 0 0
24	Repairs to Lighthouses	325 11 9		
	Contingencies, Payment of Temporary Keepers, Tools, and other Permanent Lighthouse Stores, &c. ...	725 0 9		
	General Lighthouse Expenses, including Oil, &c. ...	310 19 2		
	Lightkeepers' Travelling Expenses	29 2 0		
	Departmental Travelling Expenses	369 17 2		
	Departmental Contingencies	44 7 10		
	Charts	75 10 8		
	Buoys and Beacons	2 8 0		
			1,882 17 4	3,500 0 0
	Naval Training School at Kohimarama,—			
25	Manager	...	220 0 0	220 0 0
26	Schoolmaster	...	103 15 8	120 0 0
27	Instructors and other Officers	...	191 15 9	400 0 0
28	Rent of Station and Vessel	...	...	100 0 0
29	Purchase of Lease of Additional Land	208 17 6		
	Insurance	11 0 0		
	Medical Fees and Medicine	52 18 0		
	Repairs and Fittings to Buildings	318 4 6		
	Provisions, Fuel, and Lighting	552 9 8		
	Clothing	206 4 2		
	Beds and Bedding	80 0 3		
	Utensils, Crockery, School Books, and Sundries ...	99 2 3		
	Moorings, Boats, Fittings, &c., for "Southern Cross" ...	127 6 11		
	Passages and Expenses of Boys to School	86 9 6		
			1,742 12 9	3,000 0 0
30	Erection of Jetty	...	...	400 0 0
	Weather Reports and Storm Signals,—			
31	Officer in Charge	...	300 0 0	300 0 0
32	Clerical Assistance	...	7 4 0	120 0 0
33	Salaries of Weather Reporting Officers at Out-stations	...	374 18 4	365 0 0
34	Instruments	...	20 5 0	455 0 0
35	Signal Staffs and Appliances	...	...	670 0 0
36	Freight and Carriage	...	0 6 0	50 0 0
37	General Contingencies	...	15 6 2	140 0 0
	Totals	...	10,829 1 6	16,295 0 0

RETURN showing Cost of Maintenance of the New Zealand Lighthouses during the Financial Year 1875–76.

Name of Lighthouse.	Repairs.	Stores, Oil, and other Annual Supplies and Contingencies.	Keepers' Salaries.	Total Expenses for the Year.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Tiri Tiri	53 5 1	60 2 9	340 0 0	453 7 10
Manukau	...	82 19 11	310 0 0	392 19 11
Farewell Spit	...	166 1 7	446 18 4	612 19 11
Nelson	240 14 0	17 18 2	206 18 9	465 10 11
Mana Island	...	82 8 1	330 0 0	412 8 1
Pencarrow Head ...	...	66 13 8	338 15 0	405 8 8
Cape Campbell	...	105 0 1	320 0 0	425 0 1
Godley Head	31 12 8	72 19 2	350 0 0	454 11 10
Taiaroa Head	...	131 9 8	338 6 8	469 16 4
Nugget Point	...	126 6 2	340 0 0	466 6 2
Dog Island	...	153 2 8	418 12 9	571 15 5
Cape Foulwind	...	...	14 3 4	14 3 4
Totals ...	325 11 9	1,065 1 11	3,753 14 10	5,144 8 6

NOTE.—These expenses do not include the cost of supervision, or any allowance for the services of the "Luna."

RETURN showing the Amount of Light Dues collected during the Financial Year 1875–76.

Port at which Collected.	Amount.
	£ s. d.
Auckland	1,836 15 2
Onehunga	18 1 3
Kaipara	26 15 6
Tauranga	12 9 10
Russell	34 13 2
Hokianga	5 5 6
Whangarei	13 12 5
New Plymouth	85 6 0
Wanganui	58 16 4
Wellington	2,127 19 4
Napier	131 15 9
Picton	196 3 3
Havelock	17 16 1
Kaikoura	5 19 6
Nelson	913 1 0
Westport	40 11 8
Greymouth	61 10 3
Hokitika	33 16 4
Lyttelton	2,357 19 1
Timaru	127 14 1
Oamaru	132 13 2
Dunedin	2,521 13 10
Invercargill	29 0 10
Bluff	642 19 2
Riverton	6 13 10
Total for 1875–76	£11,439 2 4
Total for 1874–75	£10,241 19 6

RETURN of the Amount received for Pilotage, Port Charges, &c. (being Provincial Revenue), at the various Ports of New Zealand, during the Financial Year 1875–76.

Name of Province and Port.	Amount received for Pilotage.	Amount received for Port Dues, &c.	Totals.
AUCKLAND—	£ s. d.	£ s. d.	£ s. d.
Auckland	1,538 15 6	312 12 1	1,851 7 7*
Onehunga	135 12 6	155 19 7	291 12 1
Kaipara	381 14 0	164 19 11	546 13 11
Tauranga	19 8 3	...	19 8 3
Thames	92 18 3	68 6 4	161 4 7
Russell	34 3 1	1 18 6	36 1 7
Mongonui	29 8 4	18 1 6	47 9 10
Hokianga	84 14 6	...	84 14 6
Totals	2,316 14 5	721 17 11	3,038 12 4
TARANAKI—			
New Plymouth	80 2 8	71 9 1	151 11 9
WELLINGTON—			
Wanganui	346 12 2	...	346 12 2
Wellington	2,267 1 10	1,363 8 5	3,630 10 3
Totals	2,613 14 0	1,363 8 5	3,977 2 5
HAWKE'S BAY—			
Napier	1,113 6 1	272 1 3	1,385 7 4
NELSON—			
Nelson	1,359 1 5	10 1 0	1,369 2 5
WESTLAND—			
Hokitika	63 9 8	...	63 9 8
CANTERBURY—			
Lyttelton	3,014 15 1	1,801 16 0	4,816 11 1
Timaru	...	18 9 4	18 9 4
Totals	3,014 15 1	1,820 5 4	4,835 0 5
OTAGO—			
Oamaru	...	366 1 11	366 1 11
Dunedin	2,557 1 11	1,390 0 3	3,947 2 2*
Invercargill	...	70 8 11	70 8 11
Bluff	602 14 6	177 16 10	780 11 4
Riverton	26 16 10	4 19 0	31 15 10
Totals	3,186 13 3	2,009 6 11	5,196 0 2
TOTALS 1875–6	13,747 16 7	6,268 9 11	20,016 6 6
TOTALS 1874–5	14,570 18 6	5,834 6 9	20,405 5 3

* Revenue of Harbour Board.

RETURN showing the Quantity of Oil consumed at the New Zealand Lighthouses during the Financial Year 1875–76.

Name of Lighthouse.	Quantity of Oil consumed.
	Gallons.
Tiri Tiri	471
*Manukau	439
Farewell Spit	432
Nelson	120
Mana Island	540
Pencarrow Head	546
Cape Campbell	420
Godley Head	538
Taiaroa Head	344
Nugget Point	522
Dog Island	594
Total for 1875–76	4,966
Total for 1874–75	4,860

* Paraffin.

RETURN showing the Number of Masters and Mates Examined during the Financial Year 1875–76, distinguishing the Number of Successful and Unsuccessful Candidates.

Class examined for.	Auckland.			Wellington.			Dunedin.			Totals.		
	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.	Passed.	Failed.	Total.
Foreign-going Certificates	19	10	29	2	7	9	6	2	8	27	19	46
Home-trade Certificates	7	2	9	13	6	19	1	1	2	21	9	30
River-service Certificates	1	...	1	...	...	...	4	...	4	5	...	5
	27	12	39	15	13	28	11	3	14	53	28	81

RETURN of Masters, Mates, and Engineers to whom Certificates of Service have been granted under "The Merchant Ships Officers Examination Act Amendment Act, 1871," during the Financial Year 1875–76.

Name.	Rank for which Certificate has been granted.	Class of Certificate.	Date of Issue of Certificate.	Number of Certificate.
Hoggarth, John	Master	Home Trade ...	29 July, 1875	2,409
Keane, Edward	„	Foreign „ ...	29 „ „	2,410
Robinson, William	„	Home „ ...	29 „ „	2,411
Phipps, Samuel	Mate	Foreign „ ...	29 „ „	2,412
Shephard, William	Master	„ „ ...	23 Aug., „	2,413
Keyes, Daniel	Mate	Home „ ...	23 „ „	2,414
Stevens, James	Master	„ „ ...	28 Sept., „	2,415
Burr, Robert	„	Foreign „ ...	28 „ „	2,416
Warren, Charles	„	Home „ ...	28 „ „	2,417
Rawson, Thomas	„	„ „ ...	28 „ „	2,418
McKay, George	„	„ „ ...	28 „ „	2,419
Ryland, Edward James	Mate	Foreign „ ...	14 Oct., „	2,420
Coffey, James	Master	Home „ ...	22 „ „	2,421
Ross, Hector	„	„ „ ...	27 „ „	2,422
Joseph, Frank	„	„ „ ...	4 Nov., „	2,423
Jones, Joseph	„	„ „ ...	15 „ „	2,424
Ngaru, Henry	„	„ „ ...	22 „ „	2,425
Foster, Joseph	„	Foreign „ ...	1 Feb., 1876	2,426
Heyer, Johan Henri	„	Home „ ...	1 „ „	2,427
Savory, Samuel Richard	„	Foreign „ ...	1 „ „	2,428
Nicol, John	Mate	„ „ ...	1 Mar., „	2,429
Baxter, Robert	Master	Home „ ...	19 May, „	2,430
Fowler, James	„	„ „ ...	19 „ „	2,431
Binstead, James	Engineer... ...	Second Class ...	19 Feb., „	1,028

RETURN of Certificates of Competency that have been issued to Masters and Engineers of River Steamers during the Financial Year 1875–76.

Name.	Rank for which Certificate has been granted.	Date of Issue of Certificate.	Number of Certificate.
Williams, Clifford	Master	28 April, 1876	3,001
Campbell, Colin	„	28 „ „	3,002
McDonald, John	„	28 „ „	3,003
Campbell, Angus	„	14 June „	3,004
Anderson, Thomas	Engineer	1 Feb. „	1,200
Foster, Edward	„	1 „ „	1,201
Cunningham, Andrew	„	1 „ „	1,202
Whitburn, Joseph	„	1 „ „	1,203
Logan, James Martin	„	1 „ „	1,204
Blakley, Henry	„	1 „ „	1,205
Breese, John	„	1 „ „	1,206
Brett, John	„	1 „ „	1,207
Nealis, James	„	1 „ „	1,208
McAffer, Donald	„	1 „ „	1,209
Patterson, George	„	1 „ „	1,210
O'Brien, John	„	1 „ „	1,211
Duthie, George	„	1 „ „	1,212
Stock, William	„	1 „ „	1,213
Edwards, Roland Herbert	„	1 „ „	1,214
Nelson, Henry	„	1 „ „	1,215
Penny, Charles	„	1 „ „	1,216
Griffiths, John	„	1 „ „	1,217
Fleming, James	„	1 „ „	1,218
Light, William	„	1 „ „	1,219
Brown, John	„	1 „ „	1,220
Hume, John	„	1 „ „	1,221
Cain, Michael	„	2 „ „	1,222
Holmes, William	„	2 „ „	1,223
Helmbreckt, Alexander	„	2 „ „	1,224
Nolan, Joseph	„	2 „ „	1,225
Robinson, Charles	„	22 „ „	1,226
McLaren, James	„	8 April „	1,227
Richards, Morden	„	8 „ „	1,228
Brooks, James	„	8 „ „	1,229
Cooper, Adam	„	28 „ „	1,230
North, Henry	„	28 „ „	1,231
Schmidt, George Edward	„	28 „ „	1,232
Cock, John	„	28 „ „	1,233
Craig, Thomas	„	28 „ „	1,234
Slater, William	„	28 „ „	1,235
Cain, John	„	12 May „	1,236
Taylor, James	„	15 „ „	1,237
Jamieson, Joseph	„	18 „ „	1,238
Mackintosh, James	„	18 „ „	1,239
Lindsay, Ebenezer	„	26 „ „	1,240
Dean, Matthew James	„	26 „ „	1,241
Gall, James Willison	„	26 „ „	1,242
Kay, John	„	7 June „	1,243
Lockie, James	„	7 „ „	1,244

RETURN of Steam Vessels to which Passenger Certificates have been issued in New Zealand during the Financial Year 1875–76.

Name of Vessel.	Tons Register.	Horse-power of Engines.	Nature of Propeller.	Class of Certificate.	Nature of Engines.	Remarks.
Blue Nose	42	30	Paddle	River	Non-condensing	
Eclipse	8	8	Screw	„	„	Steam Launch.
Rangiriri	30	30	Stern Wheel	„	„	
Waikato	61	14	Paddle	„	„	
Enterprise	22	14	„	„	„	
Enterprise No. 2	40	32	„	Extended River	„	
Gemini	11	7	Twin Screw	River	„	
Lalla Rookh	23	14	Paddle	Extended River	„	
Devonport	23	12	„	River	„	
Tam O'Shanter	10	7	Screw	„	„	
Lily	20	10	Twin Screw	Extended River	„	
Takapuna	58	20	Paddle	River	„	
La Buona Ventura	4	4	Screw	„	„	„
Hauraki	73	45	Paddle	Extended River	Condensing	Left the colony.
Mamaia	62	30	„	„	Non-condensing	
Scotchman	20	10	Screw	River	„	
Star of the South	175	45	„	Sea-going	Compound	
Pretty Jane	101	35	„	„	Condensing	
Southern Cross	65	40	„	„	Compound	„

RETURN of Steam Vessels to which Certificates have been issued, &c.

Name of Vessel.	Tons Register.	Horse-power of Engines.	Nature of Propeller.	Class of Certificate.	Nature of Engines.	Remarks.
Southern Cross... ...	139	50	Screw	Sea-going	Compound	
Emu	123	25	„	„	„	
Iona	159	65	„	„	„	
Rowena	74	30	„	„	„	
Go-ahead	82	30	Twin Screw	„	Condensing	
Alert	12	8	Screw	River	Non-condensing	
Pearl	14	5	„	„	„	
Fairy	4	4	„	„	„	Steam Launch.
Effort	13	12	Paddle	Extended River	„	
Lilie	10	10	„	River	„	New Vessel.
Transit	12	10	...	„	...	„
Llewellyn	359	70	Screw	Sea-going	Compound	„
Tainui	47	22	Paddle	Extended River	Non-condensing	„
Quickstep	39	40	„	River	„	„
Bridgewater	5	5	Screw	„	„	New Steam Launch
Durham	54	30	„	Extended River	Compound	New Vessel.
Anne Milbank	44	24	Paddle	„	Non-condensing	„
Elsie	5	4	Screw	River	„	New Steam Launch
Argyle	126	40	„	Sea-going	Compound	New Vessel.
Staffa	40	25	„	Extended River	Condensing	„
Minnie Casey	43	25	„	„	Compound	„
Waitara	11	15	„	„	Non-condensing	
Bella	12	12	„	„	„	
Fairy	33	15	„	„	„	
Sir Donald	29	12	„	„	Condensing	
Rosina	19	14	„	„	Non-condensing	„
Result	18	23	„	„	„	
Lily	4	6	„	River	„	
Jane Douglas	75	20	„	Sea-going	Compound	„
Phœbe	416	120	„	„	Condensing	
Taranaki	298	90	„	„	„	
Lady Bird	286	70	„	„	„	
Wellington	261	80	„	„	„	
Rangatira	186	50	„	„	„	
Manawatu	103	45	Paddle	„	„	
Storm Bird	67	30	Screw	„	„	
Napier	44	24	„	„	Non-condensing	
Kiwi	133	30	„	„	Compound	„
Tui	64	20	„	„	„	„
St. Kilda	174	45	„	„	Condensing	
Wallabi	101	25	„	„	„	
Egmont	52	18	„	„	Compound	Wrecked.
Tongariro	39	10	Paddle	Extended River	Non-condensing	
Pioneer	18	10	Screw	River	„	
Osprey	28	10	Paddle	„	„	
Halcyon	24	15	Screw	Extended River	„	
Clyde	27	32	Twin Screw	„	„	
Mullogh	46	15	Screw	River	„	
Gazelle	47	30	„	Extended River	„	
Pioneer	10	6	„	River	„	Steam Launch.
Beautiful Star	126	30	„	Sea-going	Condensing	
Maori	118	60	„	„	„	
Lady of the Lake ...	60	30	„	„	Non-condensing	Wrecked.
Samson	111	70	Paddle	„	Condensing	
Wanganui	165	50	Screw	„	„	
Comerang	152	60	Paddle	„	„	
Shag	31	27	Screw	„	Non-condensing	
Express	136	32	„	„	Condensing	
Bruce	204	90	„	„	Compound	„
Easby	969	140	„	„	„	
Geelong	108	70	Paddle	Extended River	Condensing	
Golden Age	79	60	„	River	Non-condensing	
Jane	25	8	Screw	„	„	
Balclutha	84	50	Stern Wheel	„	„	
Portobello	11	10	Paddle	„	„	
Matau	104	50	Screw	Sea-going	Compound	New Vessel.
Taiaroa	228	110	„	„	„	„
Hawea	461	160	„	„	„	„
Taupo	461	160	„	„	„	„
Ino	24	12	Twin Screw	Extended River	Non-condensing	
Jane Williams	33	15	Screw	River	„	
Antrim	35	30	Paddle	„	„	
Venus	10	10	Screw	„	„	
Titan	21	55	Paddle	Sea-going	Condensing	
Waipara	70	30	Twin Screw	„	Non-condensing	
Lioness	26	60	Paddle	„	Condensing	
Dispatch	38	40	„	„	„	
Result	13	10	„	Extended River	Non-condensing	
Lady Barkly	30	25	„	„	Condensing	
Wallace	64	50	„	Sea-going	„	
Charles Edward ...	89	60	„	„	„	
Lyttelton	86	25	„	„	„	
Murray	78	18	Screw	„	„	
Kennedy	138	50	Twin Screw	„	Compound	

RETURN of Masters, Mates, and Engineers to whom Certificates of Competency have been granted under "The Merchant Ships Officers Examination Act, 1870," during the Financial Year 1875–76.

Name.	Rank for which Certificate has been granted.	Class of Certificate.	Date of Issue of Certificate.	Number of Certificate.
McLean, William*	Only Mate	Foreign Trade	6 July, 1875	79
Schulze, Oscar*	Master	" "	15 " "	80
Smith, John Christy*	"	" "	15 " "	81
Moller, John Christian*	Only Mate	" "	21 " "	82
Henderson, William	Second Mate	" "	29 " "	83
Garraway, Francis Morton*	Master	" "	2 Aug. "	84
Thomas, John	Second Mate	" "	10 " "	85
Carmichael, Thomas Sparrow*	Master	" "	10 " "	86
Smith, William Andrew*	Only Mate	" "	13 " "	87
Carlile, James Macdonnell*	First Mate	" "	3 Sept. "	88
Main, Alexander*	"	" "	27 " "	89
Anwyl, William Henry	Only Mate	" "	15 Oct. "	90
Caictheon, Robert Hunter*	"	" "	20 Dec. "	91
Brevin, William*	"	" "	30 " "	92
Watts, Theodore Thomas	Second Mate	" "	4 Feb., 1876	93
Horne, James	Master	" "	4 " "	71
Louden, William George*	First Mate	" "	4 " "	94
Amodeo, Frank*	Only Mate	" "	7 " "	95
Ayres, Thomas*	"	" "	20 Mar. "	96
McDonald, Colin*	Second Mate	" "	20 " "	97
Bongard, James*	Master	" "	20 " "	98
Cousins, Charles*	Only Mate	" "	3 April "	99
Reavy, Daniel	"	" "	19 " "	100
Baken, Thomas Nathaniel*	First Mate	" "	24 " "	101
Billinge, Samuel D.	Master	" "	18 May "	102
Murphy, Alexander	Only Mate	" "	18 " "	103
Ross, Hugh*	Master	" "	27 June "	11
Harvey, Edward	Master	Home "	6 July, 1875	5,058
Comiskey, Joseph	"	" "	18 Aug. "	5,059
Anderson, John	"	" "	24 " "	5,060
Bailey, Edward Alfred	"	" "	14 Oct. "	5,061
Berriman, Richard	"	" "	14 " "	5,062
Skinner, John Henry	"	" "	4 Nov. "	5,063
Smith, Thomas	Mate	" "	17 " "	5,064
Mason, John	Master	" "	27 " "	5,065
Hedges, Frank	"	" "	20 Dec. "	5,066
Crawford, James	Mate	" "	30 " "	5,067
Clark, Samuel	Master	" "	5 Jan., 1876	5,068
Kelly, William	"	" "	4 Feb. "	5,069
McDonald, Kenneth	Mate	" "	7 " "	5,070
Meller, Ferdinand Edmund	Master	" "	19 " "	5,071
Moore, John	"	" "	23 " "	5,072
Lambert, William Hyasenth	"	" "	1 Mar. "	5,073
McCart, Daniel	Mate	" "	20 " "	5,074
Manning, Walter	Master	" "	20 " "	5,075
Featherstone, Henry Ashford	"	" "	23 " "	5,076
Scoones, William Henry	"	" "	8 June "	5,004
McKenzie, John	Engineer	Second Class	15 July, 1875	27
Hambleton, Joseph*	"	" "	23 " "	28
Butters, James Davidson*	"	First "	4 Jan., 1876	29
Gibson, Alexander*	"	Second "	4 " "	30
Tizard, Henry William	"	First "	4 " "	12
McInnes, Angus*	"	Second "	7 " "	31
Duncan, William*	"	" "	10 April "	32
Lamb, Alexander Hill Kennedy	"	" "	18 May "	33

* Issued under the provisions of Her Majesty's Order in Council of 9th August, 1872, and have the same force as similar Certificates granted by the Board of Trade in the United Kingdom.

RETURN of Pilotage Exemption Certificates issued during the Financial Year 1875–76.

No. of Certificate.	Names of Masters to whom Certificates have been issued.	Names of Vessels for which Certificates have been issued.	Port included in Certificate.
299	James Malcolm	Maori	Lyttelton, Akaroa, Timaru, and Dunedin.
300	John Lewis Parker	Hadda	Lyttelton.
301	Thomas John Pennall	Albion	Auckland.
302	William Henry Gregory	Adelphoi	Lyttelton.
303	John Leith	Especulador	Lyttelton.
304	James Carey	Southern Cross	Auckland.
305	Richard White	Bobycito	Dunedin.
306	George Calder	Otago	Wellington, Lyttelton, Akaroa, Timaru, and Dunedin.
307	Henry William Holdbrook Chatfield	Omeo	Wellington and Lyttelton.
308	William Young	Ashburton	Wellington.

RETURN of Pilotage Exemption Certificates—*continued.*

No. of Certificate.	Names of Masters to whom Certificates have been issued.	Names of Vessels for which Certificates have been issued.	Port included in Certificate.
309	Matthew Nesham Baillie ...	Frederick Bassil	Dunedin.
310	David Lindsay	William Ackers	Wellington.
311	William Solloway Lane ...	Charybdis	Auckland.
312	Charles Watson	Mary Webster	Auckland, Manukau, and Kaipara.
313	Alexander Wynd	Sarah Pile	Wellington.
314	Edward Wheeler	Hawea	Auckland, Napier Roadstead, Wellington, New Plymouth, Manukau, Lyttelton, Port Chalmers, and Picton.
315	George Brown Harris	Glimpse	Auckland.
316	Gilbert Brown	Cleopatra	Lyttelton, Hokitika, and Greymouth.
317	Alexander Menzies	Ryno	Auckland.
318	James Wills	Lizzie Guy	Lyttelton.
319	William Powell	Especulador	Lyttelton.
320	Samuel Plumley	May	Wellington.
321	John William Millman ...	Malay	Wellington.
322	Simon Saunders	Jane Anderson	Dunedin.
323	Arthur Henry Austen	Go-ahead	Manukau.
324	Augustus Brownfield	Ashburton	Auckland.
325	John Stephen	Drover	Lyttelton.
326	John Payne	Prosperity	Hokitika and Greymouth.
327	James Walters	Alma	Lyttelton.
328	William Grant	Sea Spray	Lyttelton.
329	William Petterson	Martha Reid	Dunedin.
330	Matthew Hooper	Transit	Auckland.
331	Reuben Wells	Transit	Auckland.
332	William Chamberlain	Jane	Auckland.
333	Robert Armit	Young Dick	Wellington.
334	Alexander Wynd	Sarah Pile	Wellington.
335	James Stewart	Taiaroa	Lyttelton.
336	Robson Clayburn	Sunbeam	Lyttelton.
337	James Thompson	Anne and Jane	Wellington.
338	John Chrisp Smith	Wave	Auckland.
339	Edward Stephenson	Argyle	Auckland.
340	Hunter Nicholson	Star of the Mersey ...	Lyttelton.
341	Edward Harvey	Manawatu	Wellington.
342	Donald Urquhart	Matau	Dunedin.
343	James Deuchrass	Rosanna Rose	Dunedin.
344	William Alfred Martin... ...	Emu	Auckland.
345	John Robertson	Sea Gull	Dunedin.
346	John Stillman Friend	Isabellas	Lyttelton.
347	Edward Keane	Charybdis	Auckland.
348	Malcolm Muir	Alhambra	Wellington.
349	John Anderson	Planter	Lyttelton.
350	James Lowrie	Sea Bird	Lyttelton, Hokitika, and Greymouth.
351	Joshua Paul	Nardoo	Dunedin.
352	Colin Campbell	Martha Reid	Dunedin.
353	John S. Hodgson	Tower Hill	Dunedin.

RETURN of the Amount collected during the Financial Year, 1875-76, as Fees under the Steam Navigation Act, and the Merchant Ships Officers Examination Act, and for sale of Charts, &c.

Nature of Receipt.	Amount collected.
	£ s. d.
Fees under Steam Navigation Act and Merchant Ships Officers' Examination Act...	811 10 0
Sale of charts	40 8 6
Sale of oil casks, &c.	59 16 4
Contributions from Parents under "The Naval Training Schools Act, 1874."	137 18 0
	£1,049 12 10

RETURN of Wrecks on which Enquiries have been held under the Enquiry into Wrecks Act, or for which Casualty Returns have been received between the 1st July, 1875, and 30th June, 1876.

Date of Casualty.	Name of Vessel; also, Age and Class when known.	Rig.	Register Tonnage.	Number of		Nature of Cargo.	Nature of Casualty.	Number of Lives Lost.	Place where Casualty happened.	Wind.		Finding of Court of Enquiry, or Opinion of Officer holding Investigation.	Name of Master.
				Crew.	Passengers.					Direction	Force.		
1875. Feb. —	Comet	Barque	350	13	...	Ballast	Unknown	Supposed 13 (all hands)	Unknown ...	...	Unknown	Vessel left Port Chalmers for Hobart Town on 27 Feb., 1875, and not since heard of	James Cooper.
June —	Pacific, 1½ years	Schooner	51	5	1	Wheat	Supposed foundered; total loss	Supposed 6 (all hands)	Not known ...	...	Not known	Sailed from Timaru for Manukau on 4 June, 1875, and not since heard of	George Bradshaw.
July 3	Severn, 11 years	Cutter	19	1	...	,,	Stranded; partial loss	...	Alongside Breakwater, Commercial Bay, Auckland	W.	Strong gale	Stress of weather	Thomas Taylor.
,, 4	South Carolina, 9 months	Cutter	27	3	...	Coal	Collision partial loss	...	Commercial Bay, Auckland	W.N.W. to W.	Strong gale	Rob Roy, having parted her chains, came down on the Glance, and the Glance then fouled the South Carolina, and drove her on shore	Manuel Ignacio Soares.
,, 4	Rob Roy, 9 years	,,	24	4	...	Provisions							John Megerney.
,, 4	Glance, 19 years	,,	19	2	...	Ballast							Joseph Allen.
,, 4	Harvest Home, 11 years	,,	16	2	...	,,	Stranded; partial loss	...	Beach in Commercial Bay, Auckland	W.	,,	Stress of weather	George Henry.
,, 4	Speedwell, 9 years	Dandy	36	1	...	,,	,,	...	Western side Queen Street Wharf, Auckland	,,	,,	,, ,, ...	Frank Ohmmens.
,, 4	Queen, 11 years	Schooner	46	4	...	Kauri gum	,,	...	Pahia Beach, S.W. corner of Martin's Bay, inside Hokianga Heads	,,	Whole gale	Casualty not caused by default of master, but he showed a want of decision and judgment in the manner in which he beached the vessel.	Thomas Jones.
,, 4	Waratah, 2 6/12 years	Cutter	25	3	...	Wheat	,,	...	Gore Street Jetty, Commercial Bay, Auckland	,,	Strong gale	Stress of weather	John Bushell.
, 4	Start, 2½ years	,,	27	2	...	Ballast	Collision partial loss	...	Commercial Bay, Auckland	,,	,,	Victoria dragged her anchors through force of gale, and came down upon Start	Francis Diaz.
,, ,,	Victoria, 10 years	,,	23	2	...	,,							Matthew Martin.
, 4	Undine, 2 6/12 years	,,	22	3	...	,,	Stranded; partial loss	...	Breakwater, Commercial Bay, Auckland	,,	Strong gale	Stress of weather	Andrew Anderson.

July	4	Coronet, 4 years	Schooner	95	...	...	...	Foundered; partial loss	...	Commercial Bay, Auckland	N.W.	Strong gale	Force of gale knocked vessel off blocks, and she was scuttled to prevent her doing further damage to herself and other shipping.	
„	4	Helen, 14 years	Schooner	23	2	...	Ballast	Stranded; partial loss	...	Breakwater, Commercial Bay, Auckland	„	„		
„	5	Tiri Tiri, 6 years	Ketch	20	...	...	...	„	...	Western side, Queen Street Wharf, Auckland	„	Squally	Stress of weather	George Broadfoot.
„	—	Chanticleer, 16 years	Brig	186	10	...	Ballast	Unknown	Supposed 10 (all hands)	Unknown ...	...	Unknown	Vessel left Oamaru for Hobart Town on 9 July, 1875, and not since heard of	D. C. McIntyre.
„	12	Thomas S. Stowe, 12 years, Aa 100	Barque	686	16	1	Wool, grain, tallow, and flour	Loss of sails and bulwarks; cargo shifted	...	Lat. 48° 24′ S., Long. 152° 2′ E.	W. by S.	Hurricane	... ...	James Booth Darling.
„	14	Lerwick, 8 years	Cutter	14	2	2	General	Stranded; total loss	...	Between Starling and Burial Points, Bluff Harbour	S.	Gentle breeze	Vessel had not sufficient chain out	David Sawbrook.
„	19	Ethel, 4 months	Brigantine	180	6	...	Ballast	Loss of life	1	Between Hen and Chickens and Mahurangi	N. by W.	Strong breeze	... ...	Roderick McLeod.
„	21	Hero, 11 years	Cutter	29	4	...	Timber	Dismasted and abandoned; total loss	3	Three miles off Mokau River	S.W.	Not known	Men drowned in surf when trying to land in vessel's boat	Robert Doble.
„	21	Esther, 26 years	Brigantine	47	4	...	N.Z. produce	Stranded; partial loss	...	West side of easternmost Rangitoto Island, Province of Nelson	„	Heavy squall	No special blame attached to master	William Johnson.
„	23	Syren, 20 years	Brig	157	9	...	Ballast	„	...	Tairua Harbour, Auckland	„	Light breeze	Casualty occurred through want of local knowledge of master.	Henry Dott Bower.
„	29	Teviotdale, 6 years, Aa1 100 Lloyd's	Ship	1259	26	31	General	Loss of life	1	Lat. 42° 39′ S., Long. 62° 12′ E.	S.S.E.	...	... ...	Lauchlan Nicol.
„	—	Dauntless	Schooner	72	6	...	Produce	Supposed foundered; total loss	Supposed 6 (all hands)	Not known ...	...	Not known	Sailed from Moeraki for Wellington on 10 July, 1875, and not since heard of	Hans Peter Poulson.
„	—	Pearl, 2½ years	„	59	5	...	Timber	„	Supposed 5 (all hands)	Not known ...	...	„	Sailed from Auckland for Lyttelton beginning of July, 1875, and not since heard of	John Barns.
Aug.	15	Spec, 13 years	Schooner	32	4	...	Timber	Stranded; total loss	...	Manuka Point, Catlin's River, Otago	W.	Light breeze	The Spec had to shorten sail to avoid coming into collision with the Mabel Jane, and the tide caught her and carried her on to the rocks	John Madson.
„	17	Ocean Mail, 6 years, A1 Lloyd's	Ship	1039	38	175	General	Collision; partial loss	...	Portland, England, distant about 20 miles E. by N.	S. by W.	Moderate breeze	Italian vessel ought to have ported her helm instead of crossing Ocean Mail's bows	Thomas Cawse.
		Partétol, (Italian)	Barque	...	...	...	...							

RETURN of Wrecks on which Enquiries have been held, &c.—*continued.*

Date of Casualty.	Name of Vessel; also, Age and Class when known.	Rig.	Register Tonnage.	Number of		Nature of Cargo.	Nature of Casualty.	Number of Lives Lost.	Place where Casualty happened.	Wind.		Finding of Court of Enquiry, or Opinion of Officer holding Investigation.	Name of Master.
				Crew.	Passengers.					Direction	Force.		
1875.													
Aug. 18	Herald, 8 years	Schooner	53	5	...	Coal Wagons	Stranded; partial loss	...	Arrow Rock, entrance to Nelson Harbour	...	Calm	Unavoidable accident	Robert Hamilton.
„ 18	Fanny Kelly, 2 years	Ketch	34	3	...	General	„	...	Middle Reef, Whangaproa, Auckland	N.N.E.	Fresh breeze	Mate in charge ran vessel on to reef	Meredith Rountree.
„ 18	Wangarei, 8 years	Cutter	32	4	...	Ballast	„	...	Cabbage Bay, Cape Colville, Auckland	W.	Gale	Stress of weather	William Williams.
„ 22	Star of the South, s.s., 12 years	Schooner	175	18	15	General	Broke shaft	...	Lat. 26° 10′ S., Long. 179° 60′ E.	N.N.W.	Strong breeze	... ...	Wm. Henry Palmer.
„ —	Emily, 8 years	Ketch	17	2	...	Turnips	Supposed foundered	Supposed 2 (all hands)	Between Collingwood and Nelson	...	Not known	Sailed from Collingwood for Nelson on 18 August, and not since heard of	Henry Hamilton.
Sept. 4	Jane Spiers, 18 years	Barque	309	10	2	Ballast	Collision; partial loss	...	Cook Strait, off Cloudy Bay	N.W.	Strong breeze	Collision caused by bad light and look out on board Young Dick. Certificate of mate of that vessel (Samuel Gordon) suspended for 3 months	Chas. Chalker Beer.
„ „	Young Dick	Schooner	162	6	...	„							George Henwood Symons.
„ 8	Enterprise, 9 years	Brigantine	84	7	...	Timber	Stranded; partial loss	...	North Spit at entrance to Wanganui River, Cook Strait	S.E.	Light breeze	No blame attached to master ...	Thomas Holmes.
„ 8	Flechero, 9 years, A1 Lloyd's	Ship	730	18	...	Ballast	„	...	Cook's Point, North Head, Auckland Harbour	N.E.	Fresh breeze	No blame attached to pilot in charge	Peter Thomas Luke Corlyon.
„ 10	Ceara, 9 years, A1.	Three-masted Schooner	172	8	1	Timber and Fruit	„	...	West Spit at entrance to Wanganui River, Cook Strait	Variable	Light	Master not blamed, but Court considered he did not exercise sufficient caution in approaching the shore	James Pie.
„ 11	Alert 19 years	Ketch	43	...	...	Ballast	Stranded; total loss	...	South end of Boulder Bank at Patea Heads	...	Calm	Wind fell as vessel was crossing bar	Claude Hamilton Smith.
„ 12	Taupo, s.s., 6 months, A1 100	Schooner	461	30	25	General	Stranded; partial loss	...	Fish Reef on East Coast of Middle Island, N.Z.	...	Light	Error in judgment on the part of the master	James Macfarlane.
„ 14	Kennedy, s.s., 10 years	„	138	16	10	General	Stranded; partial loss	...	South Spit, Greymouth Bar	N.	Moderate gale	No blame to master	Abraham Palmer.
„ 17	Adamant, 17 years	Barque	815	27	268	„	Stranded; no damage	...	Abrolhas Bank, Coast of Brazil	E.	...	Accident caused through navigating without a proper chart	Thomas L. Bunk.
Oct. 5	Boyd, 20 years	Schooner	16	2	...	Provisions	Stranded; total loss	...	Marainui Bay, Bay of Plenty	S.W.	Fresh gale	Stress of weather	John Shearer.

Oct. 9	Echo, 2 months	Schooner	27	3	...	Maize	Stranded; partial loss	...	Awanui, Province of Auckland	S.S.E.	Gale	Force of gale caused anchor to break	Thomas Parker.
„ 9	Carnatic, 8 years, A1 16 years	Ship	871	32	36½	General	Loss of life	2	Lat. 49° 19′ N., Long. 5° 19′ W.	W.	Strong breeze	Men fell from aloft, and were so injured that they both died in a little over an hour	William Chapman.
„ 15	Frank Guy, 2 months	Barquentine	About 200	9	...	Timber	Stranded; partial loss	...	Waikanae Beach, West Coast, Cook Strait	N.E.	Light breeze	Master did not take sufficient pains to ascertain his true position when running in for an anchorage. Master and mate warned to be more cautious in future	Edwin Cain.
„ 16	Bruce, s.s., 1 year, A1 90 at Lloyd's	Schooner	205	21	12	General	Stranded; total loss	...	A quarter of a mile S. of Taiaroa Head, Otago	...	Calm	Loss caused by default of master, neglecting while nearing land in dense fog, to heave lead often enough, and continuing voyage at too great speed. Mate, William Cormack, blamed for increasing speed without order. Master's certificate suspended for six months, and mate's for three	Frederick Jones.
	Tawera, 12 years	„	55	5	...	Ballast	Not known; supposed stranded; total loss	Supposed 5 (all hands)	About 14 miles N. of Kaipara, Auckland	...	Not known	Supposed to have been driven ashore by force of gale	Robert Church.
„ —	Blonde, new	Cutter	About 14	2	...	Coal	Supposed foundered; total loss	Supposed 2 (all hands)	Off the Alderman rocks, East Coast of North Island	...	„	... ...	C. Kemp.
„ 16	Mary, 23 years	Schooner	22	2	...	Ballast	Stranded; partial loss	...	Hauarahi Point, Hauraki Gulf, Auckland	S.	Light	... ...	John Olsan.
„ 21	Hero, s.s., 15 years, A1 at Lloyd's	Barque	851	37	50	General	Damaged in gale, and loss of life	1	Lat. 34° 12′ S., Long. 153° 44′ E.	„	Gale	No blame attached to officers ...	Thomas Logan.
„ 24	Star of Germany, 3½ years, A1, 100	Ship	1284	22	40	„	Loss of life	1	Lat. 43° 6′ S., Long. 38° 42′ E.	W.	Strong gale	... ...	Hugh Wilson.
„ 28	Kennedy, s.s., 10 years	Schooner	136	18	25	„	Stranded; partial loss	...	On the Bar, South side of Karamea River, Nelson	Variable	Strong breeze	Stranding caused by beacons being out of place. No blame to master	William Conway.
„ 31	Brunette, 1$\frac{5}{12}$ years.	Cutter	18	3	...	Timber	Stranded; total loss	...	About 4 cables off sunken rock, Tairua Harbour	N.W.	Baffling	Baffling winds under high land canted vessel towards rocks, and a heavy sea drove her on shore	William Sinamon.
Nov. 3	Prince Rupert, 4 years	Schooner	60	5	...	Coal	Stranded; partial loss	...	N.W. extremity of Motutapu Island, Auckland	„	Gale	Error of judgment on part of master, defective condition of some of running gear and sails	Thomas Short.
„ 8	Glance, 9 years	Cutter	19	2	2	Ballast	„	...	Tairua Bar, Auckland	N.N.W. to W.	Strong, shifting	Casualty caused by sudden shifting of wind	Joseph Allan.
„ 10	Glimpse, 11 years	Ketch	38	4	...	Timber	Capsized; partial loss	...	Near Akaroa Heads	...	Squally	Capsized in a squall	Alex. Shepherd.
„ 22	Commissary, 7 years, A1 15 years at Lloyd's	Ship	900	27	38	General	Loss of life	2	Lat. 45° 50′ S., Long. 101° 20′ E.	...	...	... ...	William Hunter.
„ 29	Clematis, 3 years	Ketch	67	6	...	Ballast	Collision; partial loss	...	About 6 miles west of Mercury Island	S.S.E.	Moderate breeze	Collision caused by wrongful act of man in charge of Mercury	Charles Moller.
„ „	Mercury, 4½ years	Cutter	30	3	...	„							John Megerney.

RETURN of Wrecks on which Enquiries have been held, &c.—*continued.*

Date of Casualty.	Name of Vessel; also, Age and Class when known.	Rig.	Register Tonnage.	Number of		Nature of Cargo.	Nature of Casualty.	Number of Lives Lost.	Place where Casualty happened.	Wind.		Finding of Court of Enquiry, or Opinion of Officer holding Investigation.	Name of Master.
				Crew.	Passengers.					Direction	Force.		
1875.													
Dec. 10	Taiaroa, s.s., 4 months	Schooner	228	29	4	Ballast	Stranded; partial loss	...	Old Man Rock, ¼-mile north-west of Dog Island, Otago	...	Calm	Master ought to have exercised greater caution. Certificate suspended for thirty days	John Spiegalthal.
„ 21	Maiden City, 3½ years	„	27	2	...	Timber	„	1	Pah Point, Banks' Peninsula, Canterbury	N.	Strong breeze	Vessel lost her mainmast, and master fell overboard; she afterwards went ashore in Okain's Bay	Samuel Prescott.
„ 22	Kedron, 10 years, A1 till September, 1876	Barque	373	10	...	„	Fire; partial loss	...	Harbour of Port Chalmers	...	...	Fire, which originated in a locker in mate's cabin, cannot be accounted for	Isaac Mann.
„ 29	Lady of the Lake, s.s., 13 years	Schooner	60	9	1	General	Stranded; total loss	...	Reef off Long Bay, 3 miles north-west of the Nuggets, Otago	N.E.	Strong	Want of caution on the part of the master; certificate suspended for 3 months	Frederick Holloway.
1876.													
Jan. 2	Kate Moynahan, 5 years	„	102	7	...	Railway iron	„	...	North Spit at Heads of the Manawatu River, Wellington	S.	Light breeze	Casualty caused by variableness and sudden shifting of the wind. No blame to master	John McColl.
„ 2	Tui, s.s., Under 1 year	„	64	11	...	Ballast	Stranded; partial loss	...	South Spit at entrance to Wairau River	...	Nearly calm	No blame to master. Accident caused by a light placed on a beacon by the pilot being mistaken for a light in the pilot boat	Charles Bonner.
„ 15	Melaine, 23 years	„	136	8	...	Ballast, and 3 tons grain	Stranded; total loss	...	On beach about 2 miles seaward of North Head, Kaipara Harbour	S.E.	Fresh gale	Vessel missed stays when near North Spit	Benjamin Bousefield Creagh.
Feb. 1	Susan, 25 years	„	17	2	...	Timber	„	...	Onetonga Beach, Island of Waiheke, Auckland	S.	Moderate	Cable parted, and vessel drove ashore	Otto Hendarks.
„ 1	Gazelle, s.s., 23 years	„	47	7	1	Station stores	Loss of life	1	Godley Head Light bearing S. by W. about 15 miles	...	...	... ...	Henry Zachary Nichols.
„ 5	Mary Bannatyne, 5 years	Brigantine	116	7	...	Flour	Stranded; partial loss	...	Close to Signal Station, North Beach, Greymouth	S.W.	Light	... ...	William Chalmers Munn.
„ 12	Kestrel, 8 years	Ketch	51	4	...	Ballast	„	...	East side of Henrietta Bay, Island of Ruapuke	W.	Whole gale	No blame to master	Benjamin Bern.
„ 24	Agnes, 2 months	„	24	3	...	Railway iron	„	...	Mile and a half north of entrance to the Manawatu River	S.	Strong breeze	No blame to master	James Bissett.

Mar. 1	Lioness, p.s., 22 years	Schooner	26	8	...	Ballast	Stranded; partial loss	...	South Spit at entrance to Grey River	N.E.	Light breeze	Unavoidable accident	James Nolan.
„ 3	Jessie, 7 years	„	38	4	...	„	Loss of life	1	Lyttelton Harbour, 20 or 30 yards from wharf	...	„	... ...	Alexis R. Gibbs.
„ 8	Opotiki, 7 years	„	38	4	...	Timber	Stranded; partial loss	...	Awatoto Beach, 4 miles S. of Napier	W.S.W.	Light air	Man in charge stood too close in, and centre-board was not working properly	Wm. Oram Morris.
„ 15	Belle Brandon, 3 years	„	65	5	...	„	„	...	Eastern side of Wangaroa entrance, half-way between S. head and inner point	E.S.E.	Moderate	Wind fell suddenly when vessel was close in shore	Frederick Ohlsen.
„ 18	Florence, 7 years	„	55	5	...	Ballast	Capsized; total loss	1	Godley Head bearing W. about 19 miles	W.S.W.	Squally	Sudden squall capsized vessel, and she foundered	Alex. Macfarlane.
„ 18	Jamietta, 7 years	Ketch	41	4	...	„	Collision; partial loss	...	In Lyttelton Harbour	N.E.	Fresh	Bad look-out on board the Jamietta	John Macdonald.
„ „	Sarah and Mary, 13 years	Brigantine	154	8	...	Colonial produce							Robert Quance.
„ 22	Merwangee Framgee, A.1 13 years	Ship	1079	29	20½	General	Stranded; partial loss	...	Hobson's Bay, Auckland Harbour	N.W.	Fresh gale	... ...	Nicholas Potter Bidwell.
„ 24	Brodick Castle, 1 year, A1 at Lloyd's	„	1785	55	282	„	„	...	Shoal off Bean Rock, Auckland Harbour	N.W. to W.	Fresh	Pilot in charge sole cause of casualty	James Thyne.
„ 28	Fanny Kelly, 2½ years	Ketch	35	4	...	Timber	Stranded; total loss	...	South side of Wangaroa Harbour, about half-way through entrance	W.N.W.	„	Vessel in bringing-up parted her only cable	James Black.
„ 31	T. B. Taylor, 4 years	Schooner	54	5	...	Ballast	Loss of mainmast	...	Rocks Point N. by E. 24 miles	S.	Moderate breeze	Head of mainmast was decayed ...	John Henry Smith.
April 2	James Paxton, 26 years	„	61	5	...	Bricks and iron	Stranded; partial loss	...	Sandspit, Otago Heads	N.E.	Fresh breeze	Vessel missed stays	David Bower.
„ 3	Clyde, s.s., 8 years	Ketch	34	4	...	Ballast	„	...	Southern Beach, inside Waimakariri River, Canterbury	E.	Light	Tow-line parted and fouled screws	Patrick McConville.
„ 8	Hunter, 2 years	Schooner	22	3	...	Wool, &c.	Stranded; total loss	...	Southernmost rock of Barrett's Reef, entrance to Port Nicholson	N.W.	Fresh gale	Vessel struck by a heavy squall before she had gathered headway after staying, and was driven on to the rocks	Henry Nelson.
„ 9	Sarah Pile, 12 years	Brigantine	115	6	2	Ballast	Stranded; partial loss	...	Beach near Pinnacle Rocks, Worser's Bay, Port Nicholson	N. to N.N.E.	Whole gale	Vessel parted cable, and was run on shore	John Knowles.
„ 11	Vincent, 4 years	Cutter	20	3	1	General	Collision; partial loss	...	Under Mount Monganui, Tauranga Harbour	S.W.	Light	The Rowena to blame. Master, D. Sellars, and mate, John McKenzie, reprimanded	Charles Burke.
„ „	Rowena, s.s., 4 years	Schooner	74	12	32	„	Collision; no damage						Daniel Sellars.

RETURN of Wrecks on which Enquiries have been held, &c.—*continued.*

Date of Casualty.	Name of Vessel; also, Age and Class when known.	Rig.	Register Tonnage.	Number of		Nature of Cargo.	Nature of Casualty.	Number of Lives Lost.	Place where Casualty happened.	Wind.		Finding of Court of Enquiry, or Opinion of Officer holding Investigation.	Name of Master.
				Crew.	Passengers.					Direction	Force.		
1876.													
April 11	Helen, 10 years	Brigantine	165	8	...	Coal	Stranded; total loss	...	Near East Cape ...	S.	Strong gale	No blame attached to master ...	John Hair.
„ 13	Egmont, s.s., 1½ year	Ketch	52	8	5	General	„	...	South Spit at entrance to Patea River	E.	Light	... ...	Arthur Irvine.
„ 18	Prince Rupert, 4½ years	„	60	5	...	Timber	Loss of mainmast, mizen topmast, jibboom, and rigging	...	About 30 miles N. of Lyttelton Harbour	N.	Strong gale	Casualty caused by heavy gale ...	Henry Bushell.
„ 26	Beautiful Star, s.s., 15 years	Schooner	146	14	...	General	Knocked hole in side	...	Alongside wharf, Lyttelton Harbour	S.W.	Gale	Vessel bumped against Waterman's Jetty, and projecting bolt went through her side	John Petersen.
„ 28	May Flower, 9 years, A1 Lloyd's, 10 years	Brig	277	9	...	Coal	Lost topgallant mast, rigging, &c.	...	About 100 miles E. of Cape Campbell	N.E.	Strong gale	Accident caused through sudden shift of wind	Peter Dickson.
„ 29	Maggie Robertson	Schooner	16	2	...	Firewood	Collision; partial loss	...	Wangaproa Passage, Auckland	W.	Light	Maggie Robertson's lights not being shown	Matthew Martin.
„ „	Cabarfeielh, 2 years, A1 Lloyd's	Barque	333	10	1	Ballast	Collision; no damage						Kenneth McKenzie.
May 2	Tui, s.s., 1 year	Schooner	64	11	1	General	Collision; partial loss	...	About 18 miles S.S.W. of Cape Campbell	N.W.	Fresh breeze	Bad look out on board the Tui	Charles Bonner.
„ „	Sarah and Mary, 4 years	Ketch	40	4	2	Grain							John Grubb.
„ 3	Durham, s.s., 6 months	Schooner	54	11	6	Ballast	Fire; partial loss	...	Alongside Queen Street Wharf, Auckland	...	...	Fire caused by overheating of lagging and felt round the boiler	Alex. Farquhar.
„ 14	Kate, 17 years	„	26	3	...	„	Foundered; total loss	...	18 miles W. of Grey River	S.W.	Gentle breeze	Vessel had been injured on Charleston beach, and was leaking; pumps were choked, vessel was unmanageable, and was abandoned	Charles Kleim.
„ 16	Atalanta, 3 years	„	31	3	...	Timber and kauri gum	Loss of life	1	Between Tiri Tiri and Rangitoto	N.W.	Strong breeze and squally	... ...	James Stephen.
„ 18	Nile, 20 years	„	24	2	...	Timber	Stranded; total loss	...	Rocks under Pencarrow Lighthouse, Wellington Harbour	„	Fresh gale	Vessel parted cables, and having lost her head sails, which were old, she became unmanageable, and drifted ashore	Charles Huntley.
„ 23	Sarah, 13 years	Brig	233	8	...	Ballast	„	...	About 2 miles N. of Elizabeth Reef, abreast of Poor Knights	E.N.E.	Hard gale	Master stood too close in shore during thick and unsettled weather	John Thompson.

June 2	Zephyr, 10 years	Brigantine	135	7	...	Timber	Stranded; partial loss	...	South Spit at the entrance to the Hokitika River	N.	Gentle breeze	Vessel did not answer her helm ...	John Conor.
„ 3	Fairy, s.s. 2½ years	Ketch	33	6	7	„	„	...	End of Boulder Bank, Western Spit, Napier	N.W.	Fresh breeze	Master kept too close in, and heavy sea swept vessel on bank	John Campbell.
„ 4	Tauranga, 12 years	Schooner	61	...	...	...	Collision	...	In Wanganui River	N.N.W.	„	Collision result of an accident	Henry Divers.
„ 4	Peri, 6 years	„	69	7	...	Railway iron							Francis Mazzitello.
„ 9	Helen, 14 years	„	23	3	...	General	Stranded; partial loss	...	In Little Omaha Harbour, Auckland	S.W.	Gale	Vesssel had not sufficient ground tackle	Meredith Rountree.
„ 10	Alexandra, 11 years	Barque	306	10	...	Coal	„	...	In Lyttelton Harbour, close to Ripa Island, to westward	W.	Moderate	Accident caused by vessel hanging in stays	John Moore Lamont
„ 14	Dante, 9 years	Cutter	14	2	4	Flour	Loss of life	1	Close under rocks at Paratutai, under North Head, Manukau	S.W.	Heavy squalls	Bight of main sheet knocked man overboard	Joseph Bradley.
„ 14	Bonita, 3 years	Schooner	22	3	1	Ballast	Stranded; total loss	...	Reef, S. by E. from North Head, Coromandel Harbour	N.N.W.	Light	Master committed an error in judgment in going to sea, knowing that the vessel would not stay when light	James Conway.
„ 16	Kaiuma, 10 years	„	39	4	...	Grain	Stranded; partial loss	...	On beach at Long Point, north end of Kapiti Island	S.E.	Strong gale	Vessel dragged her anchors during a heavy gale	Francis Maule.
„ 17	Eliza McPhee, 5 years	Ketch	39	4	...	Grain and flour	Stranded; total loss	...	North end of Mayhew Reef, inside Kapiti Island, Cook Strait	N. to N.N.W.	Moderate breeze	Vessel sprung a leak, and was run ashore to prevent her sinking in deep water	Neil Reid.
„ 17	Heversham, 20 years	Barque	465	13	2	Coal	„	...	Near Tom's Rock, Cook Strait	N.N.W.	Heavy gale	Loss attributable to neglect of master, Robert Croll, in not taking cross-bearings, and not paying sufficient attention to direction given in the "New Zealand Pilot" for clearing dangers in that vicinity. Master's certificate suspended for 9 months	Robert Croll.
„ 23	Williamette, 12 years	Cutter	28	2	...	Ballast	„	...	About 3 miles to south of South Head, Manukau Harbour	N.W.	Strong squall	No blame attached to master	Samuel Roe.
„ 27	Cezarewitch, 26 years	Barque	428	14	...	Railway material and sawn timber	„	...	Boat Harbour, Crayfish Point, Big Bay, West Coast	E.	Light air	Vessel being leaky was run on shore to prevent her foundering at her anchors	Lawrence Webster.
„ 27	Dispatch, p.s. 10 years	Schooner	38	9	...	Ballast	Stranded; partial loss	...	Middle Spit, Hokitika River	N.E.	Light breeze	Bar had silted up after beacons were fixed at the previous low water	Thomas Kitchingham.

NEW ZEALAND

WRECK CHART

1st July 1875 to 30th June 1876

COMPILED FROM

Official Records

in the

MARINE DEPARTMENT

H Parkinson del.

Three Kings

North Cape

Awanui

Bay of Islands

Hokianga River

Bream Bay

Great Barrier

Auckland Harbour

Kaipara Hr

AUCKLAND

Manukau Hr

Waikato R.

Tauranga

East Cape

Kawhia

Poverty Bay

Waitara R.

NEW PLYMOUTH

Hawkes Bay

NAPIER

Patea

WANGANUI

Cape Farewell

Manawatu

Porangahau

Cape Turnagain

Farewell Spit Light Rev'd Vis 17 M.

Kapiti

Light Fixed Vis 20 M.

WELLINGTON

NELSON

Cape Palliser

WESTPORT

Cape Foulwind

Light Rev Vis 19 M.

Cape Campbell

Charleston

Kaikoura

GREYMOUTH

HOKITIKA

OKARITO

Light Fixed Vis 22 M.

LYTTELTON

Banks Peninsula

Jacksons Bay

Martins Bay

Milford Sd

TIMARU

OAMARU

Allday Bay

Light Fixed Vis 20 M.

DUNEDIN

Nugget Pt Light Fixed Vis 25 M.

INVERCARGILL

Solander I.

Dog I.

Light vessel Vis 18 M.

Stewart I.

Snares

Bounty Is.

SYMBOLS

CASUALTIES BY STRANDING

X ___ *Signifies a Total Loss.*

X ___ *" " Partial Loss.*

CASUALTIES BY COLLISION

OO *Collision between two Sailing-vessels with partial loss.*

O+ *" " a Steam-vessel & a Sailing-vessel with partial loss.*

CASUALTIES OTHER THAN BY COLLISION OR STRANDING

● ___ *a Total loss of a Sailing-vessel.*

○ ___ *a Partial " " "*

\+ ___ *" " " Steam vessel.*

APPENDICES TO MARINE REPORT.

APPENDIX A.

REPORT BY MARINE ENGINEER ON WORKS IN CONNECTION WITH NEW LIGHTS.

Mr. Blackett to the Secretary of Customs.

Sir,— Marine Office, Wellington, 15th June, 1876.

I have the honor to forward, for the information of the Hon. the Commissioner of Customs, the following memorandum on works executed in connection with the construction of lighthouses in New Zealand during the past year.

Puysegur Point, Preservation Inlet.—It having been determined that a lighthouse should be erected at this place, a party of men, under a competent overseer, was sent there in the s.s. "Maori," in February, 1875, with a proper supply of tools, tents, and provisions, as also the materials for building a small wooden store. The work to be executed was the clearing and formation of a road from the landing-place to the proposed site for the lighthouse on Puysegur Point, about 1¾ miles in length, and the clearing and preparation of a site to receive the lighthouse, dwelling-houses, and stores.

This work was accordingly executed (with the exception of about eight chains of road not quite completed), and the men withdrawn in November, 1875.

The drawings and specifications are prepared for the above work, which may be advertised for public tender as soon as the services of a steamer can be assured to the department. Part of the material for the lighthouse has already been landed in Preservation Inlet, viz. the heavy timbers for the tower, which, being of special sizes and character (iron-bark), were procured by the Government.

The Brothers, in Cook Strait, and Portland Island, in Hawke's Bay.—When the overseer and working party were withdrawn from Puysegur Point, it was intended to transfer them at once to the Brothers, to prepare the landing-places, cut the necessary tracks, and excavate the sites for the tower and dwellings, &c.; but, on their arrival in Wellington, it was found that the services of the "Luna" could not be secured continuously for the work. This being the case, it was arranged that they should proceed instead to Portland Island, which, being more accessible by ordinary steamers, does not require such continuous attention as would be needed by a party at the Brothers. Accordingly, the usual preliminary works have been carried out at Portland Island, viz. a serviceable track has been made up the cliff at the northern end of the island and along the top to a point on the southern end where the lighthouse will be erected; a store for tools and goods has also been built, and the reserve acquired from the Native owners for lighthouse purposes has been fenced in. The heavy iron-bark timber for the tower has also been landed on the island.

Before this work was quite completed, an opportunity of beginning work on the Brothers presented itself, the "Luna" having been placed at the service of the department. Another working party was accordingly organized and despatched to the Brothers in March, 1876, with the usual appliances for work, including the timbers for the landing-stage.

A house ready framed was also sent, as well as a small store, and both of these were erected in suitable places, tracks cut and excavated in the rock where required, landing-places partly prepared, and the sites for the dwellings and tower partly excavated. When nearly ready, however, to begin the actual erection of the buildings, it was found that the "Luna," being required for other services, could not be depended on to visit the island regularly, which was absolutely necessary, as the men depended entirely on her visits for everything they required. An attempt was made to arrange satisfactorily for the use of one of the small local steamers for one trip, which, after much delay, was successful; but it being found that these could not be depended on to go when required, and that they were not suitable for carrying and landing such material as would be necessary, it was determined, very reluctantly, to suspend the works until, by the arrival of the "Stella" from England, the department would be placed in a position to carry on the work vigorously and uninterruptedly. The working party was therefore withdrawn on 4th May, 1876.

The erection of Portland Island Lighthouse had meanwhile been advertised for public tender, and tenders have been received. They are now under consideration.

Cape Foulwind.—After the necessary felling and clearing of the bush on the Cape had been executed, and a branch road constructed to it from the main road between Westport and Charleston, the erection of the tower 40 feet high, two dwelling-houses, and two stores, was let by contract after public tender, and the work was satisfactorily completed last month.

Towards the completion of the work, Mr. Mill, an artizan skilled in lighthouse apparatus and lantern erection, arrived from England (having been engaged to come to New Zealand for special employment in such work), and he was immediately sent to Cape Foulwind to erect the lantern and apparatus. This work is now nearly finished, and in a few weeks the whole will be ready for lighting up.

Timaru.—The erection of this, although a local and provincial light, has for convenience sake been undertaken by the Marine Department, the cost being defrayed by the province. An eligible site has been acquired near the present signal station. Plans and specifications for the building of the tower have been prepared, and tenders have been called for its erection.

Hokitika.—A site has been selected for the lighthouse, and drawings and specifications have been prepared. In a short time tenders will be called for construction.

I will conclude this memorandum with a few remarks on the character of the buildings above described, as to materials, &c. After some consideration on this subject, it was determined to use timber not only for the dwellings and stores, but for the towers also, as being cheaper and more easily and expeditiously erected than brickwork or masonry, and at the same time very much less liable to damage by earthquakes, the probable effect of which on such structures should not be lost sight of. To insure durability in the towers, iron-bark timber has been adopted for the main framing; the minor parts of the framing and the outer boarding being of totara. In the dwellings all the piles, ground plates, and weather boarding will be of totara, and the roofing of stout corrugated galvanized iron plates.

I have, &c.,

The Secretary of Customs, Wellington. JOHN BLACKETT.

APPENDIX B.

CORRESPONDENCE RELATIVE TO CARRIAGE OF PARAFFIN.

No. 1.

Mr. SEED to Mr. FIFE.

Customs Department (Marine Branch),
Wellington, 11th January, 1876.

SIR,—

The question of using mineral oil in all the New Zealand lighthouses is now under consideration; but there is an important objection to its adoption which I consider desirable to draw your attention to—and that is, that principal firms of shipowners trading to this colony (the New Zealand Shipping Company and Messrs. Shaw, Saville, and Co.), refuse to carry your lighthouse oil, except as deck cargo. They allege—1st. That it would be injurous to any other cargo, and especially to the cargoes taken to New Zealand, consisting as they do largely of groceries, to stow the oil in the hold adjoining other goods. 2nd. That the oil is of a highly dangerous nature, and that should the temperature of the hold rise above 100° there would be a constant liability to explosion. With reference to the latter objection, a communication has been sent to the Agent-General to the colony, requesting him to point out to the shipping firms that this oil (according to the Imperial Parliamentary Papers relative to proposals to substitute mineral oil for colza oil in lighthouses) does not flash until a temperature of from 134° to 138° Fahrenheit is reached; but a sufficient time has not elapsed to receive a reply here to this letter. In addition to the fact that this oil has to be carried on deck, it is only received at shippers' risk, and is liable to be thrown overboard in case of bad weather. The rate of frieght is double that on colza oil carried in the hold—viz., 8d. as compared with 4d. per gallon; and insurance (to cover risk of jetsam) is charged at the rate of 120/ per cent. Apart from the fact of a shipment of this oil being liable at any time to be thrown overboard, there are comparatively few vessels that it can be carried in, as, under the existing regulations, it cannot be shipped in "passenger" vessels.

I should be glad if you would ascertain and inform me whether the oil in question is required to be carried on deck when shipped to places other than New Zealand, because, if not, it is only reasonable that this objectionable stipulation in reference to shipments to this colony should be removed.

I have, &c.,

The General Manager,
Young's Paraffin Light and Mineral Oil Company (Limited),
69, St. George's Place, Glasgow.

WILLIAM SEED,
Secretary of Customs.

No. 2.

Mr. FIFE to Mr. SEED.

Young's Paraffin Light and Mineral Oil Company (Limited),
General Manager's Office, 13 Dundas Street, Glasgow,
15th March, 1876.

SIR,—

I beg to acknowledge receipt of press copy of your letter of 11th January, *via* Brindisi.

So far as our lighthouse oil injuring the particular cargoes to New Zealand is concerned, I beg to explain that these oils are regularly carried under deck, without extra charge, from Glasgow to Bordeaux, Havre, Bristol, Cardiff, and Swansea, Granton to Norway, Grangemouth to London, Hull, and Newcastle, London to China, Russia, Alexandria, and Cape of Good Hope, and not a single complaint of goods being spoiled has ever been submitted to us.

In regard to the alleged danger of the oil, this is simply absurd. Your letter correctly states the fact; and I should add that the absolute safety of the oil has been one of its great recommendations to all the Governments who have adopted it for their lighthouses.

I believe that the shipping firms which you mention have practically a monopoly of the trade to New Zealand, and are therefore rather in a position to dictate. I trust, however, you will be able to make them amenable to reason, and I will try what can be effected in this way here.

I have, &c.,

Wm. Seed, Esq.,
Secretary of Customs (Marine Branch), Wellington.

JOHN FIFE,
General Manager.

No. 3.

Mr. J. Fife to Mr. W. Seed.

Young's Paraffin Light and Mineral Oil Company (Limited),
General Manager's Office, 13, Dundas Street, Glasgow,
29th May, 1876.

Sir,— *Lighthouse Oil.*

Referring to my letter of 16th March, I beg to send herewith six prints of report on our lighthouse oil obtained from Dr. Stevenson Macadam, one of the foremost chemists in Great Britain, particularly in regard to hydrocarbons. He is besides Chemical Adviser to the Northern Lighthouse Commissioners, who have charge of all the lighthouses in Scotland, and has devoted more attention to the study of suitable oils and lamps for lighthouses than I believe any other chemist in the United Kingdom. I asked for this report from him solely in consequence of your letter to me, and I trust that it will enable us to remove the shippers' objections to the transit of an oil so thoroughly safe. We will endeavour to accomplish what we can at this end.

I have, &c.,
John Fife,
General Manager.

W. Seed, Esq., Secretary of Customs (Marine Branch),
Wellington, New Zealand.

Young's Paraffin Light and Mineral Oil Company (Limited).

Foreign Lighthouse Oil.

Analytical Laboratory, Surgeons' Hall, Edinburgh 25th April, 1876.

I have to certify that I have carefully analyzed and tested a sample of foreign lighthouse oil, forwarded to me by Young's Paraffin Light and Mineral Oil Company, with the special object of determining the relative safety of the oil as compared with the other paraffin oils, and of estimating the relative photogenic or illuminating value of the oil as contrasted with the ordinary colza burning oil.

The foreign lighthouse oil under examination was a clear, almost colourless, paraffin oil, with the specific gravity of 816 (water = 1000), a flashing point of 165° F., and a firing point of 178° F. The oil is, therefore, a very safe one, and shippers and steamboat proprietors may confidently carry it without the risk of explosion or fire. It possesses the highest flashing and firing points of any clear burning paraffin oil which I have met with.

In the determination of the illuminating value of the oil, I employed two sizes of the Doty lighthouse argand lamp for the consumption of the oil, viz. the one inch wick lamp, and the one and one-eighth wick lamp. The photogenic results were contrasted with the light evolved from the one inch argand lamp consuming colza oil, and the following experimental data were obtained:—

Relative Photogenic or Illuminating Power of the Light evolved during the Combustion of the Foreign Lighthouse Oil in the Doty Lighthouse Lamps, and of Colza Oil in the Lighthouse Argand Colza Lamp.

	Foreign Lighthouse Paraffin Oil.		Colza Oil.
	Doty 1-inch Argand.	Doty 1⅛-inch Argand.	1-inch Argand.
A. Consumpt. of oil per hour, by weight ...	1·626 ounces.	1·923 ounces.	1·950 ounces.
Consumpt. of oil per hour, by volume in ounces	1·993 ounces.	2·357 ounces.	2·133 ounces.
Consumpt. of oil per hour, by volume in gallon	0·0124 gallon.	0·0147 gallon.	0·0133 gallon.
B. Photogenic or illuminating power of the light evolved during the combustion of the oil in the respective lamps, determined by Bunser's Photometer, and calculated into standard sperm candles, each consuming 120 grains of sperm per hour	19·78 candles.	23·55 candles.	11·33 candles.
C. Total value of the light obtained from the combustion of one gallon of the oils in the respective lamps, calculated from the candle power, and given in pounds of sperm candles	27·346 lbs.	27·463 lbs.	14·603 lbs.
D. Relative photogenic or illuminating value in candle power of the foreign lighthouse oil in the Doty lamps, taking the colza oil in the argand lamp as standard or unity, 1·000	1·746	2·079	1·000
E. Relative amount of total light evolved from one gallon of the respective oils, calculated from the pounds of sperm (*c*), and taking colza oil as standard or unity, 1·000	1·872	1·881	1·000

The foregoing experimental results demonstrate that the foreign lighthouse oil, when consumed in the Doty lighthouse lamps, yields the maximum amount of light which has as yet been obtained from any kind of paraffin burning oil. In each experiment, the oil burned with a clear white light, and had no tendency to smoke. After trials stretching over ten hours' time, the wicks of the lamps consuming the foreign lighthouse oil were found clean and uncrusted, so that the oil is remarkably pure and free from foreign substances.

The candle power of the foreign lighthouse oil was 19·78 in the one-inch Argand, as compared with colza oil 11·33 in the same size of Argand, and these candle powers calculated to percentage, and taking the colza lamp as unity, give 74·6 per cent. more light from the paraffin lamp. If the larger-sized Doty argand lamp of one and one-eighth inch wick is placed against the colza lamp, the candle powers are respectively 23·55 and 11·33, or 108 per cent. in favour of the foreign lighthouse oil.

The total amount of light capable of being yielded from a gallon of the respective oils brings out also a very favourable result in favour of the foreign lighthouse oil, which gives 88 per cent. more light than the colza oil—gallon of oil for gallon of oil.

Taking all these experimental observations into full consideration, I am decidedly of opinion that the foreign lighthouse oil now under examination is superior to other paraffin burning oils in high flashing and firing points, and, when consumed in proper lamps, is not excelled in whiteness and purity of flame, or in the photogenic or illuminating value of the light obtained therefrom.

STEVENSON MACADAM, Ph.D., &c.,
Lecturer on Chemistry, and Consulting Analytical Chemist.

No. 4.

Mr. W. SEED to Mr. J. FIFE.

Customs Department (Marine Branch), Wellington,
20th July, 1876.

SIR,—

I have to acknowledge the receipt of, and to thank you for the information conveyed in your letters of the 16th March and 29th May last, and especially for the trouble you have taken to procure and forward to me the report on the paraffin oil of your Company, by Dr. Stevenson Macadam, which not only demonstrates the high value of this oil as a lighthouse illuminant, but shows that it may be confidently carried below hatches on board ship with perfect safety. I trust that the promulgation of this latter information may have the effect of removing the objections entertained by the shipping firms by whose vessels the oil has to be conveyed to this colony against carrying it in the same way and at the same rate of freight as other oil is carried.

I have, &c.,
WILLIAM SEED,
Secretary of Customs.

The General Manager,
Young's Paraffin Light and Mineral Oil Company,
13, Dundas Street, Glasgow.

No. 5.

Mr. J. FIFE to Mr. W. SEED.

Foreign Lighthouse Oil.

General Manager's Office, 13, Dundas Street, Glasgow,
26th June, 1876.

SIR,—

Reverting to former correspondence with you in regard to the carriage of this Company's lighthouse oil, I now beg to annex copy of communication received from Messrs. P. Henderson and Co., who own the line of packets from the Clyde to New Zealand, from which you will observe that they are satisfied there is no danger in the conveyance of the oil, and they will be happy to take shipments thereof.

The recommendation which they make will be attended to; but in the meantime, as this removes the objection to which your letter of 11th January last directed my attention, I trust you will now be enabled to adopt our oil for the New Zealand lighthouses.

I am, &c.,
JOHN FIFE,
General Manager.

W. Seed, Esq., Secretary of Customs,
(Marine Branch,) Wellington, New Zealand.

Enclosure in No. 5.

Mr. J. GALBRAITH to Mr. J. ARTHUR.

15, St. Vincent Place, Glasgow, 8th June, 1876.

SIR,—

I have perused the communication you left with me in regard to Young's paraffin oil, and the accompanying report by Dr. Stevenson Macadam, M.A.C., from which I am satisfied that there would be no danger in the conveyance of this article by our line of ships to New Zealand.

I will therefore be glad to take shipments by those vessels that do not come under the Emigration Act; but with the ships conveying emigrants, the Emigration Officers will not allow mineral oils to be carried, and most of our ships have emigrants from Clyde.

I would suggest your memorializing the Board of Trade (Emigration Department) on this matter,

accompanying your memorial with the report I have alluded to, in the view of having this restriction removed, so far as regards Young's paraffin oil.

I have, &c.,
JAS. GALBRAITH.

James Arthur, Esq.

APPENDIX C.

REPORT BY DR. STEVENSON MACADAM ON PARAFFIN OIL PROCURED FOR NEW ZEALAND LIGHTS.

Dr. STEVENSON MACADAM to Messrs. D. and T. STEVENSON, C.E.

New Zealand Oil.

Analytical Laboratory, Surgeons' Hall, Edinburgh,
15th February, 1866.

DEAR SIRS,—

I have carefully analyzed and tested the sample of New Zealand lighthouse paraffin oil, forwarded to me on the 4th instant, and have obtained the following results:—

Specific gravity of the oil (water=1000)	816·5
Consumption of oil per hour in Doty argand lamps:—	
By weight	1·951 ounces
By volume	2·389 „ =0·0149 gallon
Photogenic or illuminating power of the light evolved during the combustion of the oil given in standard sperm candles, each consuming 120 grains of sperm per hour	23·66 candles
Total value of the light capable of being obtained from the combustion of one gallon of the oil in pounds of sperm burned in standard candles	27·22 lbs.
Flashing point of the oil in open test	155° F.
Firing point of the oil in open test	172° F.
Flashing point of the oil in close test	145° F.

The above oil is of the best quality for lighthouse illumination, having the maximum flashing and firing points for burning oil and evolving the full amount of light known to be available from first-class oil.

Yours, &c.,
STEVENSON MACADAM, Ph.D.

Messrs. D. and T. Stevenson, C.E.

APPENDIX D.

No. 1.

REPORT ON NAVAL TRAINING SCHOOL, KOHIMARAMA.

Captain BRETON to the SECRETARY of CUSTOMS (Marine Branch).

SIR,— Naval Training School, Kohimarama, 30th June, 1876.

I have the honor to transmit, for the information of the Hon. the Commissioner of Customs, the following report on the above-named institution for the past year.

The health of the boys has been very good. I append the report of Dr. Goldsbro', the medical officer of the institution.

Table A shows the educational progress of the boys. During the last five months there has been no schoolmaster, but the duties of that office have been very efficiently carried out by Mr. Ritchie Watt, one of the nautical instructors.

In seamanship, pulling in boats, and tailoring, the progress has been satisfactory. Table C contains a list of the clothing made and other work done in the school; and I have great pleasure in bearing testimony to the very efficient manner in which Mrs. Speight has carried out the duties of sewing instructress.

The admissions have been 51, the discharges 8, leaving 80 now in the school. See Table D.

Table B shows the visits made for the purpose of imparting religious instruction to the boys. The Rev. Dr. Kinder and Mr. George Cutts have attended very regularly for this purpose.

The conduct of the boys has been generally satisfactory, and I am glad to be able to state that they appear to have got over the foolish mania for absconding, which at one time existed.

During the entire year we have supplied ourselves with vegetables and with potatoes grown by hand labour for over three months, the crop, owing to the bad season, being a partial failure. The increased area of ground recently acquired will, I trust, after next season, enable us to supply our wants entirely in this respect.

The schooner attached to the school was taken out for short cruises until the state of the rigging compelled me to discontinue the practice. She is now used for berthing a portion of the boys, and for such nautical instruction as can safely be conducted on board her. I regret that the survey recently held on her hull has shown her to be in so unsound a condition as to render it unadvisable to refit her.

I trust that a suitable vessel for sea-cruising may shortly be procured, in order that the practical duties of seamen may be more efficiently taught.

A sufficiency of good, wholesome food has been provided. The cost of the ration, which includes fuel, lights, and soap, amounts to 6½d. per head per diem.

Donations of various sorts to the school have been numerous; amongst which I may specially mention a box of books sent from England by Lady Martin and Miss Yonge, and one from the Society for the Promotion of Christian Knowledge, for which we are indebted to the good offices of his Lordship the Bishop of Auckland.

The improvements and additions made last January have very much increased the efficiency of the school and the comfort of the inmates.

Three boys have been apprenticed to the sea, and the report in each case is satisfactory. More are sufficiently advanced to go as opportunity offers. There are also several ready to be apprenticed to shore trades.

I have, &c.,
G. R. Breton,
Manager.

The Secretary of Customs (Marine Branch), Wellington.

A.—Table showing the Educational State of Boys.

Particulars.	Read.				Write.				Cipher.			
	Well.	Indifferently.	Not.	Total.	Well.	Indifferently.	Not.	Total.	Well.	Indifferently.	Not.	Total.
Remaining on 30th June, 1875	13	8	14	35	9	10	16	35	12	9	14	35
Admitted during year ending 30th June, 1876	8	18	25	51	1	16	34	51	...	19	32	51
Returned Absconders ...	...	2	...	2	...	1	1	2	...	1	1	2
Total	21	28	39	88	10	27	51	88	12	29	47	88
Discharged during year ending 30th June, 1876	3	4	1	8	3	4	1	8	2	4	2	8
Remaining on 30th June, 1876	25	48	7	80	17	47	16	80	12	59	9	80
Total	28	52	8	88	20	51	17	88	14	63	11	88

B.—Table showing the Visits of Clergymen for Divine Service and Religious Instruction from 1st July, 1875, to 30th June, 1876.

Church of England.	Roman Catholic.
36	9 And 36 visits by Mr. George Cutts.

C.—List of Articles Manufactured and Work done in the School from 1st July, 1875, to 30th June, 1876, with estimated Cost of Labour.

Articles.	Quantity.	Rate.	£ s. d.	Articles.	Quantity.	Rate.	£ s. d.
		s. d.				s. d.	
Trowsers, serge ...	124	1 10	11 7 4	Brought forward ...	...	...	33 7 3½
„ drill ...	61	1 0	3 1 0	Silk neckerchiefs	94	0 2	0 15 2
„ oilskin ...	34	1 0	1 14 0	Pillow cases	34	0 3	0 8 6
Frocks, serge ...	101	1 5½	7 7 3½	Fencing round tree ...	1	5 0	0 5 0
Jumpers, drill ...	65	1 0	3 5 0	Fencing erected	11 chains	6 0	3 6 0
„ oilskin ...	36	1 0	1 16 0	Fitting oars	12	0 6	0 6 0
Flannels	116	0 7½	3 12 6	Stand for grindstone ...	1	5 0	0 5 0
Towels	90	0 1	0 7 6	Hand-barrow	2	5 0	0 10 0
Quilts	100	0 2	0 16 8				
Carried forward ...	...	...	33 7 3½	Total	...	...	39 2 11½

D.—Return showing Admission and Discharges from 1st July, 1875, to 30th June, 1876.

Admissions.	Numbers.	Discharges.	Numbers.
Committals	50	Apprenticed	3
Transferred from Industrial Schools	1	Time expired	3
Remaining on 30th June, 1875	35	Physically unfit	1
Returned Absconders	2	To relatives	1

Remaining on the 30th June, 1876—80.

E.—Table showing Particulars of Parentage of Boys received from 1st July, 1875, to 30th June, 1876.

Number of Boys Received.	Both Parents Living.	One Parent Living.	Both Parents Dead.	Unknown.
51	24	25	2	Nil.

Circumstances as shown in Register.

Sent under Section 8 of Act	21	Mother deserted	1
„ 9 „	8	Father blind—mother supporting family ...	1
„ 10 „	22	Parents separated—father a miner	1
		Father deserted	2
		Father deserted—mother in hospital	1
		Father in gaol—mother a laundress	1
		Father a bushman	1
		Step-father deserted his family...	1
		Parents following the theatrical profession ...	2
		Father a drunkard—sisters prostitutes ...	1
		Mother living—step-father	3
		Father a miner	2
		Mother in gaol—father deserted	1
		No particulars received	33
Total	51	Total	51

F.—Committing Benches and Transfers, from 1st July, 1875, to 30th June, 1876.

Otahuhu	1	Picton	1
Cromwell	1	Kaikoura	1
Rangiora	1	Lyttelton	1
Russell	1	Cambridge	1
Auckland	13	Christchurch	5
Greymouth	4	Helensville	1
Wellington	8	Caversham Industrial School, Dunedin ...	1
Shortland	2		
Hokitika	6	Total	51
Nelson	3		

G.—Table showing Ages of Boys received from 1st July, 1875, to 30th June, 1876.

Number of Boys received.	Aged 10.	Aged 11.	Aged 12.	Aged 13.	Aged 14.
51	15	15	10	7	4

H.—Table showing Religion of Boys received from 1st July, 1875, to 30th June, 1876.

Church of England.	Roman Catholic.	Presbyterian.	Wesleyan.	Christian.	Protestant.	Total.
29	14	4	2	1	1	51

No. 2.

Dr. Goldsbro' to the Secretary of Customs (Marine Branch).

Sir,— Auckland, 1st July, 1876.

I have the honor to state that the health of the boys of the Government Training Ship and Station has been during the past twelve months in a satisfactory condition. There have been no deaths, and only slight cases of fever, of a remittent type, in two or three instances. The ordinary diseases of boys, such as colds and coughs, are to be expected in children exposed as these are to wet, &c. Some cases of itch have appeared; but these have yielded to the ordinary treatment, and only two or three boys show any trace of the disease. This disease was brought into the home from ship-board. At the present time there is no case in the institution of any serious or dangerous disease.

I hold a weekly inspection every Saturday, and any case requiring it is isolated as much as possible in an institution crowded as the building at present is. The sanitary arrangements are defective; but everything is done possible to keep the place in a healthy condition by the manager and the attendants under his directions.

I have, &c.,

The Secretary of Customs (Marine Branch), Wellington.

Charles F. Goldsbro', M.D.,
Surgeon, &c., Government Training Ship.

APPENDIX E.

WEATHER REPORTING.

No. 1.

Commander EDWIN to the Hon. the COMMISSIONER of CUSTOMS.

SIR,— Wellington, 31st August, 1876.

In reporting on the progress of the experimental system of storm warnings, I have to state that satisfactory progress has been made with this work during the past year ending 30th June, and that the average of verified warnings is fully 66 per cent. Additional information relative to the increase and probable direction of the sea at bar harbours and exposed places is now frequently contained in these messages, and, whenever practicable, information as to the probable rising or flooding of rivers is given to those reporting stations where it would be of use.

The difficulties in the way of carrying out this work more thoroughly are still the same as those mentioned in my report of last year, and are still the same as those mentioned in my report for 1874–75, notably so in the case of the sixth instance shown therein.

The standard barometers, &c., recently ordered from Mr. L. Casella, have arrived in excellent condition. They will be forwarded to their destinations as soon as possible. When this material is available, the information for weather forecast will be greatly increased; and I trust that I may be permitted to call the attention of the Hon. the Commissioner to the necessity which exists for providing an assistant in this work. The arguments in favour of this are still identical with those mentioned in my last report.

The office accommodation at Westport and Oamaru will prevent the issue of standard instruments at those places for the present.

In conclusion, I have to acknowledge the prompt assistance I have at all times received from those associated with me in this work, and also from the Telegraph Department.

I have, &c.,
R. A. EDWIN,
Commander R.N.

The Hon. the Commissioner of Customs.

No. 2.

Mr. C. MELDRUM to Mr. W. SEED.

SIR,— Observatory, Mauritius, 10th December, 1875.

1. It gives me much pleasure to learn, from your letter of the 24th September, written at sea between Suez and Aden, that the Government of New Zealand have recently established a number of meteorological stations, with a view, amongst other objects, to the establishment eventually of a system of storm signals similar to that now used in Great Britain.

2. There can, I think, be no doubt that well-conducted observations in different parts of New Zealand, and discussions of the results, will be of great practical advantage to local agriculture and navigation, and at the same time very valuable as contributions towards the advancement of meteorology generally.

3. I presume that your central observatory will be supplied with a set of self-registering instruments.

4. As there is strong ground for believing that meteorology, terrestrial magnetism, and solar physics are intimately connected, you will perhaps consider it desirable to extend your operations in the course of time so as to embrace the two latter subjects. Melbourne and Mauritius have already magnetic observatories, and I understand that there will soon be one at the Cape of Good Hope. From continuous and intercomparable records of the variations of the meteorological and magnetical elements at different points of the earth's surface, in conjunction with observations of the solar spots and protuberances, important results might be expected.

5. Having no direct knowledge of the nature and course of New Zealand storms, I can only offer one or two suggestions which arise from what I know of the storms of the Indian Ocean.

6. Of these there are two classes, viz.—1st, cyclones or tropical hurricanes, which, originating between the N.W. monsoon and the S.E. trade wind, in 8° to 12° S. lat., generally travel for some days towards the W.S.W., and then curve to S. and S.E., seldom passing the parallel of 30° S.; and 2nd, extra tropical storms, between 30° and 50° S., which travel from westward to eastward. The latter partake of the nature of cyclones, but the wind in them does not blow in such complete spirals as in the former.

7. It is not probable that New Zealand has suffered, or ever will suffer much, from the tropical hurricanes (analogous to those of the Indian Ocean) which originate to the northward of it, between 8° and 12° S., and occasionally pass over the New Hebrides, Fiji, &c. I think that, as a rule, they seldom pass beyond the tropic. If by chance New Zealand should be visited by a tropical cyclone, I think it would probably come down from the north-westward.

8. The weather in New Zealand, however, is probably always more or less affected by severe cyclones, raging 1,000 miles or more to the northward of it; and it is very possible that their existence may be known with certainty from the state of the barometer, winds, and weather in New Zealand.

9. I should say that the storms of New Zealand generally belong to the second class—that is, that they are analogous to the storms that take place in the Indian Ocean, between 30° and 50° S., and to those of the temperate zone in the Northern Hemisphere. In the Indian Ocean, they seem to be invariably connected with two opposite currents of air—the one polar, the other equatorial. They travel, as I have said, from westward to eastward, and the equatorial current is in advance of the

polar, that is, forms the front of the storm. The wind generally sets in at eastward or north-eastward, and veers to N., N.W., &c., the barometer gradually falling. When the barometer has reached its lowest reading, there is often a shift of wind to S.W. or to the polar current. The barometer then rises, and the temperature falls. Sometimes the shift from the one current to the other is very sudden from N.E. to S.W. I have not yet ascertained the extent to which the barometric trough between the two currents extends from northward to southward; but it must be very considerable, for the barometers at the Cape, Natal, and Mauritius are successively affected by its passage from west to east.

10. Between the western edge of the polar current and the eastern edge of the next equatorial current, there is an area of high barometer, with a strong tendency in the wind to circulate in the opposite direction, and form an "anti-cyclone."

11. Generally, these areas of high and low pressure, with their characteristic winds and weather, follow each other so regularly that the nature of the successive changes may be known beforehand.

12. Captain Toynbee has shown that a similar law obtains in the North Atlantic. I have examined the log-books of several vessels that have come here *viâ* Cape Horn, and found the same sequences of wind and weather in the South Atlantic as in the Southern Indian Ocean.

13. I should think, therefore, that it would be important for New Zealand to have daily weather telegrams from Hobartown, Melbourne, or both; for if the areas of low pressure in that part of the world travel from westward to eastward, New Zealand might have from one to three days' warning of their approach.

14. By to-day's mail I send you a copy of the results of the meteorological observations taken here last year, and should be much obliged for similar publications from New Zealand, especially for tables of the annual rainfall for the longest possible periods.

I have, &c.,
C. MELDRUM,
Director.

The Secretary of Customs, Wellington.

APPENDIX F.

REPORT BY SECRETARY OF CUSTOMS ON LIGHTHOUSE ADMINISTRATION.

Mr. W. SEED to the Hon. the COMMISSIONER of CUSTOMS.

SIR,— Wellington, 3rd December, 1875.

I have the honor to inform you that, in compliance with your request, I visited Canada on my way to England, for the purpose of making myself acquainted with the manner in which the business of the Marine Department of that country is conducted. On reaching Ottawa, the capital of the Dominion, I called at once on the Secretary of State, who received me most courteously, and, in the course of a long conversation, made many enquiries about New Zealand. He informed me that he had already referred to the Minister of Marine and Fisheries the letter which you had sent to him, accrediting me to the Government of Canada; and he gave directions for me to be supplied with such information as I might desire to obtain from any of the other departments. The Under Secretary, Mr. Langerin, introduced me to the several heads of departments, who all exhibited the utmost willingness to afford me every information in their power. I spent most of the time at my disposal with Mr. Smith, the able and experienced officer who is at the head of the Department of Marine and Fisheries. He spared no pains to explain every detail of the working of his department to me; and furnished me with copies of such printed official documents as he thought would be useful to me. He also instructed the Engineer of the department, Mr. Tomlinson, to supply me with every information in his power on matters connected with his branch of the service. * * *

The heads of the Customs and Marine Departments were good enough, on my leaving Ottawa, to give me letters of introduction to their principal officers at Montreal and Quebec. Mr. Smith gave me also a letter to M. Chanteloup, in Montreal, at whose extensive factory I had the opportunity of seeing a number of lighthouse lanterns, lamps, reflectors, and other works in course of construction for the Canadian Marine Department. I obtained from him a list of prices. I had also a letter of introduction to the British Consul-General at New York, who, on my arrival there, was good enough to accredit me to the lighthouse authorities of the district, whose establishment at Tompkinsville, on Staten Island, is the largest of the kind in the United States. * * *

At Washington, I called at the office of the Pilot Board Commissioners, who have control over all the lighthouses and harbours of the Union. Here the Naval Secretary of the Board, Commander J. G. Walker, of the United States Navy, received me most courteously, and took considerable trouble to explain the practice of the department. He kindly furnished me with copies of the reports of the department, and of many other useful works relating to lighthouses, buoys, and beacons, two of which—viz., "Manual of Lighthouse Engineering, embracing Plans of Towers, Light Vessels, Beacons, Buoys, and other Aids to Navigation, designed and executed under direction of the Lighthouse Board"; and "Report of a Tour of Inspection of European Lighthouse Establishments, made in 1873, by Major G. H. Elliott, Member and Engineering Secretary of the United States Lighthouse Board"—will be very useful, the last-named one especially, as it contains a description, illustrated by plates and woodcuts, of all the latest improvements in lighthouses, light vessels, beacons, and buoys, which have been adopted in the United Kingdom and in France. He was good enough also to say that he would cause me to be supplied in future with copies of all the printed reports and papers of the department. On returning to New York from Washington, I procured from the office of the Captain of the port copies of the laws of the port. * * * * * * *

On reaching England, I communicated with Messrs. D. and T. Stevenson, of Edinburgh, who wrote me, in reply, that they would be glad to see me, at my earliest convenience, regarding the lighthouses

which had been ordered through them. Accordingly, I proceeded at once to Edinburgh, and was abel, from my knowledge of the several localities in which those lights are to be erected, to supply information that they stood in need of before they could satisfactorily complete their designs for some of the lenticular apparatus. I was informed that it would take several days before the plans for all the lights would be finished; and as I had occasion to return to London I left for that place, after furnishing Messrs. Stevenson with a chart showing the present New Zealand lights, and a descriptive list of those lights, together with Captain Johnson's report on the proposed lighthouse sites; also, a chart showing, in addition to the existing lights, those it is proposed to erect hereafter, to complete the lighting of the entire coast line of the colony. Messrs. Stevenson promised to carefully consider the information contained in these documents, before deciding on certain alterations they had suggested in the character of the optical apparatus of some of the lights they were designing; and they promised, also, that they would draw up a list showing the kind of lights they considered best suited for the various parts of the coast yet unlighted.

On my return, shortly afterwards, to Edinburgh, I spent several days in Messrs. Stevenson's office, discussing various points connected with the New Zealand lights, and acquiring information regarding the Scotch lighthouse system. Mr. Thomas Stevenson, who throughout his life has made lighthouse illumination one of his principal studies, and who is everywhere acknowledged to be the chief authority on this subject, took me to the Industrial Exhibition at Edinburgh, in which a large number of models of lighthouses, and of lighthouse lenses of his designing, are exhibited. He pointed out to me the peculiarities of construction of the different kinds of apparatus, and took a great deal of pains to explain the properties of those which illustrated recent improvements in the application of the holophotal system to lights designed to meet the special requirements of particular localities.

I went to the workshops of the two contractors for the lanterns and revolving machinery for the new lights, and saw some of those works in course of construction; the workmanship and materials used both appeared to me to be of first-class character.

I took occasion also to go over the Lighthouse Store and Buoy Yard, at Granton, and to visit some of the most important of the Scottish lights; so that, from actual inspection of those establishments, I might be able to make myself acquainted with their entire management and internal economy.

On my way to London, I stayed at Birmingham, and visited Messrs. Chance's extensive glass works, where I witnessed all the operations in the manufacture of crown, sheet, and plate glass, and was allowed the privilege of inspecting the whole of that portion of the works which is devoted to the manufacture of lenses, lanterns, and other parts of lighthouses. The manager of this part of the establishment very courteously conducted me through all the workshops and through the building in which the lenses are adjusted, so that I had the opportunity not only of seeing all the parts of a lighthouse apparatus in various stages of construction, but also of seeing a number of lenses of different orders in course of being fitted up, and others which were finished and had been adjusted ready for delivery.

* * * * * * * * *

In London, I employed my time in acquiring information from several of the Government departments. The Hon. Mr. Herbert, Under Secretary for the Colonies, was good enough to give me letters of introduction to the heads of the principal departments I desired to visit. I first placed myself in communication with the Marine Department of the Board of Trade, where Mr. Gray, the Assistant Secretary, afforded me much information, and instructed the heads of branches under him to supply me with various printed documents, and to show me how the business under their management was conducted. I next waited on Mr. Trevor, the Assistant Secretary of the Harbour Department, with whom I had a long conversation about lighthouses, during which he described the position that the Board of Trade occupies in relation to the different lighthouse authorities in the United Kingdom. I procured from Mr. Trevor's department a number of very valuable printed papers connected with harbours, foreshores, pilotage, fisheries, &c. Mr. Trevor gave me a letter of introduction to Mr. Robin Allen, the Secretary to the Trinity Board. This gentleman, as soon as I presented my letter, assured me that he would gladly render me every assistance in his power. He explained to me the various functions and powers of the Trinity Board, and the system on which it worked, and described the kind of lights that were now considered most effective. He gave me copies of the Board's instructions to lightkeepers, diagrams of buoys and beacons, and other printed documents, which he thought would be useful; and he said that he would be glad if at any future time he could be of any service to the New Zealand Government on matters connected with his department. He kindly offered to provide me with a passage by one of the Trinity yachts to any of the lighthouses or lightships I might wish to visit, which offer I greatly regretted I could not avail myself of, as I had already taken my passage to return to New Zealand, and would have to leave London within a few days. I, however, gladly accepted an order he gave me for permission to inspect the Trinity Wharf, near the East India Docks, which enabled me to see the buoy yard, stores for lighthouse supplies, and workshops in which lighthouse lanterns and other appliances are made, and where repairs of various kinds are effected.

* * * * * * * * *

Having regard to the recent establishment of the Naval Training School at Kohimarama, and the Weather Office in Wellington, both of which have been placed under the Marine Department, I considered it advisable to acquire all the information I could respecting kindred institutions in Great Britain. Accordingly, I called on Mr. Saddler, the Secretary of the Naval Society, at the offices of the Society, 54½, Bishopsgate Street Within, who gave me copies of the rules and regulations of the Society, and furnished me with a letter of introduction to the Superintendent of the "Warspite," Naval Training Ship, lying off Woolwich. The following day I spent several hours on board of that vessel in making myself acquainted with the duties allotted to the several officers, in learning how the daily routine was carried on, and in examining the fittings and the various appliances used in the instruction of the boys.

Finally, I called at the Meteorological Office, 116, Victoria Street, Westminster, S.W. Captain Scott, the Director, was absent at the time, but Captain Toynbee, the Marine Superintendent, very kindly explained to me what his department had been doing in regard to weather telegraphy and storm

warnings, and gave me a list of the publications issued under the authority of the Meteorological Office, pointing out at the same time those which he thought would be desirable I should procure. Before leaving London, I ordered these publications to be sent out to the colony.

It will be seen that during my absence from New Zealand I have had opportunities, probably rarely enjoyed by one person, of conferring personally with the principal executive officers of the Marine and Revenue Departments of the Dominion of Canada, of the United States, and of Great Britain. I endeavoured during the comparatively limited time at my disposal to take full advantage of those opportunities, and I feel that I am justified in saying that much of the information I have acquired, especially in regard to matters of various kinds connected with the Marine Department, will prove to be most useful. * * * * * * *

Having specified the sources from which I obtained information on the several subjects referred to above, I now proceed to transcribe some of the notes I made in the course of my enquiries, in order that they may be placed on record in a convenient shape for future reference if necessary.

Lighthouses, Canada.—The lighthouses in Canada are under the management of the Department of Marine and Fisheries. * * * * * * *

The department asks for an annual appropriation of 120,000 dollars—about £24,800—at the commencement of the session; later on, the Minister, aided by the deputy or permanent head of the department, decides what particular lights are to be erected. Tenders for their erection are then called for from time to time; these tenders are opened by the deputy, and the Minister decides which are to be accepted. The kind of light to be adopted in each case is fixed by the deputy, who very frequently orders one similar to some that have been already erected, and does not consult the Engineer at all. If anything special about the construction of the tower is required, Mr. Smith instructs the Engineer to prepare plans. There are no scientific men attached to or employed by the department, and no scientific refinements are attempted in the construction of the lights, which are nearly all catoptric. All the towers are built of wood. The department goes on the principle of getting as many lights as it can for the funds placed at its disposal, so as to have the coasts and inland waters of the Dominion lighted as quickly as possible. Mr. Tomlinson gave me copies of the working drawings and specifications of some of the recently erected lighthouses. These documents I transmitted to you from London, in order that they might be referred to the Marine Engineer, for his consideration, in connection with the designs he had to prepare for the new lighthouse buildings. Mr. Tomlinson considers that their structures will last for seventy or eighty years, by which time the Dominion will be rich enough to provide better ones, if experience should then show that this would be desirable. It is right, however, to add that whilst he considers the Canadian system cheap and effective, yet he thinks that economy is pushed rather too far, especially in the adoption of catoptric or reflecting, instead of dioptric or lenticular apparatus for places where powerful lights are required. The lanterns, lamps, and reflectors, are made by M. E. Chanteloup, of 587, Craig Street, Montreal, much more cheaply than they could be if procured from England. Dioptric lenses alone, of which few are used, are ordered from Messrs. Chance, of Birmingham. Lanterns are made of cast-iron, the glass is embedded against a soft wooden fillet, which is inserted in a groove provided in the castings of the astragals; these wooden fillets answer admirably in preventing the glass from breaking when the metal contracts and expands from changes of temperature. M. Chanteloup makes excellent lamps for burning kerosene or petroleum, somewhat similar to the head lamps of locomotives. The largest sized lamp for fixed lights has the oil cistern under the burner like an ordinary kerosene lamp, except that there is an aperture for the passage of air round the burner. Experience has shown that these lamps burn admirably, and that there is no risk in using kerosene in them. The lamps for revolving apparatus have flat shallow cisterns for the oil placed behind the reflectors, level with the burner. Wherever manual labour, more than machinery, is required, M. Chanteloup, who employs about 250 hands, can produce anything in his business much cheaper than manufacturers in England can do; for instance, he makes all the electrical apparatus used throughout the Dominion, at prices much lower than those at which they can be imported. All his lighthouse lamps are made to gauge, so that the various parts and the glasses for each size are interchangeable. * * * Light keepers are never shifted from station to station. Assistant keepers are not now appointed by the department; the principal keeper gets so much salary, with the proviso that he is to provide an efficient assistant. * * Keepers find themselves in rations, even at rock and island stations. The Government steamers, as a rule, visit all stations once a year, with supplies of oil and other necessaries. The Dominion is divided into districts, in each of which there is a resident officer who acts as agent for the department. He has charge of the lights, buoys, and beacons in his district, forwards supplies to the lighthouses, and attends generally to all local marine business for the department. I visited Quebec, which is the head quarters of the most important district, and as I was provided with a letter of introduction to Mr. Godfrey, the local agent, he received me very cordially, and spared no pains to make me thoroughly acquainted with every detail of the business under his charge, and by his hospitality and kind attentions to make my short stay in Quebec as agreeable as possible. Mr. Godfrey has extensive workshops under his charge, in which blacksmiths, machinists, and carpenters are employed on various works for the department. Attached to the establisment there is an extensive buoy yard in which buoys are made and repaired. I went on board the "Napoleon," the largest of the lighthouse tenders, then undergoing extensive repairs and alterations, and I visited one of the light ships which was being got ready to be taken to its station as soon as the ice broke up.

United States.—The lighthouses (including harbour and river lights), light-vessels, beacons, and buoys in the United States are all under the management of a Lighthouse Board, composed of two officers of the Navy, two engineer officers of the Army, two scientific civilians, and two secretaries,

one of whom is an officer of the Navy and the other an officer of engineers of the Army. The Secretary of the Treasury is President *ex officio*. Comprehensive and detailed regulations and instructions for the guidance of the Board are laid down by the Treasury Department. The Board is divided into six Committees, the duties of each being carefully prescribed. These Committees are respectively styled—

The Committee on Finance.
The Committee on Engineering.
The Committee on Floating Aids to Navigation.
The Committee on Lighting.
The Committee on Experiments.
The Committee on Location.

The Board meets once a week, when the secretaries lay before it such matters as require attention. The Engineering Secretary and the Naval Secretary are members of all the Committees, and necessarily exercise considerable influence in them, especially as members of the Board are constantly changed.

The States are divided into fifteen lighthouse districts, in each of which there is a naval officer who acts as inspector, and an officer of engineers who acts as engineer. This plan of having two officers in charge of each district greatly increases the cost of administration, and must frequently hamper the service and impair its efficiency. Major Elliot, in his report, to which I have previously referred, condemns this arrangement, and says, "there is no doubt that the service can be conducted with more efficiency and economy than now, by a single officer in each district." The Lighthouse Inspectors have instructions to visit each light at least once a quarter, and oftener if possible, especially if they find that things are not being carried on satisfactorily; they are directed to make their visits at uncertain periods. Collectors of Customs in some cases act as Superintendents of Lights, in which capacity they have the immediate supervision of the light-keepers in their respective districts. It is provided by statute, "that Collectors whose compensation exceeds twenty-five hundred dollars shall receive no compensation as Superintendents of Lights or disbursing agents."

The Board annually makes an estimate of the money required for carrying on the service, and for the erection of new lights. This estimate is submitted to Congress by the Secretary to the Treasury. Congress is usually very liberal in voting supplies for the lighthouse service, so that the department experiences no difficulty from want of funds. * * * * *

Both principal and assistant light-keepers are appointed by the Board, but the principal is always consulted as to who his assistant is to be; generally, they are both nominated together. * * *

Keepers are not often shifted from station to station; they provision themselves at all, except one or two of the rock stations, where supplies cannot easily be procured. At rock stations the establishment consists of four keepers, three of whom are always on duty, and one, by rotation, on shore.

When a new light is erected, it is usually in compliance with petitions sent in to the department; these petitions are always referred to the district officers for their report. Separate reports from the naval and engineer officers are required in every case; if not well acquainted with the locality, those officers visit it before reporting. The site is always visited by an officer of the department before plans are prepared. The character and order of the light are settled by the Board at Washington. When it is decided to erect a lighthouse, the District Engineer prepares designs for the tower and keepers' dwellings; these are submitted to the Lighthouse Board for approval. These designs are frequently altered by the Board. After approval, most elaborate plans and specifications are prepared in the District Engineer's office. The work of construction is, in all cases, submitted to public tender.

Harbour Works.—The United States General Government has the power throughout the States to step in and stop or control all harbour works. When it undertakes any such works, they are carried out under the directions of the engineers of the War Department, as those officers are at present the only engineers in the service of the Government. I was informed that it had been for some time under consideration to establish a Department of Public Works, to which a staff of civil engineers would be attached.

Lighthouse Depôt, Staten Island, New York.—Colonel Woodruff, the Engineer officer in charge, was absent when I reached Staten Island; but his son, who is in the Engineer's office, was detailed by the principal officer present to show me over the establishment, and afford me every information. This he very courteously did, and, in conducting me through the various stores and worshops, took great pains to explain every object likely to be of interest to me. I was first shown into a large room, in which a number of lenses of various kinds, and specimens of the different kinds of lamps, and other appliances used in the United States lighthouses, are exhibited. I found that lard oil was still used throughout the States; the oil is supplied to the burner from a reservoir at a considerable elevation from the lamp; the iron damper tube over the chimney passes through this reservoir, whereby the heat from the flame keeps the oil liquid during the cold weather in winter. The flow of the oil is governed by a very ingenious device: a light hollow float is fitted in a glass cylinder in a down tube from the reservoir; this float falls as the oil is consumed, and opens an aperture above, by which a fresh supply is admitted, then the float rises and closes a valve fitted level with the burner; the supply of oil to the lamp is then simply regulated without any machinery. The whole apparatus has the advantage of being so excessively simple that any one can take charge of a lamp without fear of damaging it. This plan was devised by Mr. Funck, the foreman of the lighthouse workshop, and is in use in all the large lighthouses in the States. At the time of my visit, they were making experiments with kerosene, using for the purpose a Douglas burner, which had been presented by the Trinity Board of London; these experiments, however, had not been attended with much success, mainly owing no doubt to the fact that a burner only had been supplied, and not a complete lamp, so that, with the oil cistern which had been devised by the officer who had charge of the experiments, a fair trial had not been made. I was informed that they had not hitherto made any great efforts to perfect appliances for burning mineral oil, because lard oil had been cheap; but now that that illuminant had advanced in price considerably, they were anxious to use kerosene. After going through the workshops and stores, I was taken into the engineer branch of the department, and was there shown plans and working drawings of the lighthouses in the New York, or third district. Many of these structures are most elaborate in design,

with much ornamentation, and were erected at great cost; some of the keepers' dwellings are very large. The usual cost of a first-order light, I was told, was about 75,000 dollars (£15,500). The lighthouse lenses are all procured from France; the lamps are made in the depôt shops. There are four steam tenders belonging to the New York District—viz., the "Putman" and the "Cactus," for conveying supplies and for inspection; the "Fern," for supplying the lighthouses of the Atlantic and Gulf Coasts; and the "Mistletoe," for engineer purposes. There are altogether no less than twenty-two steam tenders, one steam launch, and five sailing vessels, belonging to the lighthouse service; of these, eight steamers and four sailing vessels belong to the engineer branch, and are only used for construction and repairs, eight steamers are used for inspection and for conveyance of supplies, and six steamers and one sailing vessel as buoy tenders.

Trinity House, London.—The following concise and clear description of the constitution and functions of the Corporation of Trinity House is quoted from Major Elliot's "European Lighthouse System":—

"The Corporation of Trinity House, or, according to the original charter, the Master, Wardens, and Assistants of the Guild, Fraternity, or Brotherhood of the Most Glorious and Undivided Trinity; and of Saint Clement, in the parish of Deptford Strond, in the County of Kent," existed as early as the reign of Henry VII., and was incorporated by Royal Charter during the reign of Henry VIII.

"In the year 1565, in the reign of Queen Elizabeth, the Corporation was empowered, by Act of Parliament, 'to preserve ancient sea-marks and to erect beacons, marks, and signs of the sea;' but it was more than a century, *i.e.* not until 1680, before the Corporation constructed or owned any lighthouses. After that date it from time to time purchased the lights which were owned by individuals or by the Crown, and also erected new ones. In 1836, an Act of Parliament vested in the Trinity House the entire control of the lighthouses of England and Wales, and gave it certain powers over the Irish and Scotch lights.

"Prior to the Act of 1836, the charge was from one-sixth of a penny to one penny per ton on all ships at each time of passing a lighthouse, but by this Act uniform light dues of a halfpenny per ton were established.

"The charge of one penny per ton at Bell Rock Lighthouse is the only exception to this uniform rate. By further provisions of the Act, national ships, fishing vessels, and vessels in ballast are exempt from light dues.

"It should be mentioned that only the lighthouses for general use are owned by the Trinity House, harbour and other local lights being constructed and maintained at the expense of the cities or localities which they especially benefit; but the Trinity House not only has over them a supervisory control in regard to their sites and plans, but inspects them from time to time, thus securing their efficiency.

"The Elder Brethren, twenty-nine in number, comprise sixteen active members, including two officers of the navy and thirteen honorary members, all of whom are elected by the body as vacancies occur.

"The honorary members include his Royal Highness the Prince of Wales, some of the Ministers of the Crown, several members of the nobility and of Parliament.

"The Duke of Edinburgh is the present Master, but the Deputy Master, who is elected by the Elder Brethren from their active list, is the executive officer.

"Out of the annual revenues, £350 are paid to each of the active members; these members are organized into Committees, which meet twice a week, except when absent on duty.

"The entire Board holds weekly sessions, at which the matters before considered in Committee are disposed of.

"The Corporation of the Trinity House includes also the Junior Brethren, who are elected by the Elder Brethren, and simply form a reserve from which the Elder Brethren add to their own number when vacancies occur.

"The Junior Brethren have no duties.

"Since 1854, the Trinity House has been subordinate to the Board of Trade, whose President is one of the Queen's Ministers.

"All light dues collected by the Corporation of Trinity House go into a general fund called 'The Mercantile Marine Fund,' from which is paid the cost of the maintenance of a lighthouse establishment and of the erection of new lights. This fund is under the control of the Board of Trade, whose authority must be obtained for the erection of any new lighthouse, or for any important change in administration.

"This subordination to the Board of Trade extends to the Lighthouse Boards of Scotland and Ireland, causing, I was told, much inconvenience and embarrassment."

The entrance hall of Trinity House is a spacious apartment, in which are exhibited models of most of the principal lighthouses erected by the Board, also of beacons and buoys, together with specimens of marine appliances of various kinds, all of which I had a good opportunity of examining.

I had a long conversation with Mr. Robin Allan, the able and experienced Secretary of the Trinity Board, in the course of which I gathered much information about the Trinity Lighthouse system. He gave me copies of "The Trinity House Light-keeper's Instructions," and other printed papers, and very kindly promised to assist me in any way he could if I would write to him at any time. With regard to lights, he told me that revolving lights, showing a number of flashes in rapid succession between short intervals of obscuration, were now most approved of, as it had been found that lights of this kind could be seen more distinctly than the ordinary revolving lights, and that by varying the number of flashes, each light is easily recognized, and the mariner is thus made sure of his position.

Local officers, called Superintendents, are appointed by the Trinity Board. These officers have charge of the service in their respective districts.

Light-keepers are appointed by the Corporation. Applicants must be between the ages of nineteen and twenty-eight, and procure certificates of character and physical ability, and that they can read, write, and perform simple operations of arithmetic. As vacancies occur, successful candidates are taken on probation as supernumerary light-keepers; they are then sent to the depôt at Blackwall, where they are trained in the use and care of the lamps and lighthouse apparatus, also of meteorological instruments, and the general management of the affairs of a lighthouse. Supernumeraries are paid at the rate of £45 per annum on entering, but as soon as they become proficient in their duties, and give satisfactory proof of their steadiness and sobriety, they obtain assistant keeper's pay.

The following are the rates of pay:—

Term of Service.	Principal Keeper.			Deduct Ins.	Assistant Keeper.			Deduct Ins.
	£	s.	d.	£	£	s.	d.	£
Above 10 years, if insured	72	0	0	3	58	0	0	3
Above 10 years, if uninsured	70	10	0	...	56	10	0	...
Above 5 years and under 10 years, if insured ...	68	0	0	3	56	0	0	3
Above 5 years and under 10 years, if uninsured ...	66	10	0	...	54	10	0	...
Under 5 years, if insured	66	0	0	3	54	0	0	3
Under 5 years, if uninsured	64	10	0	...	52	10	0	...

Trinity Wharf, Blackwall.—Here the Trinity House steamers lie when in port, and buoys, mooring chains, and various stores are kept in readiness for immediate use. There is a large building containing lighthouse stores, and several extensive workshops for the construction and repair of lighthouse appliances. At the time of my visit to the works, a light ship for the Shipwash Station was being fitted with the "Syren" fog horn; and I saw a large lighthouse lantern in course of construction on the latest pattern approved of by the Trinity Board. The astragals were placed diagonally like those of the Scotch pattern as adopted in New Zealand, but were of steel instead of gun metal. The Superintendent's office at Trinity Wharf is connected by telegraph with Trinity House, so that when intelligence is received of the breaking away of a buoy, or the occurrence of an accident to any of the light ships, orders are promptly sent for one of the steamers to get up steam immediately and proceed to the scene of accident. In the case of a buoy breaking away, a duplicate of it is taken aboard from the large stock of spare buoys kept in the buoy shed. The officers spare no exertions in carrying out this important part of their duty, and pride themselves on the short time in which they can replace buoys, after receiving intelligence of any having broken away.

The Trinity Board have eight steam tenders or "Trinity yachts" as they are called, five paddle and three screw, each carrying a steam launch: the largest of these yachts is the "Galatea," of 506 tons gross; their newest vessel is the "Stella," of 149 tons, built recently by Seath, of the Clyde; this vessel, when tried at the measured mile under steam and canvas, attained a speed of 15 miles an hour; her ordinary speed is 10 knots an hour. She has compound engines, and burns 5 cwt. of coal an hour. I was told by the Superintendent of Trinity Wharf, who has been thirty-two years in the service (including ten years as master of one of the Trinity steamers), that the "Stella" was in every respect their handiest and best vessel. She is about the size of the one it is intended to procure for the New Zealand Lighthouse service, tenders for which had not been called for when I left London. I accordingly wrote to the Agent-General and suggested that he should procure full particulars of the "Stella" from the Trinity Board, and invite tenders for the building of a similar vessel. I did this because I considered that a vessel of this kind, which had good speed on a low consumption of coal, was an excellent sea boat, and had been fitted with every necessary appliance which long experience could suggest, was sure to be well suited for our use; besides, in adopting the "Stella" as a model, there would be a greater degree of certainty of our procuring a good serviceable boat, than if we adopted the most carefully prepared plan by a person not practically acquainted with the requirements of the Lighthouse service.

Light Ships.—The masters and crews of these vessels are shifted once a month. When on shore they attend at Trinity Wharf and assist in the general work of fitting out light vessels, repairing and painting buoys, &c.

Buoys.—Wooden buoys are shifted every six months. Iron buoys are hove up and painted twice a year. The chains of large buoys are changed every three years; those of small buoys every four years.

Lamp Glasses.—These when received at the store are unpacked and gauged by a template to ascertain that they are of the proper size and shape; those which are not fit for use are rejected and returned to the makers. This is an excellent arrangement and should be adopted in procuring our lamp glasses, as the misfits, which are quite useless in the colony, form a considerable portion of those sent out, and therefore greatly enhance the cost of the good glasses.

Scotland.—* "The Board of Commissioners for Northern Lights was established in 1798. Up to that time the Trinity House exercised direct control over the Scottish lights, and it does so now in some small degree. The Commissioners receive no salary. They are all *ex officio* members, viz. the Lord Advocate and Solicitor-General of Scotland, the chief municipal authority (whether Lord Provost or Senior Bailie) of Edinburgh, Glasgow, Aberdeen, Inverness, Campbelltown, Dundee, Leith, and Greenock; and the Sheriffs of the maritime counties of Scotland. The committee of the Board meet twice a month, but the entire executive functions are exercised by the Secretary and Engineers.

"The latter are Messrs. David and Thomas Stevenson, whose published writings on lighthouses and their illumination have not only given them a world-wide fame, but have established the reputation of the lighthouse system of Scotland as second to none but that of France, which is acknowledged to be the model for all others."

---

* Elliot's European Lighthouse System.

I spent several days in Edinburgh, during which time I was in constant attendance at the office of the Northern Board of Lighthouses, where I had the advantage of having long consultations with the Messrs. Stevenson, and also with the Secretary to the Board, and the Lighthouse Inspector, or Superintendent of Light-keepers' Duties, as he is called, in course of which I gathered much valuable information relative to lighthouse management.

Fixing Sites for New Lights.—This is regarded as a question not depending on nautical knowledge alone, but as a mixed one, requiring both engineering and nautical knowledge. The Scottish Board usually, after consultation with the Engineers, fix on the site for any projected lighthouse. If the Trinity Board, to whom the matter has to be referred, disagree with the Scottish Board, the question is then referred to the Board of Trade for final decision. Masters of vessels are never consulted on this question. Lengthy notices to mariners with regard to lights are not issued, experience having shown that it is advisable only to issue a concise description of the light, with its exact position, but without any cautionary remarks to master mariners.

Lighthouse Store at Granton.—At the time of my visit to this depôt the annual supplies had just been sent away, but still there were samples in hand of the various stores, and I had an opportunity of learning from the storekeeper how the supplies were purchased and distributed. They are purchased annually by contract, and have to be supplied of the same quality as standard samples which are exhibited at the store. Circulars are sent to several respectable firms, who are asked to tender; if any one supplies inferior articles, they are not again asked to tender. When stores are being got ready for distribution, printed labels with the name of each lighthouse are placed on the walls of the packing-rooms at convenient distances, and the stores of the several kinds for each station are laid out on the floor under these labels; the several lots are checked over by the Lighthouse Inspector, to see that they are correct. They are then packed in cases or mats as may be requisite. Articles for rock stations are put up in small packages, to facilitate the landing of them; rations for these stations are similarly packed.

Rations are supplied only to rock or isolated stations. It has been found necessary to do this in order to prevent the keepers from running out of food through laying in too small a stock. Staple articles only are supplied, such as beef, bread, &c. In lieu of tea, sugar, and other small stores, a money allowance of 4d. per day is made.

The daily allowance to each keeper is—

1 lb. meat.	2 oz. barley.
1 lb. bread.	2 oz. butter.
2 oz. oatmeal.	1 quart beer.

Vegetables when procurable.

Garden seeds of the smaller kinds, such as turnips, cabbage, carrots, &c., are supplied by the Board to keepers at stations where there are gardens. When keepers are shifted, if they have crops growing, the incoming keepers have to take them by paying for labour, manure, and any seeds that may have been purchased. Keepers generally arrange these matters between themselves; but if they cannot agree, the inspecting officer is appealed to for his decision.

Oil Store.—This is usually in an underground cellar below the lighthouse, especially when paraffin is used, so that it may be kept cool. This arrangement would be undesirable in connection with any of the wooden towers in New Zealand; but the same object might generally be secured by having a cellar constructed away from the lighthouse, or a store built into an excavation in the side of a hill.

Mr. Young, Superintendent of Light-keepers' Duty, having experimented with lead, tin, and iron, with a view of seeing which was best adapted for tanks for paraffin, found lead utterly unsuited, as the paraffin eats it away, but that tin stands well. His experiments consisted in immersing a piece of tin, plain iron, galvanized iron, and lead, each separately in a bottle containing paraffin. These had been in the bottles three months when I saw them; the lead was much eaten away, the iron was corroded to a less extent, the galvanized iron had discoloured the paraffin, and the tin alone remained bright and clear as when it was put in.

Lightning Conductors should be connected with all iron projections from top to bottom of lighthouse tower by metal clamps. For instance, the iron strengthening hoops on the tower at Dog Island should be brought into contact with the conductor. Conductor should have gilt or platinum covered point at top, as the copper rod oxidizes quickly, and does not then readily attract the lightning. Copper earth plates are not essential. The copper rope or conductor may terminate in a bolt which should be buried in the ground, say, 10 or 20 feet away from building.

St. Abb's Head Light.—Owing to a breakdown in the machinery of the lighthouse tender "Pharos," I was unable to avail myself of the permission accorded to me to visit some of the Scotch lighthouses in her, and I had therefore to proceed to them by land. Accordingly, I left Edinburgh by rail for Aytown, the nearest station to St. Abb's Head Light, Berwickshire, where I procured a conveyance and drove to within a short distance of the lighthouse. It had been raining all day, but cleared up just as I left the conveyance to walk to the lighthouse. Soon after I started, a thick fog came on suddenly, which totally obscured every object within a few yards of me. I was guided to the edge of the cliffs only by the sound of the breakers, and was fortunate enough to meet a shepherd, who put me on the road to the lighthouse. Had it not been for his opportune appearance, it is most probable that I should have failed alike to have found the lighthouse or the way back to my conveyance, as I struck across some fields on leaving it, and had no tracks to guide me. On reaching the lighthouse, I presented my letter to the principal keeper, who at once showed me over the building. I found that he was a very intelligent man, and willing to afford me every information in his power. He told me that he had been thirty years in the service. St. Abb's is a first-order light, flashing every ten seconds. The tower is a low one, exactly similar to the one at the Nuggets. The lamp is of the kind called "mechanical," in which paraffin has been used since December last; prior to that time colza oil was used. The lamp was altered to suit it for paraffin by simply adding one of Doty's patent burners. This was done by the artificer of the department. The keeper, who had had experience of sperm oil, colza oil, and paraffin, considered the last named the best illuminant. It

burns steadily, and gives a better light after burning fifteen hours than when first lighted. The wicks require no trimming during the the night. Keepers' dwellings built in two storeys, each having five rooms. The upper storey is occupied by the principal keeper, and the lower by the assistant. A building is being erected alongside the lighthouse for a fog signal on the American plan. Keepers are supplied with coal and light, but they provision themselves. They are also supplied with uniforms once every three years, which they are enjoined to wear when visited by their superior officers, and when attending divine service. The Board supplies each station with copies of the *Illustrated News* and of the *Weekly Scotsman;* also with a couple of periodicals, besides standard works of general literature, which latter are circulated from station to station through the book post. Furniture, of a plain and substantial kind, is supplied by the Board. There is a furnished apartment in the principal keeper's dwelling which is kept for the use of the Inspector or other official visiting the station. Appended hereto is a list of the furniture and utensils supplied to the St. Abb's Head Lighthouse.*

Keepers are shifted from station to station, as the exigencies of the service require. Sometimes a keeper is not at a station more than six months, and sometimes he is allowed to remain as long as seven or eight years. Salaries vary at different stations. Keepers do not carry their rate of pay with them on being shifted. Rock stations have the highest pay. Most of the shore stations have gardens attached. The education of the keepers' children is not provided by the Board; where no school is near, this has to be done by the keepers themselves.

Time of Lighting up.—There is a table or calendar posted up in the light-room, showing the time for every day in the year in which the light is to be lighted and extinguished.

Girdleness Light.—I had to stay at Aytown for the night, and returned next morning to Edinburgh, proceeding thence to Aberdeen, for the purpose of seeing the Girdleness Lighthouse, at the entrance of Aberdeen Harbour. The tower of this lighthouse is a splendid structure of granite. Contiguous to it are the keeper's dwellings, also built of granite, the whole being surrounded by a high granite wall, and the enclosure being paved throughout with the same material. Outside this enclosure is a larger one, containing several acres, part of which is divided between the keepers for gardens, and the remainder is rented to them by the Board.

The Girdleness is a first-order dioptric fixed light, with a second light (catadioptric) of less radius, half-way down the tower. This lower light has thirteen lamps, the same as those in use at Dog Island. In both upper and lower lamps paraffin is used. The keeper here spoke quite as highly of this illuminant as did the one at St. Abb's Head. The lamp in the dioptric apparatus is a mechanical one, similar to that at St. Abb's Head, and, like it, was altered to suit for burning paraffin, by having a Doty's four-wick burner fitted, which answers admirably. The wicks do not char, and they never require cutting with the scissors; all that is necessary is to rub off the carbonized surface with the finger or a little cotton waste. The old wicks for colza oil are still used, but, to make them answer well, two instead of one have to be put on the two outside burners, the single wick not being thick enough. A little difficulty was experienced at first in getting a good light, but it was found that this arose through the paraffin having been put in the cisterns formerly used for colza without their having been thoroughly cleaned. Every trace of the colza oil should be removed from the lamp and cistern before using paraffin.

The keeper's replies to various questions I put to him on other matters connected with the Light-house service coincided entirely with what I gathered from the keeper of St Abb's Head Light.

Montroseness Light, at the entrance of Montrose Harbour, was the next one I visited. This light is a second-order dioptric, with glass mirror, and shows over an are of 150°. The tower is 100 feet high and is built of brick. It has a first-order lantern; the apparatus stands on a pillar, but the lamp table being stayed with angle iron to the iron trimming path round the inside of lantern, all vibration of the apparatus is prevented. Light first exhibited in 1870; paraffin in use since last December; keeper states that it gives brighter light than colza, and is less trouble to attend to; but comsumption is rather more. With paraffin the lamp wicks will last a month or more, whilst with colza they had to be renewed after burning for three nights. To extinguish the light the supply of paraffin should be turned off, and the flame allowed to go out by itself; the carbonized portion of the top of the wick should then be wiped off with a rag or a bit of cotton waste, turning the hand in doing this round the top of the burners always in one direction; no further trimming is required. This, like the other lights, is officially inspected twice a year at least by Mr. Young, the Superintendent of Light-keepers' Duties, and once a year by the Commissioners, who are accompanied by the Secretary. One of the Engineers to the Board also usually visits the station once during the year, as also does the Artificer, to see if any repairs are necessary about the lamps or apparatus. At this station I observed that black varnish or Brunswick black was used for all the iron work instead of paint. The keeper spoke highly of it, and said that it can be laid on quickly, dries immediately, and lasts longer than paint, but before using it the iron work should have a first coat of black paint.

Bell Rock Lighthouse.—From Montrose I went to Arbroath to see this celebrated lighthouse. The Bell Rock Lighthouse is situated about 10 miles S. by E. ½ E. off Arbroath, in Forfarshire. It is built on a rock covered at high water, and over which the sea breaks heavily during the gales in winter. The light is catadioptric, revolving, showing red and white alternately every minute. It has sixteen lamps similar to those at Dog Island, arranged on a square iron frame. The diminution of power of the red rays is in great measure compensated for by having on opposite sides of this frame five lamps showing red by means of ruby chimneys, and three only on each of the other sides showing white. Paraffin had been burnt since August last. The first set of wicks used with paraffin lasted seven and a half months; when colza was used the wicks had to be renewed once a week. Returning to a plan devised by the late Robert Stevenson, an experiment is being made by using looking-glass in one of the mirrors instead of polished silver. The glass is in eight pieces, each being curved to the shape of the parabolic reflector. The keeper was of opinion that the glass would not answer so well as the silver, as the silvering already shows signs of dimness in places. arising from damp getting to it. No

* This list of furniture, bedding, crockery, cooking utensils, tools, &c., is not printed herewith, on account of its length.

doubt this defect could be overcome by further experience in the construction of these reflectors. There are four keepers, three always on duty for six weeks at a time, and one on shore, by rotation, for a fortnight, during which interval he has to keep watch on the signals from the lighthouse, and answer them from the signal tower which is attached to the keepers' dwelling-houses at Arbroath. Keepers are supplied by the Board with bakers' bread, fresh meat, coal, and water. These supplies are taken off by the attending boat once a fortnight. This boat is a large open cutter, similar to the fishing boats on the East Coast of Scotland. A permanent boatman, who, like the lighthouse-keeper, is provided with a house at the station on shore, has charge of the boat, five other men, who are not on regular pay but receive ten shillings a trip each, are employed to work the cutter and land the stores at the lighthouse. Skerryvore and other rock stations difficult of access in winter are supplied with coals and water once a year only. Bell Rock, like the shore stations, is visited twice a year by the Superintendent of Light-keepers' Duties, once by the Commissioners and Secretary, and once by the Foreman of Repairs.

All the internal fittings of the Bell Rock Lighthouse are very substantial, and many of them are of elegant design, particularly those in the room called the library, where the table and chairs are of oak richly carved. There is in this room over the window a handsome marble bust of Robert Stevenson, father of the Messrs. Stevenson, of Edinburgh, the engineer who designed the lighthouse, and under whose superintendence it was built. Below the bust is a marble tablet with the following inscription:—

"The Commissioners of the Northern Lighthouses, at a meeting held in this apartment on the 20th July, 1824, when the Right Hon. Sir William Rae, Bart., Lord Advocate of Scotland, presided, resolved: That a bust of Robert Stevenson, Engineer, be placed in the Bell Rock Library, in testimony of the sense entertained by the Commissioners of his distinguished talent and indefatigable zeal in the erection of this lighthouse."

There is a tank in the basement of the tower which I was assured had been filled with water fifty years ago, and has been kept ever since as a reserve. It is rarely opened, but the principal keeper opened it and gave me a glass of it to drink. It was quite sweet, but, from being so long excluded from the air, it had a flat or alkaline taste.

The sea rises about 12 feet up the tower at high tide, but the rock on which the tower stands is bare at low water. A cast-iron jetty or landing stage about 4 feet high has been erected on the rocks. The trestles of this jetty are fixed into the rock with Portland cement, and all the joints are covered with the same material, which prevents them from rusting.

Irish Lights—In the course of a hasty visit to some relatives living near Carlingford Bay, in the North of Ireland, I availed myself of the opportunity of seeing two of the lighthouses in that locality. One of them, the Halbowline light, has a fine stone tower, and stands out in the sea near the entrance of Carlingford Bay; the apparatus is catoptric. There are three keepers; two remain on duty for a week at a time, and one on shore, by rotation, for three days at a time. The principal keeper informed me that the light was inspected three or four times a year by the Inspector, and visited once each year by the Commissioners of Irish Lighthouses. Keepers find themselves in provisions. Salary commences at £45 per annum, increasing up to £75. No books or periodicals provided by Board for use of keepers, and no provision made for schooling keepers' children. Keepers have to do the painting and any small repairs required about the lighthouse.

The other light I visited was one of the two small leading harbour lights which are built on screw piles in the bay, some distance inside of Halbowline light. They have small catadioptric apparatus, similar in design to the one in the Nelson Lighthouse. They were erected in 1871. The keepers live on shore in houses provided for them, and are taken off to the light by attending boatmen who are permanently in the Lighthouse service.

Board of Trade.—This department exercises a general control over all the lighthouses in the United Kingdom: those in England are under the immediate management of the Trinity House; those in Ireland under the Dublin Board; and those in Scotland under the Board of Northern Lighthouses. The erection of new lights is generally undertaken at the instance of one or other of these Boards, but no light can be erected anywhere in the United Kingdom without the sanction and approval of the Board of Trade. The Harbour Department of the Board of Trade has an experienced nautical officer in its service, who advises on lighthouse administration and other kindred matters; but it does not follow that his advice, though given professionally, is always acted on. The department, when it considers that it has good grounds for such a course, frequently overrides this advice, especially when the Trinity Board is not in agreement with it; but when the Board of Trade Nautical Adviser and the Trinity Board are agreed on any point, the concurrence or approval of the Board of Trade is usually given as a matter of course.

In my interview with Mr. Trevor, I informed him that the New Zealand Government had been ordering several new lights through the Messrs. Stevenson, and that, when conferring with them about these lights, I had availed myself of the opportunity of obtaining their advice as to the different kind of lights that should be procured hereafter to complete the lighting of our coast. I asked him if he thought it would be advisable to have their opinion reviewed by any other authority; he replied that he should have every confidence in whatever Messrs. Stevenson recommended, and that he did not think it would be at all necessary or desirable to seek the advice of any one else.

I took the opportunity, in the course of our conversation, to draw Mr. Trevor's attention to the necessity that existed for a light on the Snares, which should be regarded as an ocean light, and to the representations which I believed had been made by the Australasian Governments, to the effect that this light ought to be erected at the joint expense of the colony and the mother country. He replied that the only instance of the Imperial Government taking in hand the erection of a light of this kind was that of the Great Basses light near Ceylon; that he felt satisfied that the Government would feel that it

was necessary to be very chary in undertaking to contribute towards the cost of erecting a lighthouse at the Snares, as such a contribution would form a precedent which might lead to large expenditure. I pointed out that if such expenditure was made for the erection of lighthouses on dangers in any ocean track much frequented by British vessels, it would be a most judicious expenditure, as it would tend to the preservation of human life, and of British vessels, and their cargoes, most of which were insured in offices in the United Kingdon, or in foreign or colonial insurances offices having a large British proprietary, so that the loss of such vessels and their cargoes really falls in great part on the United Kingdom and not on the colonies. I gathered from Mr. Trevor that he had no doubt that any representation on this subject would receive due consideration from the Home authorities; but the impression conveyed to my mind by his remarks did not make me sanguine that if such a representation were made, it would be likely to lead to the grant of any pecuniary assistance from the Imperial Government towards the erection of this light.

Mineral Oil.—On my way from Quebec to New York, I stayed for a couple of days at Boston, where there are extensive mineral oil works. I made inquiries of the Oriental Oil Company, who have the reputation of supplying only first class oil, and found that oil of 125° fire test could be supplied at that time alongside the vessel, in strong tins and boxes, at 22 cents. currency per gallon; and Imperial oil, 160° fire test, at 28 cents. per gallon. I learned that freight by a vessel then loading for Dunedin would be 50 cents. per foot, which would be about 10 cents. per gallon, so that the Imperial oil could be laid down in New Zealand for 38 cents. currency, or about 1s. 6d. per (American) gallon.

I have little doubt, from its high fire test, which is 30° higher than the standard fixed for oil used in the English lighthouses, that the American oil will be found to answer admirably for use in lighthouses. The saving by using it in New Zealand, if present rates of freight are maintained, would be about £180 per annum for the present lights, and £420 per annum when the lights now ordered are lighted. In order to settle beyond doubt whether this oil is suited for lighthouse illumination or not, I ordered a case of it to be sent to Messrs. Stevenson, who promised me that they would have it tested by Dr. Macadam, and let me know the result.

Weather Reports and Storm Signals.—At the Meteorological Office, I explained to Captain Toynbee, the Marine Superintendent of the establishment, what had been done in New Zealand towards establishing a system of weather reports and storm signals. He said he considered that very valuable results might follow from the careful study of meteorological observations taken at various places in New Zealand; that in making weather forecasts, New Zealand would be greatly assisted when the cable was laid between it and Australia, as he thought it would be found that the general course of storms in the South Pacific would be from west to east; that observations transmitted from Tasmania would therefore probably be more useful than from any other point. He said that much attention had been directed to this subject by Mr. Meldrum, Director of the Observatory at Mauritius, where lengthened observations had enabled him to issue weather forecasts which proved to be very reliable, and were highly appreciated in Mauritius. He advised me to write to Mr. Meldrum, explaining our position, and asking his opinion as to what would be found to be the general direction of gales in the South Pacific, and also whether New Zealand, owing to her isolated position, might expect to be able to establish a system of weather forecasts which would be of any value. Accordingly, on my passage out, I wrote to Mr. Meldrum from Aden, in order that my letter might reach him by the following mail steamer leaving Aden for Mauritius.

Captain Toynbee told me that the most useful warnings received in his office were those from Newfoundland and from the United States, as most of the severe gales travelled from west to east; for this reason the warnings received from the Continent of Europe were not of much value to England for weather forecasts, whilst those sent from England to places on the Continent were of great value for this purpose.

Aneroid barometers I was told were useless for meteorological purposes, except after having been carefully compared for a long time with a standard mercurial barometer. The best instrument now known is the Kew barometer, made by Adie. Captain Toynbee would be glad to procure a supply of these for the New Zealand Government, and would see that they were properly tested before they were sent out. He frequently did this for several of the colonies as well as for foreign Governments. I gathered generally, from Captain Toynbee's remarks, that he considered that it would be desirable to go on with the weather observations in New Zealand; but that careful study of those observations for some time would be necessary before forecasts of any value could be made. He said he should be happy if he could at any time assist the New Zealand Government in any way in connection with this subject, and that he would attend to any communications they might send to him thereon.

Training Ships.—I procured at the Marine Department of the Board of Trade a return, ordered by the House of Commons to be printed in February last, which shows that there are seventeen training ships in the United Kingdom, classified as under:—

Two ships: "Conway," at Liverpool, and "Worcester," at London, for gentlemen's sons only, who are trained to serve as apprentices or midshipmen, to become officers. The entire cost of these ships is provided for by the pupils' fees, which are 50 guineas and 55 guineas per annum respectively.

Eight Ships: Certified by the Secretary of State as Industrial Schools under "The Industrial School Act, 1866." Cost of maintenance mainly provided by the Government.

Four Ships: Independent—maintained entirely by private subscriptions.

Three Ships: Reformatories—maintained at the public cost.

These ships have accommodation for 4,255 boys, and there were at the end of last year 3,754 boys actually on board of them.

I visited the "Warspite," belonging to the Marine Society, which body has been in existence since the year 1756, and was the first society to establish training ships. It has fitted out and sent to sea up to the 31st December, 1874, no less than 57,884 boys. The "Warspite" is an old 50-gun frigate, and has accommodation for 200 boys. She is moored off Woolwich. At the time of my visit to her, the age of the oldest boy on board was a little over 16, and of the youngest a little over 14; none under 14 are admitted, and they are all kept until sent to sea. Boys are shipped as apprentices usually for four years, their wages for that term being £40. I was told that shipowners exhibited great reluctance in taking apprentices. The Society does not permit boys to be apprenticed to the coasting trade, as it was found that inducements of various kinds were offered to them by unprincipled persons which caused them to desert almost as soon as shipped.

The staff of the "Warspite" consists of a Superintendent who is a Commander in the Royal Navy, a chief officer, four seamen instructors, two schoolmasters, two carpenters, and one cook. The chief seaman instructor has relative duties to those of chief boatswain's mate on board a man-of-war. A good plain education is given to the boys, and they are instructed in the art of seamanship. The routine duties of the ship are conducted as nearly as possible the same as on board a man-of-war. The boys are divided into classes. I saw a class of 50 boys working away at knotting, splicing, stropping blocks, and making sinnet. The chief schoolmaster instructs the upper boys in navigation.

I observed a sextant hanging up between decks, with the following notice under it:—"Presented by Henry Hughes, optician, 59, Fenchurch Street, to the first boy who passes his examination for second mate." There is a good library in the school-room; and bagatelle, dominoes, and other games are supplied. The books are given out to the boys at 5 p.m., and they have to be returned at a quarter to 8 o'clock. The boys who read well read aloud to the rest during the winter evenings.

A fife-and-drum band of twelve performers is on board, who practice every morning from a quarter past 8 o'clock till 9 o'clock. There is a model of a ship about 9 feet long, brig-rigged, fitted with sails, running-gear, and everything complete, by which the boys are taught the names and leads of ropes, names of spars, and the various parts of a ship. Near this model, between decks, there is a large drawing of a ship, with names of the rigging, ropes, spars, &c.; and a frame fitted against a bulkhead on which specimens of knots and splices of all kinds are exhibited for the boys to work by. The boys are divided into twelve messes, with sixteen in each. Four are appointed to assist the cook one being taken on each week, so that in this way every boy on board has to serve four weeks in the galley. The boys wash their own clothes. Provisions are contracted for. Fresh bread and fresh meat are sent on board daily, and other supplies as applied for. Soft bread is served out for breakfast, and biscuit twice a day; potatoes and meat for dinner; preserved meat twice a week. Clothing is also supplied by contract; an entire outfit, including hammock and bedding, costs about £6. Each boy has a bag, with his number on it, which holds his kit of clothes; these are stowed in closed lockers, fitted round the sides of the ship on the lower deck. Clothes are inspected every Saturday. Hammocks are on the lower deck, and are swung athwartship so as to economize space. In summer, one watch is placed on the main and one on the lower deck. As the ship lies quite close to the shore, it has been found necessary, in order to prevent desertion, to secure all ports and apetures with bars and padlocks, which are locked daily at 4.30 p.m., and all boats when hoisted up are chained and locked; the working boat kept alongside is locked at 8.30 p.m. There is a lavatory, fitted in fore-part of lower deck, to accommodate 100 boys at a time, supplied with water from a two-tun tank on main deck, which is filled every night from water in the hold by the black-list boys. Severe punishment is not resorted to; every effort is made to induce good behaviour by appealing to the boys' better feelings. Only desertion and insubordination are punished by the infliction of the birch, which is administered by the Chief Seaman Instructor under the immediate directions of the Superintendent. The vessel is inspected once a month by two of the Committee and the Secretary of the Marine Society.

The scale of pay to the officers and men on board the "Warspite" is as under:—

Superintendent, who is a Commander in the Royal Navy	£250 salary
Chief Officer	£82 per annum.
Chief Seaman Instructor	£3 15s. per month.
4 Seaman Instructors, each	£3 10s. per month.
2 Schoolmasters	1 at £145, and 1 at £70 per annum.
2 Carpenters	1 at £4 10s., and 1 at £3 10s. per month.
1 Cook	at £4 per month.

In addition to the above-named pay, the officers and men are each allowed 1s. 8d. per diem for ration money, and the Superintendent is allowed the same sum for rations for one servant.

In the course of conversation with Mr. S. Whitchurch Sadler, the Secretary of the Marine Society, he said the want of a sailing tender in connection with the "Warspite," in which the boys could be sent to sea for short trips to get lessons in seamanship by actual experience, was felt to be a great drawback; and he highly commended the plan proposed in New Zealand, of having two large vessels stationed at some two of the principal ports, and employing the "Southern Cross," or some other vessel of about her size, rigged as a brig, to take the boys to sea in from the large vessels. With reference to this proposed plan, and to the application which I understand has been made to the Home Government for two of the old wooden vessels of war of a type not now commissioned for service, I may remark that, when I was on board the "Warspite," I saw the "Liverpool" lying quite near, in course of being broken up; she was a 60-gun frigate, about fourteen years old, and I was told had only been once in commission for about two years. A little higher up the river another frigate, the "Melpomene," was also being broken up. I was given to understand that there are plenty of good wooden ships of this class lying unused in the Medway, and at Portsmouth and Plymouth, many of which would be quite suitable for training ships for the colonies. These vessels, although dismantled, have their masts, spars, and rigging stored in the dockyards, and they could therefore be easily fitted for sea The best kind of training ship to be stationed in harbour would be a 60-gun frigate, similar to the "Liverpool." * * * * * * * *

I returned from England by the Torres Straits route, and therefore touched at Singapore, where I was detained for five days waiting the arrival of the P. and O. steamer with the English mail for Queensland. I called on the Harbour Master, or Master Attendant as he is called, and had a long conversation with him as to the way in which the business of the port was carried on. He gave me copies of the harbour regulations and of some local ordinances relating to shipping and revenue.

* * * * * * * * * * * *

I have, &c.,
WILLIAM SEED,
Secretary of Customs.

By Authority: GEORGE DIDSBURY, Government Printer, Wellington.—1876.

Price 1s.]