1946
NEW ZEALAND

MARINE DEPARTMENT

ANNUAL REPORT FOR THE YEAR 1945-46

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

Marine Department,
Wellington, 22nd July, 1946.

YOUR EXCELLENCY,—

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

I have, &c.,
JAS. O'BRIEN,
Minister of Marine.

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

REPORT

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

SIR,— Marine Department, Wellington, 10th July, 1946.

I have the honour to submit the annual report on the activities of the Marine Department for the year ended 31st March, 1946.

I take this opportunity of placing on record the war activities of this Department, which could not be published for security reasons during the war years. They in themselves depict a war effort on behalf of all concerned which calls for special mention.

SHIPBUILDING AND SHIP REPAIRS IN NEW ZEALAND, 1939–46

It would be wrong to say that ship-construction in New Zealand commenced during the last war period. It would be more correct to say that shipbuilding was rejuvenated with a vengeance. Ship-construction is not by any means a venture tied to the present century, as in the early days of New Zealand, wherever there was a kauri forest, there was a small shipbuilding effort on wooden vessels. Most of our earlier traders on the coast were built in New Zealand, and later, when good heart kauri became more scarce, very creditable units were constructed both in composite design (steel frame and wooden planking) and in all steel. The best examples of our composite built vessels are the ferry boats of the Ferry Co. at Auckland. In 1937 one of the present vehicular ferry boats was constructed with Diesel engines.

Farther south the s.s. "Earnslaw," for Lake Wakatipu, was built by Messrs. John McGregor and Co. at Dunedin. The tug "Dunedin" was built by Messrs Stevenson and Cook at Port Chalmers in 1914, and the present motor-ship, "Hokitika," was built two years later by Messrs. John McGregor and Co.

Many other examples could be quoted, but the above are given merely as an indication that small craft have been built in New Zealand right throughout the last century.

In the early days of the war shipbuilding in its infancy was under the direction of the Hon. Minister of Marine, but it was soon apparent, as the industry was dependent on the supply of materials such as steel, that the Hon. Minister of Supply and Munitions was the appropriate authority, and this war industry was placed under that Minister, the Hon. D. G. Sullivan.

Mr. Sullivan, with executives of the engineering industry, proceeded to Australia, procuring plans of suitable vessels and a supply of steel frames.

The Minister was responsible for the whole of the programme thereafter and worked in close consultation with War Cabinet to ensure expedition of the work.

In this connection, also, the Department received the fullest co-operation from Navy Office through Captain Bodell and Commander Earnshaw, through the Supply Department with Mr. G. H. Jackson as Director of Production, and through the Munitions Controllers, Squadron Leader Carter and Mr. W. G. Colquhoun.

For the purpose of this report the shipbuilding programme will be divided into two distinct parts, the programme for New Zealand and that for the Americans.

New Zealand Programme

Soon after the commencement of the war in 1939 it was apparent that, despite the taking-up by Navy of most of the small cargo-vessels suitable for transforming into minesweepers, there was still a dearth of sufficient minesweeping craft to fully equip New Zealand for the war emergency. Later events proved the wisdom of our policy at this time.

The major factor, however, was that minesweepers were required immediately, and ways and means had to be found for providing these at the shortest possible notice.

Government set up a small Shipbuilding Committee with Mr. G. E. Breeze as Chairman, and associated with him were Mr. F. P. Walsh, President, Seamen's Union; Mr. G. H. Jackson, later Director of Production; Mr. G. A. Pascoe, Factory Controller; a Navy representative; Squadron Leader Carter, Munitions Controller; and Mr. W. C. Smith as administrative officer.

It was thought that vessels of the minesweeper-trawler class could be constructed of composite design, but the bottleneck occurred in connection with engines, which, although they could be, and were eventually, built in New Zealand, could not be constructed in a short space of time. Inspection was then made of five old condemned vessels, which were lying in the "Rotten Row" of Auckland, the property of the Northern Steam Ship Co., Ltd. It was ascertained that the engines of these vessels still had life in them, and after mature consideration it was agreed that composite hulls could be built and minesweepers engined with the engines from the condemned steamers. It was assumed that the old engines might have a five-year life, which, to all intents and purposes at that time, covered what was thought would be the duration of the war.

Let me mention here that those three composite minesweepers were employed right up to the end of the war on their respective stations and still have sufficient life in them to permit, if need be, of their transformation as trawlers. For incorporation in the minesweepers certain minor alterations had to be made in the engines and boilers.

By this time plans and specifications of "Castle" type trawlers had been received from Admiralty. In at least one case the boilers had to be placed back to front to permit of their inclusion, and the general arrangement of the vessels, having regard to the difficulties of installing old engines in new hulls, was a feat of engineering of which the Survey Branch of the Marine Department will continue to be proud.

Eventually these three minesweepers, the "Rimu," the "Hinau," and the "Manuka," were successfully constructed and launched. The major firms occupied on this work were Shipbuilders Ltd., Seagar Bros., Mason Bros. Engineering Co., Ltd., and Senior Foundry, Ltd. They were constructed on hastily improvised slipways at Auckland on foreshore sections kindly made available by the Devonport Steam Ferry Co., Ltd., and the Northern Steam Ship Co., Ltd.

While these vessels were in progress an urgent appeal was received from New Zealand Navy and Admiralty for consideration of the construction of all-steel vessels, nine for New Zealand Navy and five for Admiralty (the latter five were eventually cancelled). Steel plates and frames were naturally at that period at a premium, but through the kind offices of the Broken Hill Pty., Ltd., Australia—whose country also had an enormous shipbuilding programme—sufficient steel was made available. We considered the construction of boilers in New Zealand, but this could not be brought about for the reason that the machine tools were not available in New Zealand to roll the plate of the required size and thickness. Boilers were eventually ordered from England, and in this connection, to expedite construction, the remainder of the boilers, after the first two or three, were delivered from United Kingdom in a prefabricated condition, the balance of the work being performed here by New Zealand Railway Workshops at Woburn and by Messrs. Stevenson and Cook Engineering Co., Ltd., at Port Chalmers. Engine-construction also gave much food for thought, and it was considered that as Messrs. A. and G. Price at Thames had faithfully constructed many locomotive engines for New Zealand Railways—some of these still going strong—they could successfully attempt the construction of marine engines. Engine forgings were ordered from Australia, and the actual construction of the engines was satisfactorily carried out by Messrs. A. and G. Price at Thames, John McGregor and Co. at Dunedin, and by New Zealand Railway Workshops at Woburn. None of the engines so successfully constructed has given the slightest trace of trouble and are a lasting testimonial to the builders. Some of them will be propelling fishing-trawlers for many a year to come.

At the same time as these new steel trawlers were under construction it was decided to build a further composite vessel at Auckland—the "Tawhai"—for special minesweeper work not connected with the usual trawling. This vessel was completed to steam-trial stage when the war finished, and has been sold to the UNRRA authorities for conversion in Auckland to a fishing unit for trawling purposes in Far Eastern waters.

The principal dimensions of the minesweepers are—

Length between perpendiculars	125 ft.
Length overall	135 ft.
Breadth	23 ft. 6 in.
Depth moulded	13 ft. 6 in.
Loaded displacement	612 tons.
Engines	480 h.p. at 103 r.p.m.
Speed	10 knots.

One of the main features with a minesweeper is the provision of a powerful winch, being much bigger than those usually fitted on a trawler. These winches were built in New Zealand. They can handle 1,000 fathoms of $2\frac{1}{2}$ in. wire rope, exerting a pull of $2\frac{1}{2}$ tons at 300 ft. per minute.

Naturally the order for nine or fourteen further steel minesweepers necessitated the construction of these units at points other than Auckland, where vessels were constructed by the firms previously concerned with the composite minesweepers. One vessel was constructed at Wellington by the Wellington Patent Slip Co., and seven at Port Chalmers by Stevenson and Cook Engineering Co., Ltd., who took over the area known as "Boiler Point" and within a few months had a thriving shipbuilding industry working at full pressure. The ease with which this somewhat waste land was levelled and brought to fruition as a shipbuilding-yard was one of the wonders of New Zealand's war effort and was due solely to the vision of Mr. James Fletcher (now Sir James Fletcher), whose firm at that time took over the establishment of Stevenson and Cook, Ltd.

The programme for the construction of steel minesweepers was no sooner under way than the Marine Department was faced with another difficulty, in that Admiralty had requested consideration by New Zealand Government of the construction of twelve "Fairmile" patrol vessels for anti-submarine warfare.

These vessels are 112 ft. long, with 17 ft. 10 in. beam and 4 ft. 10 in. draught. They have a speed of 18½ knots, their loaded displacement being 80 tons.

Arrangements were immediately made with the wooden-shipbuilding firms in Auckland, and by a combination of the smaller companies construction was commenced with twelve vessels as under, the foundation members being laid in January, 1942, and the twelve keels actually completed and in work by September, 1943 :—

Associated Boat Builders, Ltd.	Four boats.
Shipbuilders Ltd.	Three boats.
Chas. Bailey and Son, Ltd.	Three boats.
P. Vos, Ltd.	Two boats.

All the components necessary for the assembly of the hulls were imported from the Fairmile Co., England, excepting such members as keels, stems—in fact, all foundation members—and the whole of the deck planking. Kauri for these members was likely to become a bottleneck, but the Director, State Forest Service, did yeoman work in providing the timber required without any delay worth mentioning.

About 14,000 ft of timber was required per ship. The propelling engines comprised two sets of Hall-Scott twelve-cylinder petrol units developing a maximum of 630 b.h.p. at 2,100 r.p.m., and with such big units fuel-tanks of bullet-proof construction were required on each vessel for 2,320 gallons. This was work on which the shipwrighting tradesmen of Auckland were in their element, and although this construction was novel the vessels were completed in an average of 35,000 man-hours, compared with 40,700 man-hours per unit as the average time communicated to us by the Fairmile Co.

At this time, also, the New Zealand Navy called for the construction of two non-propelled steel oil-barges of similar design to a barge at that time being built for the Union Steam Ship Co. of New Zealand, Ltd. These barges are 180 ft. long by 36 ft. wide and 15 ft. 3 in. in moulded depth. They carry 1,400 tons of oil. Steel and the necessary auxiliary units were procured from Australia and the United Kingdom respectively, and one vessel was actually completed for Navy by the Wellington Patent Slip Co. The other barge was cancelled in the early stages of prefabrication, but has since been built by the Patent Slip Co. for the Union Steam Ship Co., and is now in use at Auckland.

In addition to the above construction, approximately twenty-seven vessels of small dimensions were constructed through the Public Works Department to act as refuelling barges, crash launches, flare-path dinghies, &c., for air bases in New Zealand and in the nearby Pacific islands.

Thus the construction for New Zealand requirements can be summarized as follows, with costs in round figures :—

	£
For New Zealand Navy—	
Minesweepers, composite (4 at £60,000)	240,000
Minesweepers, steel (9 at £60,000)..	540,000
" Fairmile " anti-submarine vessels (12 at £35,000) ..	420,000
Steel oil-barge (1 at £50,000)	50,000
Small Vessels for R.N.Z.A.F., &c.—	
Refuelling barges, crash launches, flare-path dinghies, &c. (27)	20,000
	£1,270,000

American Programme

It was towards the end of 1942 that overtures were made by the American authorities as regards the likelihood of the construction of small craft for them for use in the Pacific area. At that stage, puckered up as we were with our own Navy construction programme, the answer to the question was definitely " No," but thanks

to the vision of Mr. James Fletcher, who was then Commissioner for Defence Construction in New Zealand, thoughts were given as to what could be done outside the New Zealand programme by combining engineering and shipwrighting firms and hundreds of other small engineering and woodworking workshops into syndicates for the construction of these small craft for America. New Zealand Government at once appointed Mr. James Fletcher as Controller of Shipbuilding with the organization of the Marine Department at his back, Mr. G. E. Breeze as Deputy Controller of Shipbuilding, and Mr. W. C. Smith as Chief Executive Officer of the Shipbuilding Division. Prefabrication was the theme for this project and almost the whole of the programme was completed in Auckland. American Army and Navy representatives in Colonels Warren and Dinkins (Army) and Commodore Jupp (Navy) were conjoined with the Controller of Shipbuilding, and at the culminating point as many as two hundred firms were at one and the same time employed in Auckland on the fabrication of parts for the American vessels, these being subsequently assembled at two new shipyards, one for steel ships at French Street and one for wooden ships at Fanshawe Street on the site on the foreshore previously occupied by the Kauri Timber Co. before the big fire. Shipyards and buildings were constructed hastily, and suffice it to say that so great was the progress that eight 45 ft. wooden hulls could be run down the launching ways every five to six weeks, this in addition to work on powered lighters, steel tugs, &c., that were in the yards or at the other shipyard.

Such a huge organization demanded the establishment of a subsidiary organization in Auckland. Executives of the shipbuilding firms were formed into an Allocation Committee for the allocation of contracts and subcontracts, thus the builders themselves had a big part in the organization of the industry. Mention must be made of the work performed by Mr. R. C. Porter, who gratuitously gave his services in the same way as Mr. James Fletcher in organizing the industry in Auckland. Mr. N. Burnette, of Fletcher Construction Co., was also made available full-time to the industry in a generous gesture by that firm.

The American programme was divided into two parts, first the section required urgently for the American Army in the South-west Pacific, this portion being under the guidance of Colonel Max Warren, who subsequently proceeded to Australia, and later Colonel J. Dinkins. The second, or United States Navy portion of the programme, was sponsored in the early stages by Commodore Jupp, United States Navy, and later by Commander A. C. Bushey, jun., who did some sterling work in expediting the programme at a time when matters looked black in the Pacific.

For the purpose of this report the American programme will be shown as one, and consisted of the following :—

	£
Steel tug-boats, 75 ft. (22 at £26,700)	587,400
Wooden tow-boats, 45 ft. (50 at £7,250)	362,500
Powered lighters, 114 ft. (15 at £71,400)	1,071,000
Barges, wood, prefabricated, 50 ft. (40 at £1,000) ..	40,000
Barges, wood, completed, 50 ft. (100 at £1,200) ..	120,000
Amphibian trailers, steel (100 at £270)	27,000
Wherries, wood, 12 ft. and 14 ft. (60 at £85)	5,100
	£2,213,000

The vessels completed for America can be briefly described as follows :—

The 45 ft. wooden tugs are of normal design, 45 ft. in length, with a 14 ft. beam and 7 ft. in depth. They are propelled by a Diesel engine of 120 b.h.p. In the main the planking and most of the wood was kauri, but frames are of beech, knees of pohutukawa, towing-posts and bitts are of hardwood, sheathing and false keel being of totara. The engines and the auxiliaries for these vessels were supplied by the American authorities.

The 75 ft. sea-going tugs are of all-welded variety, 75 ft. 9 in. in length, 18 ft. moulded breadth, 9 ft. 11 in. depth, and engined with a single Diesel unit of 300 h.p. They are of the "hard chine" design, which, of course, lends itself to an all-welded construction.

In the construction of these vessels a difficulty was experienced in obtaining a sufficient number of welders, but even this difficulty was overcome by the institution of a training school. After three or four weeks' tuition under an expert welder, trainees were then passed out for welding on the vessels, their work being carefully supervised by a thoroughly competent welder. The prefabrication of these vessels was a masterpiece, in that the hull was divided into three parts—the bow portion, the middle, and the stern. It was interesting during construction to see the bow portion being transported by road from the Railway Workshops at Otahuhu round about daylight so that interference with traffic would be at a minimum. These units were sea-going and, indeed, had some interesting trips across the Tasman under heavy weather, but have been most favourably commented on by all parties concerned.

The 114 ft. powered lighters are a misnomer as far as New Zealand is concerned, in that they are virtually small cargo-vessels of 200 tons to 250 tons carrying-capacity. They are 114 ft. 6 in. in length, with a breadth of 24 ft. and moulded depth of 11 ft. They are twin-engined, each unit of 208 b.h.p. Diesel. There is accommodation on board for nine officers and men, and the hull has four watertight bulkheads. Ten or so of these vessels were completed and sailed to the Pacific, being also very favourably commented on by every person concerned. When the war ceased, the balance of the American programme was cancelled, but four of these units were so near completion that it was decided to complete them for service on the New Zealand coast, where they should prove hardy little transports for coastal traffic.

In addition to the American shipbuilding programme at Auckland, the Government shipyard at Port Chalmers, under the control of Stevenson and Cook Engineering Co., Ltd., also constructed two powered lighters, one of which proceeded to the Pacific and the other is now lying in an almost completed state afloat in the port.

The other items in the American programme, although small in monetary value, have their particular significance. The 140 wooden barges were constructed by a syndicate of coachbuilding firms in Christchurch and by Messrs. Love Construction Co. at Dunedin. When this order was received from the Americans it was imperative that firms outside the usual run of boatbuilding should participate in their construction. To the coachbuilders of Christchurch and to the building tradesmen of Dunedin a tribute should be paid for their expedition of work and efficiency. The wooden wherries are what are known to us as dinghies and were constructed in Auckland as a side-line by the boatbuilding firms.

The American authorities also required 100 amphibian steel trailers. These are non-propelled and were constructed by the coachbuilding firms in Auckland and Christchurch. These also were required at very short notice and the operatives did a very good job of work.

It would be fitting at this stage to pay a tribute to the operatives all over New Zealand who participated in any way in either the New Zealand Navy or American programmes of shipbuilding. Those who were skilled readily imparted their knowledge to the unskilled. What might be termed "diluted" labour was used extensively; for instance, in Auckland hundreds of housebuilding carpenters were transferred to shipwrighting—an entirely different trade—and within a few months had become expert in their new industry. When the war finished, these men went back to their former occupations possessed with a thought that they had performed a splendid war work on ship-construction. Mention should also be made of the splendid work performed by the executive officers of the various engineering and shipwrighting firms. They are too numerous to mention individually, but all performed splendidly under difficult circumstances.

Vessels for Western Pacific Administration

Towards the end of the shipbuilding programme the High Commissioner for the Western Pacific placed an order for five special-purpose wooden vessels for servicing the Pacific islands. They were 60 ft. long with a gross tonnage of 58 tons and propelled by a Gardner four-cylinder Diesel engine of 102 b.h.p. They were well equipped and had a speed loaded of 8 knots.

Vessels for Eastern Group Supply Council

Towards the end of the programme also and at the completion of the fifty 45 ft. wooden tugs for the Americans, the British Ministry of War Transport placed an order for twenty-four similar tugs for use in Eastern Group countries. At the present time twelve of these are almost completed, and the balance of twelve was cancelled by the Authorities. These vessels were identically similar to the American vessels and were propelled by "Atlas" Diesel engines of 120 b.h.p.

Ship Repairs

One must not imagine that the full labour quota—approximately 4,000 men—was always available for ship-construction. The ship-construction industry provided a nucleus of labour for ship repairs in New Zealand, on which our war effort was no less outstanding than on that of shipbuilding. A large influx of American vessels, plus some units of the British Pacific Fleet, made it necessary to allocate all usage of slips and docks through a Central Docking and Repairs Committee at Wellington, consisting of representatives of the shipping companies together with Navy and Marine Departments, also the New Zealand representative of the British Ministry of War Transport, Sir Alex. Roberts. This Committee was instituted to ensure that dockings were scheduled in such a way as to give a minimum of delay in all cases and to facilitate the quick turn round of vessels carrying food to the United Kingdom and to the troops, both British and American, in the Pacific. A Ship Repairs Costing Service was instituted under the Marine Department, this providing full supervision of the work to ensure that only the most necessary work was given effect to owing to shortage of materials and to check up on actual cost of repairs to each vessel. The total ship-repairs programme undertaken by the Ship Repairs Costing Service is indicated in the following expenditure on ship-repair work as from 1st January, 1944, to 15th August, 1945:—

	£ s. d.	£ s. d.
For New Zealand requirements—		
Navy	218,343 10 9	
Other vessels	249,208 15 6	
		467,552 6 3
For U.S.A. requirements—		
U.S.J.P.B.	677,313 16 9	
War Shipping Administration	12,055 4 5	
		689,369 1 2
		£1,156,921 7 5

The colossal ship-repair work carried out during the war years was a splendid effort and was assisted by the co-operation of Commander A. C. Bushey, United States Navy, the U.S.J.P.B. in Wellington, and the representative of the War Shipping Administration. The New Zealand work was very ably organized as for Navy work by Captain Bodell (New Zealand Navy) and by the Survey Staff of the Marine Department under Mr. G. E. Breeze, Chief Surveyor of Ships.

Many of our ship-repair jobs during the war have been praised by the various shipping authorities. Notable amongst these were the "Fordsdale," which required five refrigerated holds completely dismantled, retimbered, and reinsulated, also the

U.S.S. "John Deere," which was made the subject of tremendous repairs at Port Chalmers. The Netherlands East Indies vessel, "Khoen Hoea," also underwent extensive repairs in Lyttelton; and the repairs carried out on the "Trocas" at Auckland call for special mention.

United States Appreciation

Rear-Admiral E. W. Mills, United States Navy, Assistant Chief of the Bureau of Ships, Washington, wrote in a letter that the Bureau noted with pleasure the many expressions of satisfaction received from the commanding officers of naval vessels undergoing repairs in New Zealand. The high quality of workmanship, the expeditious completion of important repairs, the excellent co-operation existing between United States naval activities, New Zealand governmental agencies, and civilian contractors were most useful contributions to ship-maintenance in the area. The Chief of the Bureau of Ships desired to express his appreciation for the uniformly excellent results achieved in ship-maintenance at Auckland and in the New Zealand area.

This report touches the fringe only of our ship-repair and shipbuilding industry during the World War II, but is an attempt to place on record an outstanding achievement.

VESSELS CHARTERED AND PURCHASED FOR DEFENCE PURPOSES BY THE MARINE DEPARTMENT

At the outbreak of war it was found that the vessels then under the control of the Navy Department were insufficient for its wartime needs. Vessels of all types were required, ranging from small private launches to sea-going cargo-carriers, and the Marine Department was brought into the picture for the purpose of inspecting and valuing the various craft required by the Navy.

The inspections and valuations were carried out from one end of New Zealand to the other and hundreds of craft were inspected and rejected, the cause of rejection ranging from unsuitability for the purpose in view to unseaworthiness and old age. On some few occasions the Navy Department inspected and requested the requisitioning of their own craft, but, apart from a few barges and other similar craft, all requisitioned vessels were passed for service by this Department.

After the vessels had been inspected, various alterations were found necessary to fit them for the work, and such alterations were supervised by the Department's Surveyors of Ships, and in many cases the vessels were placed in commission after extensive repairs and renovations had been carried out.

The value of the vessels requisitioned ranged from £200 to, in some cases, more than £100,000.

There were two forms of requisitioning, one being requisitioning for purchase, whilst the other was requisitioning for charter. Many cases of hardship were placed before the Department, and, wherever possible, alternative arrangements were made, with the result that as little dislocation of normal trade as possible was encountered.

The uses to which the vessels were put were many and varied and their spheres of activity were widely spaced, some being used in New Zealand waters, some in the forward bases at the islands, and the dredge owned by the Lyttelton Harbour Board was requisitioned under charter for the purpose of work to be carried out in the Middle East. This vessel was ready for despatch when Japan commenced hostilities, and owing to the danger of a trip through hostile waters the charter was cancelled and the vessel did not leave New Zealand waters.

It was also intended to send the crane-ship "Rapaki" overseas, but in view of developments this trip did not eventuate, although the vessel actually made a start on her long voyage. This vessel was eventually chartered for the American authorities and spent many useful months in the Pacific.

Among the many uses previously mentioned, the vessels were used for lightering stores, boom defence, examination ships, harbour patrol, defence surveys of the Sounds, cargo-carrying, hospital ships, and many other types of work. In all, the Department was responsible for the purchase of 138 vessels, with a value amounting to £484,175.

Chartered vessels numbered 53, with a total replacement value of £1,114,440.

After the vessels had finished their period of usefulness to the Navy in terms of the charter parties, it was necessary to bring them back to the condition in which they were delivered, less, of course, an allowance for fair wear-and-tear, with the result that the Department's officers were kept busily engaged in inspecting and evaluating work done and to be done.

Three very big jobs were carried out under the control of departmental officers as a result of charters, they being the "Breeze," on which repairs to the value of £31,854 were carried out, the "Gale" £28,371, and the "Futurist" £13,702.

The Marine Department's lighthouse tender vessel "Matai" was also loaned to the Navy, with the result that alterations and repairs to the value of £16,549 were necessary on her return to the Department.

Even the small launches used in harbour-patrol work required considerable sums of money to be spent on them before returning to their owners, and the efforts of the departmental officers resulted in sums considerably lower than those demanded by the owners being spent.

Although all the work involved in the valuation and supervision of alterations was additional to peacetime requirements, no additional staff was available and the work was carried out promptly and efficiently by the Chief Surveyor and his staff.

RECOVERY OF GOLD FROM "NIAGARA"

On 19th June, 1940, the Royal Mail Steamer "Niagara" struck a German mine and in one hour forty minutes had gone to the bottom of the ocean thirty miles from Bream Head, at the entrance to Whangarei Harbour. Although during the war many vessels struck mines and sank and many others were sunk by other enemy action, the sinking of the "Niagara" is noteworthy by reason of the fact that she had on board at the time £2,495,700 worth of gold bullion, and this fact was responsible for an epic of the sea in that £2,397,000 worth of bullion was salvaged from a depth of 436 ft. below the surface, a depth at which successful salvage had never before been carried out.

On 4th September, 1940, the Prime Minister of Australia requested the New Zealand Government to assist the accredited agents of the Commonwealth Bank in salvage operations which were to commence in the near future, and was assured by the Prime Minister of New Zealand that the desired co-operation would be given.

Captain J. P. Williams, managing director of the United Salvage Proprietary, Sydney, was accredited to the New Zealand Government as the controlling officer of the salvage operations, and in this capacity Captain Williams investigated the possibility of chartering a salvage vessel.

At this period lying in Auckland Harbour was the old s.s. "Claymore," which had been purchased by the Crown for the purpose of dismantling and retrieving such parts as would be useful in the construction of minesweepers. The "Claymore" had been on the coastal run in the North Island for some considerable time, and since she had been laid up for a lengthy period was in a very dilapidated condition. In fact, her condition was so bad that after salvage operations had been successfully concluded she had her hull entirely replated and was then used by the Navy in Auckland Harbour on boom-defence work.

However, the condition of the ship did not deter Captain Williams, and with the co-operation of the Marine Department he chartered the vessel for the sum of £250 for six months and then commenced the job of making her fit for the arduous task in hand. As the salvage operations were to be carried out in areas known to be mined,

it was necessary for Captain Williams to take out insurance cover for normal ship work in addition to war-risk insurance, and the condition of the "Claymore" can be judged when it is known that the cover in each case amounted to no more than £2,000, although in the first instance it had been decided to insure her for £1,000.

On 14th December, 1940, Captain Williams advised the Marine Department that the "Claymore" was on the job and sweeps were about to be put over. Prior to this, however, a good deal of work had been put in on the job of strengthening and furnishing the "Claymore." Furnishing such as bedding, cutlery, and other small items were hired by the Navy Department to "Claymore" at the request of the Marine Department.

Arrangements had also been made for minesweepers to mark off part of the area to enable the "Claymore" to carry out her sweeping operations with some degree of safety from mines. In spite of these precautions, however, it was later found that the "Claymore" had on numerous occasions passed over enemy-sown mines many times, it being only her light draught which saved her from the same fate as that which met the "Niagara."

On 12th February the Marine Department was advised that the wreck had been located and that it had a heavy list, being buried to within 10 ft. of the main deck in the mud. From then on Captain Williams advised the Department of his progress, and in spite of very bad weather which limited the capabilities of the salvage party to one working-day per week, very satisfactory progress was made.

On 11th August a letter was received by the Secretary of the Marine Department from a firm of solicitors in Auckland requesting details on behalf of the proposed salvage syndicate, the writer stating that he was informed that Captain Williams' project was doomed to failure. The Secretary of the Marine Department advised the inquirer that the party in possession of the "Niagara" were the accredited agents of the owners of the bullion and therefore the only ones allowed to operate.

At last, on 25th October, Captain Williams wrote to the Department and advised it that he had delivered to the bank £150,000 worth of bullion, this bullion being salvaged by grabs, the largest of which measured 3 ft., through an opening 4 ft. by 8 ft., it having been necessary to blow away three decks before this opening could be made.

A rather disturbing cable arrived at this time stating that an Australian newspaper correspondent in London had telegraphed a comprehensive story to Australia covering the whole of the salvage operations. This story, although passed by the London censor, was stopped by the Australian authorities and all possible precautions were taken to prevent leakage of the story overseas or its publication in New Zealand.

Shortly after this, fears for the safety of the operations through the publication of the story in London were allayed by advice from the Admiralty that the story had not been published in any English papers and that a stop against publication had been issued by the Censorship authorities.

On 27th October the Minister of Marine received a letter from a person in Australia who was interested in some way in a new diving-dress requesting advice as to whether or not the salvage party had reached the gold, but, of course, the information requested was not given.

By 16th November approximately 60 per cent. of the total bullion had been delivered to the bank, and on 7th December, 1941, the last bar, twisted and torn by the grabs, was hauled on board the "Claymore," this last bar bringing the total recovered to £2,397,000.

The salvage operations being over, Captain Williams wasted no time in returning the vessel to the Government after removing from it the heavy salvage gear imported from Australia.

Among this gear was the specially designed diving-bell from which Diver J. Johnston and his brother directed operations. This bell was necessary, as it was impossible for a diver to descend to the depth at which the "Niagara" lay in the standard rubber diving-suit. Throughout the operations danger was encountered by the divers and

by the ship from mines caught in the sweeps and drags, and throughout the period minesweepers of the Royal New Zealand Navy destroyed forty-one mines which would have menaced the safety of the ship and personnel.

It was not until February of 1942 that any news of the story was published, and with the publication of the full story in the papers throughout New Zealand and, in fact, throughout the world ended one of the most secret operations carried out in New Zealand.

LIGHTS AND BEACONS

To the layman there will always be something romantic about a lighthouse. Something remote and mysterious which appeals to the casual passer-by seems to have been built into the towering structure from the top of which the welcoming light sends its encouraging gleams across the moody seas to the ultimate comfort and assistance of the ships' navigators.

To the keepers and to the Department, lighthouses mean something entirely different: to them there is no romance and still less mystery, especially in time of war.

New Zealand, with its rocky, cliff-bound coasts, has many lighthouses, some with resident keepers who live within comparatively easy reach of coastal towns and cities, while on remote headlands and surf-bound islets there are others who live as a small community in a solitude broken in peacetime by the regular visits of the Government lighthouse vessel with its welcome cargo of amenities and comforts of all kinds. Unfortunately, when peace goes it takes with it most of those things which go a long way towards making life on a lighthouse reasonably happy.

Gone are the regular visits with their exchange of gossip and gleanings of news from outside, gone also are the regular mails and stores, and in their place come uncertainty and additional hard work.

In 1937 the first taste of what was to come soured on the palates of principal keepers of lighthouses in the territory controlled by the Marine Department when letters were received with orders relating to the extinguishing of the lights in an event of an emergency.

At this time, also, Harbour Boards were requested to co-operate in the advising of keepers and in the extinguishing of automatic lights.

In 1938 once again the whole emergency procedure was brought to life when keepers were given further instructions relating to the extinguishing of their lights and the institution of a continuous coast-watch. At this time, also, instructions were given that arrangements made with various vessels regarding radio D.F. signals were to be cancelled.

Then at last the long-dreaded moment arrived, and in 1939 all Government services were on a war footing; but the lights still shone.

At this stage keepers were advised that they may be ordered to extinguish the lights and that a continuous watch was to be kept for signals from the naval officer in charge of their territory.

At the outbreak of war some few lighthouses not connected with telephone were supplied with radio receivers, while on some stations naval and Army detachments were encamped for the purpose of coast-watching.

On the 15th December, 1939, the lights of Suva Harbour were extinguished until further notice, and before long many of the lights on the New Zealand coast went out for varying periods, while most of those remaining were shown at about half power only.

In reply to a telegram instructing him to extinguish the Matakawa automatic light, Mr. E. T. Hughes, of Hicks Bay, replied: "Require key of Matakawa Lighthouse urgently instructions for 23rd December will be carried out irrespective. E. T. Hughes." The Matakawa light was put out on the 23rd December as required.

Another light which would have been of great assistance to an enemy raider in fixing his position was the North Cape light, and instructions were given to the Fisheries Inspector of the Department at Russell that this light must be out on the night of the 23rd December. Although this officer is not in the lighthouse service, his report is an epitome of the spirit of loyalty and a story well worthy of inclusion in the annals of the Department.

In December, 1940, the lights at Mokohinau, Cuvier Island, Gable Islet, Honeycomb, Separation Point, Le Bons, St. Annes Point, Puysegur Point, and North Cape were closed down for the duration of the war or the period of the state of emergency, and in so far as the Mokohinau station was concerned the keepers were withdrawn.

The light at the Chickens was extinguished and replaced by a light on Taranga (Hen) Islet, while the light on the top of the wireless mast at the Chathams was extinguished and later was exhibited only at the request of vessels known to be arriving. In reference to this light it is interesting to note that the "Port Waikato," which recently lay off the Chathams with a broken shaft, was instrumental in having the light exhibited for a period of thirty-six hours prior to the expected arrival of vessels at the port because of her arrival in February, 1944, a day earlier than she was expected. It seems that the vessel was, as mentioned, a day early and was attempting to make harbour without the aid of the light when just before she made the break she found herself uncomfortably close to the reef. After this representations were made to the Department and to the Navy, with the result that the period of lighting was extended to thirty-six hours prior to the expected arrival.

A test of the blackout of coastal lights was carried out in February, 1941, and it was found that with few exceptions the lights could be extinguished within fifteen minutes. Those which took longer were, when such action did not endanger shipping, extinguished for the period of the emergency.

In addition to their many normal lighthouse duties, the keepers were required to carry out coast-watching and radio watching duties, thus adding to the severe strain to which the reduction in power of their lights had already placed upon them. Meteorological reports and data had to be prepared and transmitted to the appropriate authorities and details of any suspicious vessels noted and forwarded to the Navy.

All these duties meant that the watchkeeper had to be continually on the alert and ready at any time to note any peculiar circumstances which may or may not have been of importance; in addition, the stores position in some of the more remote stations at times caused great anxiety owing to the non-availability of the "Matai" and the lighthouses' dependence on small craft for the conveyance of necessities.

When the "Matai" was withdrawn from the lighthouse service the Department was faced with the job of servicing the lights by other means, with the result that island lights were supplied by small coastal launches, while the land stations were supplied by road. Many of the land stations were, by the very nature of their location, cut off from road transport and supplies had to come in on the backs of packhorses, and at times for the last portion of the journey heavy loads were manhandled over rough terrain by the keepers.

It can be understood that as many of the automatic lights were extinguished by inexperienced persons it was possible that valuable equipment may have been inadvertently harmed and, in any case, without regular maintenance deterioration would rapidly take place, so in the early part of 1942 the Department arranged for inspection and overhaul by Public Works mechanicians.

The value placed on the lights by seafarers was demonstrated in March, 1944, when the organization representing fishermen plying out of Bluff wrote asking if the light at Pegasus Harbour, Stewart Island, could be re-established, as it was of great assistance to the fisherman in finding their bearings; as a result of these representations the light at Pearl Island was re-established.

From then on, as the menace of surface and submarine raiders became more remote, more and more lights and radio beacons were re-established until in August, 1945, practically all were back on their full pre-war power.

Until all the minefields in the Hauraki Gulf are cleared up it is possible that the lights and radio beacons on Mokohinau and Cuvier Island will remain extinguished, otherwise vessels would be guided into danger by the light instead of into safe channels.

With the closing of the approaches to Auckland via the Mokohinau and Cuvier channels, alternate routes were lighted so that vessels would be clear of the minefields.

VESSELS CHARTERED

Of the 191 ships purchased or chartered, fifty-five were trading ships, thirty-seven of which were in use by the New Zealand Services and eighteen by the American authorities. One hundred and forty-eight of these vessels were actually manned by New Zealanders.

STEAMSHIPS "BALTANNIC" AND "BALTRAFFIC"

In the early stages of the war it was realized that it was vital to get our produce to the United Kingdom in the quickest possible manner, and to assist in this direction the Ministry of War Transport, England, loaned these ships to New Zealand. These two ships have refrigerated accommodation space, and were used extensively from early 1941 to convey refrigerated cargo from the minor ports to the major ports, principally Wellington and Auckland. By this means the larger overseas ships were able to make a quicker turn round, in that they omitted calling at the minor ports and concentrated their loading at the major ports. The whole expense of bringing these ships to New Zealand, running-expenses while in this Dominion, and cost of returning them to the United Kingdom is borne by the Ministry of War Transport.

NEW ZEALAND SHIPS LOST BY ENEMY ACTION

During the war period five ships the crews of which were on New Zealand articles of agreement were lost as the result of enemy action, but fortunately the loss of life was small—namely, nine. Of these nine, four lost their lives when their ships were torpedoed and the other five died while prisoners of war in Japanese hands.

"Holmwood"

A steel ship of 546 gross tons, built at Goole, England, in the year 1911, came out to New Zealand early in 1923 for the Westland Shipping Co. and was engaged for some years in conveying coal and timber from west coast ports. Later she made periodical voyages to the Chatham Islands. This ship was acquired by Holm and Co., Ltd., in August, 1940, and it was while she was on her second voyage to the Chatham Islands for her new owners that the ship was captured and sunk by a German raider on the 24th November, 1940. The crew and passengers totalling twenty-nine were taken aboard the raider and were eventually landed at the small island of Emirau, in the Bismarck Group, after the members of the crew had signed an undertaking not to serve on defensively armed ships and the male passengers had agreed not to bear arms nor undertake military action against Germany or her allies during hostilities. The crew and passengers were eventually rescued from the island by an Australian ship, which landed them at Sydney on the 6th January, 1941. The crew and passengers were conveyed from Sydney on the American ship "Mariposa," and landed at Auckland on the 13th January, 1941.

The "Holmwood" was the first New Zealand ship captured and destroyed by the enemy, but fortunately no lives were lost.

"Komata"

A modern steel cargo-ship of 3,900 gross tons, built at Glasgow in the year 1938 to the order of the Union Steam Ship Co. of New Zealand, Ltd., was the second New Zealand ship lost as the result of enemy action, off Nauru Island. At 9 a.m. on the 8th December, 1940, a ship was sighted which appeared to be a Japanese ship of about

8,000 tons accompanied by a smaller ship which had a Japanese flag painted on her side and which looked like an innocent merchant ship. The larger ship bore straight on to the "Komata," sending out a signal "Stop and do not use your wireless," but the master of the "Komata" ordered the wireless operator to send out a signal. However, before this could be accomplished the raider sent a shell crashing through the bows of the "Komata," and the next shell shattered the wireless masts and equipment. Another shell crashed on the bridge, killing the first mate and severely wounding the second mate, who later died of wounds on the raider. The crew were taken aboard the raider, eventually landed at Emirau Island, and released on the same conditions as the crew of the "Holmwood" stated above. The survivors were eventually conveyed to Sydney and brought to New Zealand by the "Maunganui," which arrived at Wellington on 18th January, 1941.

"HAURAKI"

This was the third New Zealand ship lost as the result of enemy action. The "Hauraki" was a steel motor-ship of 7,113 gross tons built at Dumbarton in the year 1922 to the order of the Union Steam Ship Co. of New Zealand, Ltd., and arrived in New Zealand on her maiden voyage in June, 1922. At the time of launching, this ship was one of the largest motor-ships afloat, her engines developing 3,500 b.h.p., and she created a great deal of interest among the shipping world on arrival. During the whole of her career the ship was engaged mainly in trading between New Zealand, Australia, and North American west coast ports. On the 23rd July, 1940, the ship was taken over by the Ministry of War Transport, and while so employed by that Department she was captured by two armed Japanese raiders while *en route* from Freemantle to Colombo in the Indian Ocean on the evening of the 12th July, 1942. The Japanese placed a prize crew on board and ordered the ship to proceed to Penang. Before the enemy boarded the ship much of the secret documents, mail, &c., was dumped overboard, but later it was discovered that a certain amount of secret Navy mail (nine bags) located in a locker at the after end of No. 2 hold had not been disposed of. By feigning sickness the second officer, Mr. A. F. McIntyre, was allowed a good deal of latitude, thus lulling the Japanese suspicions, and finally in the early hours of one morning he was able to get into the locker and perform the hazardous task of disposing of this secret Navy mail, notwithstanding the Japanese warning that any one found near the hatches would be shot or beheaded. Mr. McIntyre was ably assisted by the chief engineer, Mr. W. C. Falconer, who received the mail at the hatch and assisted in dumping it or hiding it until an opportunity occurred to dispose of it. The chief engineer also pumped a quantity of oil overboard each night in the hope that it would leave a trail whereby they could be traced by a rescuing ship. He also disposed of all plans, specifications, and as many spare parts as possible. When the ship arrived at Singapore the master, chief officer, chief engineer, and senior radio officer were taken off the "Hauraki" and sent to Yokohama by transport. The majority of the crew were also taken off and interned in Changi Prison Camp, but the engineers and a few other ratings were kept on board the ship until she reached Japan some time in January, 1943, and were later interned in a Tokio Camp. The whole crew, with the exception of five who died while prisoners of war, were safely repatriated to their homes during September and October, 1945.

"AWATEA"

The "Awatea," of 13,482 gross tons, built at Barrow-in-Furness in the year 1936 to the order of the Union Steam Ship Co. of New Zealand, Ltd., was the fourth ship lost through enemy action. The "Awatea" was a modern steel steamship with accommodation for 528 passengers, arrived in New Zealand in September, 1936, and was engaged in the passenger service between New Zealand and Australia. The "Awatea" was an outstanding ship in many respects, and particularly so in regard to her propelling machinery, which embodied the very latest refinements in marine engineering practice. In fact, when the ship arrived in New Zealand she was considered to be the most powerfully engined ship owned in the Southern Hemisphere and, for her size, one of the highest

powered ships in the world. On her trials the ship averaged 23 knots. The passenger accommodation was the last word in convenience, and, included in her equipment, radio telephony for communication between ship and shore was installed. In July, 1940, the ship was taken over by the Ministry of War Transport and then commenced to make several voyages to Vancouver. On the 27th October she left Vancouver, touching at Honolulu, Manila, Hong Kong, Singapore (24th November, 1941, fourteen days before the Japanese entered the war), Colombo, Mombassa, Cape Town, Trinidad, and Liverpool, at which port she arrived on the 18th January, 1942. She left Liverpool on the 15th February, 1942, and proceeded to Freetown, Durban, and Bombay, and arrived back at the Clyde on 29th May, 1942. The ship then proceeded from the Clyde on 29th June, 1942, for Durban, Cape Town, Bermuda, and Halifax, from which port she left on 22nd August, 1942, under convoy, but at about 10.30 p.m. the same day the destroyer escort attempted to pass through the line of convoy and ahead of "Awatea," with the result that the ship's bow struck the destroyer with a severe impact, causing an explosion on the destroyer. The ship suffered damage and put back to Halifax for repairs. She left this port again on 29th September, 1942, and arrived at Glasgow on 7th October, 1942. She left this port on the 24th October, 1942, to join up with the big convoy in connection with the Allied landing on the North African coast, and it was while engaged in this operation that she was attacked by enemy bombers, and after a gallant action by the members of the crew she was torpedoed off Cape Carbon, North Africa, on the 11th November, 1942. Fortunately, no lives were lost, and several members of the crew were awarded decorations for their gallant service.

"Limerick"

This was the last ship lost as the result of enemy action, on the 26th April, 1943. The "Limerick," of 8,724 gross tons, was built at Port Glasgow in the year 1925 to the order of the Union Steam Ship Co. of New Zealand, Ltd. Although this ship was registered at London, she had been trading on New Zealand articles of agreement since the year 1935 between New Zealand, Australia, and North American west coast ports and carried a New Zealand crew of fifty-seven. She was a steel refrigerated cargo-ship, being taken over by the Ministry of War Transport in October, 1940, and carried many valuable cargoes during the war period. Unfortunately, two lives were lost when the ship was torpedoed off the Australian coast.

HOSPITAL SHIP "MAUNGANUI"

This veteran of two world wars was built at Govan, Scotland, in the year 1911, of 7,527 gross tons, was employed for the first few years in the old horse-shoe run between New Zealand and Australia. At the outbreak of World War I she was comandeered as a transport and conveyed the Headquarters staff of the Main Body, N.Z.E.F., from Wellington to Alexandria, arriving at the latter port on the 1st December, 1914. During the whole of the period of the 1914–18 War she made numerous voyages as a troopship, and after hostilities had ceased she resumed her running between New Zealand and Australia. In January, 1941, Government decided to take this ship over for a hospital ship, and as such she commenced her first voyage from Wellington on 21st April, 1941. In all she made nine voyages from Wellington to Suez, four to Italy and Mediterranean ports, and one voyage to Glasgow from Italy, one to the island of Leyte (Philippines), one to Hong Kong and Manila, and her last voyage as a hospital ship was made to the United Kingdom, from which she returned to Wellington on the 23rd March, 1946. The "Maunganui" was well worth the cost of converting her to a hospital ship, as she was instrumental in conveying large numbers of seriously wounded men in comfort to their homeland with a minimum of inconvenience and delay. She is at present making a further trip to the United Kingdom not as a hospital ship, but as a transport for the purposes of conveying the New Zealand contingent for the Victory Celebrations. This vessel carried 10,000 patients on seventeen voyages as a hospital ship and steamed 400,000 miles.

BARQUE "PAMIR"

The four-masted barque, "Pamir," was built at Hamburg in the year 1905, is of 2,796 gross tonnage, and has had a most eventful career. During the 1914–18 War period she was captured from the Germans and handed over to the Italians. Later she was again acquired by the Germans, who sold her to Captain Ericson, of Finland, and who was the owner of a fleet of twelve sailing-ships principally engaged in carrying grain cargoes from all parts of the world. In the year 1931 "Pamir" dead-heated for first place in the annual sailing-ship grain-cargo race from Australia to the United Kingdom. On the 29th July, 1941, the ship arrived at Wellington from the Seychelles Islands with a cargo of guano with the intention after discharge to return to Seychelles to load again for New Zealand. The crew comprised fourteen Finns, including the master, one Swede, seven New Zealanders, and one English seaman. At the time of her arrival relations, although strained, had not been broken off with Finland and consequently it was not possible to seize the ship as a prize, and the United Kingdom authorities suggested that Government should continue to detain the ship by administration means. Later instructions were received to seize the ship in prize. The Prime Minister directed the Hon. Minister of Marine on 13th October, 1941, to arrange for officers of the Marine Department to consult with the management of the Union Steam Ship Co. of New Zealand, Ltd., with a view to getting the "Pamir" into commission again at the earliest opportunity. On the 6th January, 1942, the ship was taken over by an officer of the Marine Department on behalf of the Crown and arrangements were made to get the ship ready for sea. The Union Steam Ship Co. of New Zealand, Ltd., was appointed managing agent for the Government, and after several alterations to the crew's quarters had been effected and the ship loaded she commenced her first voyage for Government on the 30th March, 1942. In all to date she has made six round voyages from Wellington to San Francisco and two from Wellington to Vancouver and has carried valuable cargoes each way.

NEW ZEALAND MERCHANT SEAMEN

The record of this Department's war activities would not be complete without a measure of appreciation and thanks to New Zealand merchant seamen, who carried on for the war period without a single hold-up of traffic. With fifty-five small trading ships taken off our coast for war purposes, an already overloaded coastal traffic was asked to carry a double load, calling for a quick turn round of vessels and their retention at sea for every hour possible. The Marine Department co-operated with shipowners in arranging running surveys where necessary and extending the provisions of the Shipping and Seamen Act to the utmost. This increase in the use of vessels spelt hardship to the masters and crews of the vessels, in that normal periods in their home ports were vastly curtailed, but this position was accepted in a splendid spirit by the men concerned.

SHIPPING AND SEAMEN

During the six-year period of the war an average of 161 ships were employed in the coastal and overseas trades (exclusive of ships employed in river and extended-river limits), on which were employed an average of 2,676 men, exclusive of the masters of such ships. Owing to the menace of surface raiders and submarines, early in the war period the Department instituted a dual system of keeping a record of seamen. As well as keeping an individual record of seamen, an alphabetical list of ships was kept showing the names of each seaman employed on each ship. The idea of the latter record was if a ship were lost or overdue a ready reference to the members of the crew would be immediately available. Fortunately, it was required on only a few occasions. In the middle stages of the war there was an acute shortage of qualified seamen, but this was gradually overcome. During the whole period of the war the manning of ships was singularly free from any disputes or hold-ups and the seamen are deserving of commendation for the way in which they kept the ships running.

G.S.S. "MATAI": CABLE-LAYING OPERATION

Of the many and varied duties the "Matai" is called upon to perform, submarine cable work, because of its importance to the community, possibly takes pride of place.

The largest cabling operation ever undertaken by the Post and Telegraph Department was successfully carried out by the "Matai" under the command of Captain W. R. Webling during the early months of 1945.

The vessel was adapted for cable work early in February, and by 21st April the new coaxial cable from Lyall Bay to Blind River had been laid. Subsequent tests proved the work had been well and truly done.

Later the four-core telephone cable laid in Cook Strait in 1927 was recovered, reconditioned, and then laid from Oreti Beach to Lee Bay, in Stewart Island, providing additional speech channels linking Stewart Island to the New Zealand telephone and telegraph systems.

POST-WAR ACTIVITIES

The foregoing has traversed the major and additional activities of the Department during the war years, and for the latter part of the financial year under review the Department's officers have been busy in getting down to details of post-war reconstruction due to war activities and to progress made in certain spheres during those war years. To take one aspect of progress: navigational aids have improved wonderfully by the use of radar, which in itself is only in the embryo stage. Towards the end of the year Captain Whiteford, Nautical Adviser to the Department, proceeded with Dr. E. Marsden, Secretary, Scientific and Industrial Research Department, to London to a Radar Conference to ensure that the latest developments for radar would become known to New Zealand navigators and shipowners and be available to assist in safe navigation on our shores. It may well be that navigation by radar assistance will revolutionize our preconceived ideas of navigational aids, and it is hoped that "radar pictures" will be available through instruments which will have a comparatively low cost. Radio-telephones have also been improved, and it is the intention of the Department to recommend the institution of a series of radio-telephone installations around our coast which will ensure that contact by radio-telephone is available at every point, provided, of course, our coastal fleet and smaller vessels are suitably equipped. Approval has already been given for the installation of a wireless-telephone at Westport, and, apart from the feature of safe navigation, this unit will provide a means of information to shipowners which will prove invaluable in running-costs of vessels.

The reorganization of the Fisheries Section of the Department is being undertaken as this report goes to press. Prior to the war our fisheries patrol vessels were so obsolete that with a maximum speed of 8 knots they were chasing offending trawlers with a speed of perhaps 14 knots. That factor is being overcome by the replacement of the patrol vessels by up-to-date and faster units and by association in fisheries patrol with the Royal New Zealand Navy. At the outbreak of war the Department's fisheries research vessel, the "Ikatere," was at once made available during completion for war purposes. She has now been reconditioned and will shortly be available for her original pursuit of fisheries research.

The fresh-water fisheries research section of the Department was practically non-existent during the war owing to the fact that our scientists joined up for military service. The necessity for this research in conjunction with the acclimatization societies of New Zealand, the Internal Affairs Department, the Scientific and Industrial Research Department, and the science section of the universities is fully recognized and a plan made with the approval of all interested parties has been formulated as this report goes to press.

LIGHTHOUSES

Work during the past year has been chiefly concerned with repairs to and maintenance of existing stations, improvements to amenities where such were practicable, and the reconditioning of stations taken back from Navy after being utilized for war

purposes. There still remains the Mokohinau station to be reconditioned and placed in commission. Lightkeeping staff was difficult to obtain during the year, this necessitating in many cases extra work by the permanent staff remaining. In this connection it is hoped that the amended scale of salaries and conditions as from 1st April, 1946, will prove more attractive to those anxious to enter this particular branch of the service. The most important works carried out during the year were as follows:—

Cape Reinga.—Completion of 30,000-gallon reservoir with pump and construction of new dwelling.

Cape Brett.—Miscellaneous repairs and the transfer of the naval water-supply to the permanent lighthouses.

Chickens Island.—Construction of battery box and transmission line for ultimate electrification.

Mokohinau.—General reconditioning of station now in hand.

Portland Island.—Modernization of dwellings, including hot-water service, bathrooms, and W.C. drainage; also construction of two 10,000-gallon water-tanks.

Cape Palliser.—General repairs to dwellings and provision of hot-water service and drainage.

Brothers.—Complete overhaul of station, including mechanical overhaul.

Farewell Spit.—Installation of adequate water-supply.

Cape Campbell.—Installation of water-supply and general improvement of residences with hot-water services, &c.

Godley Head.—Preliminary work in connection with electrification of light.

Akaroa Head.—General painting and repairs to dwellings.

Puysegur Point.—General repairs to dwellings and provision of 30,000-gallon water-tank.

NAUTICAL

Admiralty Charts

The demand for charts has not been so great as formerly, owing, no doubt, to the cessation of hostilities, with the consequential resumption of vessels to their normal trades.

It is opportune at this juncture, with the removal of security precautions, to refer to the means whereby the Department was able to meet the unprecedented demand made on its chart resources.

The war, becoming global overnight, rendered it very necessary and of the utmost urgency that ships be supplied with charts to cover practically every part of the world, but with the number of sinkings on the upward grade the problem of obtaining supplies from England became extremely acute and recourse had to be made to the production locally of photostatic copies of admiralty charts.

It is interesting to record the following statistics:—

Number of photostatic charts completed	4,432
Number of negative prints	1,737
Number of positive prints	16,010

The length of photostatic paper 18 in. wide used in the production of charts was 6·72 miles.

To appreciate the gravity of the situation it must be realized that without charts a vessel cannot proceed on her voyage, and it was therefore due to the officers of the Lands and Survey Department working in conjunction with this Department that a desperate situation was successfully overcome.

Examination of Masters and Mates

The examinations of masters and mates were held at Auckland and Wellington on ordinary scheduled dates, and at Wellington on special occasions to meet the convenience of students of overseas ships.

The examinations were conducted in a satisfactory manner, and in the case of Foreign-going Certificates in accordance with the requirements of the Imperial Ministry of Shipping.

The number of examinations, 161, shows an increase of 38 on last year's figures. The passes and failures are as follows:—

	Per Cent.
Foreign-going Certificates—	
Full pass	42
Partial pass	40
Foreign-going Certificates—	
Partial failure	17
Failures	1
Home-trade Certificates—	
Full pass	63
Partial pass	17
Partial failure	13
Failure	7

Examination in Form and Colour Vision

During the year 107 candidates were examined, of whom 7 failed.

School of Navigation

Enrolments during the year were 84 students, made up as follows: 15 Masters Foreign Going, 8 First Mates Foreign Going, 24 Second Mates Foreign Going, 4 Masters Home Trade, 15 Mates Home Trade, 2 Second Mates Home Trade, 1 Master 25-ton Cargo-vessel, 13 Masters of River Steamer, 1 Voluntary Examination Compass Deviation, 1 Yacht Master (N.Z.).

The school continues to be appreciated by students and the accommodation has been fully occupied throughout the year.

An additional room has been acquired, thus relieving the congestion which prevailed during the early period of the school's existence.

The financial assistance rendered to students by the Rehabilitation Department has been much appreciated and the effect of this assistance in relieving students of financial worries has been amply reflected in the progress made in their studies.

The beneficial results of planned courses for the various grades has been a marked success and particularly so in cases where students have undergone great privations as prisoners of war.

Two students ex "Hauraki" had been in Japanese prisons for over three years and at the commencement of their studies at the school were at a great disadvantage. The studious atmosphere and comradeship which are a marked feature of the school helped these men considerably in making a fresh start and they were both successful in obtaining their certificates.

In the near future it is hoped to expand the school by the acquisition of an additional room to be used entirely for seamanship instruction.

The school will be developed along the lines of pre-vocational training, correspondence courses, and evening classes as necessity requires, but as yet there is little or no demand for other than the orthodox day classes.

"Nautical Almanac" and Tide Tables

The forty-fourth edition of the "New Zealand Nautical Almanac" was published and issued to the general public in November.

The acute shortage of paper during the war years necessitated printing the "Almanac" in two parts, but there is every reason to hope that the volume will in the future be as formerly, in one part only, and thus restore this much-appreciated work to its full value. Unfortunately, the alteration in New Zealand Standard Time was not

made until immediately after the publication of the "Almanac," hence the necessity for applying a correction to the times given in this year's edition, but in future editions the times given will be in the newly adopted Standard Time—*i.e.*, twelve hours ahead of Greenwich Mean Time.

Radio Beacons

The programme of establishing radio beacons had to be curtailed owing to the war, but perhaps this may be a temporary advantage, as the extraordinary development of radio aids to navigation has made it advisable to delay the resumption of activities until full information is available as to the most suitable type of apparatus for the Dominion's requirements.

The Government of Great Britain decided to call a conference for the purpose of considering radar and other radio navigational aids. Representatives from the majority of countries throughout the world were invited, the New Zealand delegates being Dr. E. Marsden, of the Scientific and Industrial Research Department, and Captain W. Whiteford, Nautical Adviser to this Department.

While abroad the Nautical Adviser will visit Trinity House and several of the large seaports for the purpose of inspecting navigational aids.

Training for Sea

This is a matter which is being carefully considered by the Department, and it is hoped that as a result of several conferences attended by interested parties that finality will be reached in the near future.

The question of training for the sea is not merely confined to a matter of providing openings for youths to commence a seafaring career, but involves the actual training in the art of a seaman and then finally the placing of the lads in suitable employment with reasonable hope of advancement.

Survey of Coast

The survey which was being carried out by the "Endeavour" had to be discontinued shortly after the outbreak of war.

The survey commenced south of Castle Point near Mercury Bay and filled in the blanks in the southern part of the Hauraki Gulf which remained from H.M.S. "Penguin" in 1909.

The "Endeavour" then resumed in the northern part of Hauraki Gulf and continued to Cape Brett and the Bay of Islands.

New charts issued consequent on "Endeavour's" work are as follows:—

No. 3797: Great Barrier Island to Mayor Island, including Hauraki Gulf.
No. 3798: Cape Brett to Cuvier Island.
No. 1090: Bay of Islands and Whangarei Harbour.
No. 1512: Approaches to Port Russell.
No. 2543, Sheet 2: Mongonui Bluff to Manukau Harbour, Tutukaka Harbour to Mayor Island, including Hauraki Gulf.

The coastline from Young Nick's Head to Cape Brett is now correctly charted; likewise from the 100-fathom line inwards to the coast.

The Department has approached the Admiralty regarding the resumption of the survey and the matter is under consideration.

Inspection of Compasses

During the year the inspection of ships' compasses was carried out satisfactorily by the Department's Inspectors.

With the removal of danger from magnetic mines, the need for de-gaussing will become less and less, and in the near future it is hoped that the compasses of ships will require adjusting from the ordinary disturbing forces only.

Sea-rescue Service

Arising out of the loss of the vessel "Hope" from Port Chalmers and with the purpose of setting up an organization to arrange immediate action for relief in such cases in future, a conference was held in Dunedin at which representatives of the Harbour Boards, Air Department, Seamen's Union, the Fishermen's Society, and the Marine Department were present.

The conference investigated the various methods of assisting overdue vessels and other matters involving life-saving appliances, survey seaworthiness, &c., and a complete scheme of "sea-rescue service" was inaugurated. The intention is to apply the recommendations of the Dunedin conference to other parts of the Dominion so that in the event of a marine disaster the "sea-rescue service" will be able to swing into action at very short notice.

Notices to Mariners

During the year forty-one notices to mariners were issued, but where the subject-matter was of immediate urgency the facilities of the broadcasting stations were used.

ENGAGEMENT OF SEAMEN

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

SICK AND INJURED SEAMEN

The total amount paid by shipowners to sick and injured seamen, under the provisions of the Shipping and Seamen Act, 1908, and amendments, was £16,215 17s. 2d., as against £11,606 10s. 4d. for the previous year, an increase of £4,609 6s. 10d.

REGISTRATION OF SHIPPING

On the 31st December, 1945, there were on the register of vessels in the Dominion 45 sailing-vessels of 3,553 net tons register, 127 steamers of 61,606 net tons register, and 279 motor-vessels of 18,770 net tons register, as compared with 45 sailing-vessels of 3,553 net tons register, 127 steamers of 61,900 net tons register, and 280 motor-vessels of 18,770 net tons register at the end of the previous year.

The number of seamen employed on board was 2,174, as compared with 2,308 for the year 1944.

PROSECUTIONS

Prosecutions during the year under the various Acts administered by the Department numbered 51, as against 26 during the previous year. The prosecutions during the past year comprised 47 for breaches of the Fisheries Act, 2 the Inspection of Machinery Act, and 2 the Shipping and Seamen Act.

The increase in prosecutions under the Fisheries Act is due to the increased activity by the Department on fisheries patrol.

HARBOURS

At Dargaville the harbour services have been maintained in good order by the Department, and at Picton a satisfactory service to shipping has been provided, this including the maintenance of lights in the Cook Strait area, which is always a hazardous undertaking.

At Westport there are two factors: (1) the maintenance of the port at normal standards to ensure availability of coal to North Island industries, and (2) the improvement of the port for the future. The latter factor has been well provided for by the decision of Government to bring out two eminent harbour engineers from

England to report on the ports of Greymouth and Westport. The first factor has been implemented during the past year by the appointment by Government of a Harbour Advisory Committee and as dealt with in the report of the Engineer-Manager, Mr. A. C. Bascand, as follows :—

During the first three months of the year—that is, April, May, and June, 1945—conditions on the bar at the entrance to the port were very unfavourable, noticeably so when compared with the very favourable condition which obtained over the later months at the close of the previous year. For instance, over the last three months to 31st March, 1945, the average of high-water depths on the bar (at which stage laden vessels leave the port), and which depths therefore govern the effective working of the port, such average was 22 ft. 9 in., with the average least low-water depth during the period of 12 ft. 9 in.

As comparison, during the first three months of the year now to be reviewed, however, the average of high-water depths was only 19 ft., with 8 ft. 6 in. only as the average of least low-water depths.

This adverse change in circumstances resulted from a frequency of light freshes in the river, followed by a period of strong south-westerly actuated currents along the coastal foreshore and across the entrance, conditions which invariably result in shoaling on the bar. In June a period of favourable weather permitted intensification of dredging by the suction dredgers "Eileen Ward" and "Rubi Seddon" on the bar area, from which, together ultimately with a strong fresh in the river, the very appreciable improvement to low-water depth on the bar of 15 ft. 6 in. resulted by mid-July, and a return to 22 ft. 9 in. as the average of high-water depths over that month.

During the next few months, influenced mainly by prevalence of northerly weather conditions together with steady dredging, bar depths held satisfactorily, but a turn to south-westerly weather, inducing appreciable easterly sets past the entrance at time of low river flow, resulted in deterioration of depths. Predominately fine south-westerly weather continued over the remainder of the year, which conditions do not favour ready reduction of the bar. By January the depth on the bar had fallen to 19 ft. 0 in. average for the month of high waters, as against 23 ft. 4 in. for August, and with the lowest low-water depth 9 ft. 0 in., as against 15 ft. 6 in. in July.

By the close of the year—*i.e.*, as at 31st March—the low-water depth improved to 12 ft. 0 in.. and the average of high waters to 20 ft. 6 in., which latter has still further improved.

The port's two bar suction dredgers, "Eileen Ward" and "Rubi Seddon," worked all possible time throughout the year, and together lifted just on 520,000 cubic yards of littoral sand from the bar area, as against some 490,000 yards during the previous twelve months.

The dredgers mentioned, in addition, when conditions were not suitable for working on the bar, lifted from the river reach from the entrance to the wharves some 177,700 cubic yards of sand and shingle, and the bucket dredger, "Maui," lifted just over 88,000 yards of shingle from the berthage area in the port. In all the total lifted by the three dredgers and carried to sea to dump during the year was 785,900 cubic yards, as against 765,000 cubic yards during 1944–45, and a total only slightly exceeded during one year (1940–41) since 1930.

Taken over the year as a result of poorer depths during the majority of months the mean of high-water depths was rather less than over the previous year, being 20 ft. 8 in., as against 21 ft. 4 in. Further comparisons are included in the following tabulation, together with corresponding statement of the number of days in the respective comparative years on which various depths of water obtained on the bar :—

NUMBER OF DAYS ON WHICH DEPTH OBTAINED ON THE BAR AT HIGH WATER

Depth	1917.	1924.	1927.	1931.	1939.	1942.	1944.	1945.	1946.
14′ to 16′ ..	..	..	..	..	..	..	1	..	2
16′ to 18′ ..	..	..	..	25	2	1	39	23	35
18′ to 20′ ..	..	4	..	132	88	33	96	69	124
20′ to 22′ ..	..	110	26	165	149	181	150	142	117
22′ to 24′ ..	22	162	112	43	115	143	75	87	62
24′ to 26′ ..	143	86	125	..	11	7	5	43	24
26′ to 28′ ..	137	4	79	..	..	..	..	1	1
Over 28′ ..	63	..	32	..	..	..	..	..	..
Mean for year	25′ 3″	23′ 2″	24′ 10″	20′ 2″	21′ 3″	21′ 9″	20′ 8″	21′ 4″	20′ 8″

NOTES.—In the foregoing tabulation the years quoted are as at 31st March. In the history of the port 1917 was the year of best depth conditions. This was during the year following completion of the last breakwaters extension plus a period of very intensive dredging.

The good return of working depths for 1927 was the result of many floods in the river that year, topped by the exceptionally great flood of 5th November, 1926.

The figures for 1931, except for 1934 (depression circumstances), represent the poorest working depth conditions for over forty years.

During the year under review 316 (301) vessels aggregating 198,643 (211,449) tons net register worked the port, the figures in parentheses being those corresponding for the previous year. In all, the in and out vessels for the year totalled 633 (603) with total net register tonnage of 398,565 (426,162).

The trade of the port is essentially an export one, and in this direction the total of coal shipments was 385,300 tons, a slight decrease on that of 402,000 for the preceding year.

In the past bunker-coal trade in respect to overseas and intercolonial cargo-vessels was a feature of the port's activities, though this fell away very considerably after the entry of Japan into the late war, and last year there was no such trade whatever.

Timber, another product from the district, was shipped to the total of 1,500,000 super feet, as compared to 400,000 super feet in 1944–45.

The following records of some annual shipments of coal from the port, together with the corresponding annual means of high-water depths on the bar, might be of some interest :—

Year.	Mean of High Water Depths on Bar.	Total Quantity of Coal shipped.
	Ft. in.	Tons.
1931	20 2	513,500
1939	21 3	426,400
1942	21 9	487,500
1943	21 8	446,500
1944	20 8	401,300
1945	21 4	402,000
1946	20 8	385,300

During the years ended 31st March, 1931 and 1944, the working depths month by month were somewhat poorer than during the past year, yet, compared with the latter year, the total coal shipments fell to the extent of 16,000 tons and 128,000 tons as compared with 1931.

In my report presented last year I mentioned that the administration is by no means unconcerned in regard to the circumstances which, with increasing frequency, result in periods during which shoaling of the bar at the entrance to the port occur, with the consequent considerable handicap to shipping working the port and resultant disruptions in transport of coal to North Island ports.

With this in mind the Hon. Minister took steps during the year since to secure the services of two eminent British engineers to visit New Zealand and investigate at the port (and at Greymouth also) the circumstances and make recommendations as to works considered necessary to be carried out for purposes of ensuring permanent adequate depth of water at the entrance, and improvements generally necessary to restore the harbour to a condition suitable to ensure all possible efficiency in operation of the port to the maximum of ability in the years to come.

At time of indition of this report it is gratifying to be able to record that the Hon. Minister's efforts have been brought to fruition, in that such engineers, Mr. E. J. Buckton and Mr. A. J. Clark, senior members of the well-known and long-established engineering firm of Messrs. Rendel, Palmer, and Tritton, of Westminster, with a wide experience of harbour matters, and particularly bar harbours, have arrived in this country to carry out their investigations. For their preliminary information the Department's officers, also the Commissioner of Works' Office, assembled and collated much information relative to the establishment and progression of the harbour and subsequent circumstances and changes leading to the present position.

During the year, also, the Hon. Minister obtained appointment of a Harbour Advisory Committee, comprised of reputable men representing all interests of the district, the function of such Committee being to consider on the spot and refer and recommend to the Hon. Minister and the Department suggestions and proposals in general for improvements to the port and any other aspects which may be allied with the harbour as a whole.

It is pleasing to record that the members of the Committee have met on numerous regular occasions, and continue to do so, and have earnestly considered and referred many matters of nature relevant to betterment of the functioning of the port, and I have no doubt that by the time of my next annual report I will be able to specifically refer to definite and concrete achievements resultant from the Committee's activities.

EXAMINATION OF MARINE ENGINEERS

During the year 237 candidates were examined for Marine Engineers' Certificates of Competency at the various centres throughout the Dominion. Of these, 58 were examined for First- and Second-class Certificates of Imperial Validity, 58 were examined for Third-class Marine Certificates, and 20 were examined for First- and Second-class Coastal Motor Certificates of New Zealand Validity. Candidates sitting for First-class

Imperial Validity Certificates total 29, of which 11 passed for certificates, 6 passed Part "A," and 12 failed. Candidates sitting for Second-class Imperial Validity Certificates total 29, of which 7 passed for certificates, 11 passed Part "A," and 11 failed.

Candidates for the Third Marine Examination total 58, of whom 34 passed and 24 failed. Of the 34 who passed, 24 passed at the first attempt and 10 at the second attempt.

Candidates for the Coastal Motor Examination total 20. Of these, 1 passed for First-class Certificate, and 16 passed and 3 failed for Second-class Certificate.

Summary

(1) First- and Second-class Examination for Imperial Validity Certificate.—60·3 per cent. passed and 39·7 per cent. failed.

(2) Third-class Examination.—58·7 per cent. passed and 41·3 per cent. failed.

(3) Coastal Motor Examination.—85 per cent. passed and 15 per cent. failed.

The remaining 101 candidates were examined for River Engineer and Restricted Limits, P.V.O.S. Certificates of Competency. Of these, 7 passed for River Engineer; 88 passed and 6 failed for Restricted Limits Examination.

In the course of the year there has been a constantly increasing volume of inquiries regarding qualifying workshop time for returned servicemen who have performed trade work. In all cases the time so served has been considered to be continued apprenticeship service and each apprentice who desired examination on the completion of five calendar years' combined service has been examined for the appropriate certificate for which he is qualified to sit.

During the latter part of the year there were numerous requests for special examinations for candidates serving on home-trade articles who could not get leave at schedule examination dates. These requests were met whenever possible.

Summary, 31st March, 1946

	Passed.	Failed.	Total.
R.L., P.V.O.S.	88	6	94
River Engine Steam	7	..	7
Second Coastal Motor	16	3	19
First Coastal Motor	1	..	1
Third Marine	34	24	58

	P.P.	Failed.	N.P.	
Second Marine	11	11	7	29
First Marine	6	12	11	29
				237

SURVEY OF SHIPS

Survey certificates were issued during the year ended 31st March, 1946, for 2 steam and 5 motor foreign-going ships, 26 steam and 69 motor home-trade ships, and 33 steam and 262 motor restricted-limits ships and launches.

Equipment certificates were issued for 16 foreign-going, 17 home-trade, and 4 restricted-limits ships, all of which carry certificates of class issued by classification societies.

Survey and equipment certificates issued for the year ended 31st March, 1946, total 434, as compared with a total of 389 issued for the year ended 31st March, 1945.

Surveys were also made in 247 cases for seaworthiness, efficiency of equipment, tonnage, radio-telegraphy, &c., as against 221 such cases surveyed during the previous year.

Forty-two of these surveys made in 1945-46 were in respect of overseas ships not registered nor normally surveyed in the Dominion.

Two wooden motor-ships built by the New Zealand Government for the United States authorities for the Pacific war zone are now being prepared for entry into the New Zealand coastwise trade. These vessels, "Rosalie" and "Aranui," have each a cargo capacity of 250 tons. They have been chartered to the Northern Steamship Co., Ltd.

Two steel motor-vessels, "Kanna" and "Katui," have been built in the United Kingdom for the Union Steam Ship Co. of New Zealand, Ltd., and they will shortly enter the New Zealand coastwise trade.

A large turbo-electric steamer, "Hinemoa," is also on the stocks in Great Britain, and when completed at about the end of 1946 will enter the Wellington-Lyttelton express service

Other ships are also on order for the New Zealand local and Pacific trades to replace old ships either lost during the recent war or no longer economically serviceable.

An extensive repair was made in the Wellington Floating Dock during the year to the Union Co,'s steamer "Karepo," which was seriously damaged through the underwater hull striking a submerged object in the course of a coastwise voyage.

Demands by ships for accommodation at Calliope Dock, Auckland, continue to be heavy. The Docking Committee have, as in the war years, controlled New Zealand dock allocations throughout 1945–46.

The shortage of ships' officers in general, and particularly the unsatisfied demand for engineer officers, has necessitated the granting of temporary permits to some uncertificated officers to ensure that ships will continue in operation.

Continual attention is being given by the Department to maintain and improve the standard of accommodation in New Zealand ships for officers and ratings, and this object has been furthered by the withdrawal of gunners from New Zealand ships, thus providing crew spaces additional to pre-war accommodation.

Discussions have been held with the shipowners and the maritime unions to secure improved heating and lighting of crew's quarters when ships are in port. Technical details are being worked out to use shore-generated electricity or storage batteries in lieu of the limited electric-power supply of most ships' own generating plants.

Discussions have also taken place in respect of adopting a more rational and scientific basis for the assessment of deck cargoes, in which the important factors of the ship's structural fitness and stability are now taken into account before a deck-cargo license is approved.

Since the conclusion of hostilities in the Pacific Ocean the Naval Board have authorized the removal of guns, armour, and other special equipment for defensively equipped merchant ships on the New Zealand register, and the work of removing such D.E.M.S. war equipment and restoring ships to pre-war condition has been steadily proceeded with under Marine Department supervision in such a way as to avoid unnecessarily immobilizing the ships.

Small vessels used for coast defence by the naval authorities are also being reconditioned and returned to their former owners or otherwise disposed of.

INSPECTION OF MACHINERY

Steam Boilers, Air-receivers, and other Unfired Pressure Vessels

The following statement sets out the number of inspections made during the year ended 31st March, 1946, of fired boilers, air-receivers, and other unfired pressure vessels, with the corresponding figures for 1944–45 shown also :—

	1945–46.	1944–45.
Fired boilers	4,551	4,499
Air-receivers	4,003	3,491
Other unfired pressure vessels	6,207	6,607
Total inspections	14,761	14,597

The inspections include 138 new power boilers, agregating 728 horse-power, manufactured in the Dominion, and 13 new power boilers, aggregating 631 horse-power, imported from abroad.

The inspections also include 45 new air-receivers made in the Dominion and 18 made abroad, and 367 new unfired pressure vessels, other than air-receivers, made in the Dominion and 120 made abroad.

The fusion welding process of joining metals continues to progress in the field of boiler and pressure-vessel construction, this progress being marked by a concurrent decline in the time-honoured method of joining metals by rivets.

Large unfired steam-pressure vessels used as digesters for processing food products have been built in New Zealand during 1945 for the first time of all-welded construction. Welded digesters possess the important advantage that there are no lapped plates or rivet heads to harbour the acids which, in riveted digesters, have hitherto caused rapid and severe corrosion.

Designs have been submitted and approved for the construction of water-tube boilers of 600 lb. p.s.i., which is the highest working pressure which has as yet been proposed for boilers intended for New Zealand The boilers are of the water-tube flash type and would be of all-welded construction. Increased attention is being given to the control of the quality of feed water in boilers of the types where the usual systems of feed-water control are inadequate.

New Zealand Land Boiler Rules have been reprinted with amendments, and progress has been made in the framing of a comprehensive code of rules covering fired boilers and all types of unfired pressure vessels.

Printed notices drawing the attention of steam-users to the fundamental principles of economy in steam-production have been distributed by the Department to encourage methods of efficient combustion which effect savings in the consumption of fuels in general, and particularly coal.

Machinery

The following statement shows the number of machines, machinery plants, lifts, cranes, hoists, and tractors inspected during the year ended 31st March, 1946, with the corresponding figures for 1945 also shown :—

	1945–46.	1944–45.
Machines driven by steam power in 1,604 plants	8,323	8,053 (1,640 plants)
Machines driven by power other than steam in 11,618 plants	83,291	81,155 (10,806 plants)
Electric-power-supply stations	140	129
Lifts	3,563	3,331
Cranes	571	529
Hoists	1,950	1,885
Tractors	163	351
Total machinery inspections	98,001	95,433

There has been an increase of 2,568 machinery inspections made during 1945–46 over the previous year, including 47 cranes and 25 lifts inspected for the first time, and the revenue from the machinery-inspection service again shows an increase over that of the previous year.

Plans of all new boilers, air-receivers, and other unfired pressure vessels, and of new cranes and lifts, have been examined during the year, including the plans of a 175-ton crane to be built in the United Kingdom for the Lake Tekapo Power-station.

Accidents reported during the year ended 31st March, 1946, arising from boilers, cranes, lifts, hoists, and general machinery inspected by the Inspection of Machinery Branch number 114, of which 7 were fatal. The circumstances attending every reported accident, fatal and non-fatal, were investigated by the Department to determine the cause of the accident and to devise means of preventings it repetition. Improvements have been effected in the mechanical guarding wherever practicable and in the removal or mitigation of mechanical hazards likely to cause accidents. Attention is being actively given by the Inspectors of Machinery to the education of machine owners and users in the practice of "safety first" principles by the vigorous pursuance of the safety poster campaign instituted in 1944 and by the efforts of Inspectors of Machinery in personal discussion of safety problems with operators and managers during routine inspections of machinery.

Of the fatal accidents reported, nearly one-third were caused by circular saws. These machines also accounted for one-fifth of the non-fatal accidents reported in 1945-46. A determined effort to improve the efficiency of the guarding of all types of power-driven woodworking saws was made in 1945 by the publication of departmental instructions which describe and illustrate practical means whereby power saws can be efficiently guarded.

Of the 7 fatal accidents reported, 2 occurred from circular saws, 2 from lifts, and 3 from the entanglement of the clothing of the victims with revolving shafts.

In the following table is given an analysis of the fatal and non-fatal machinery accidents which occurred during the year, indicating the principal machines and industries concerned :—

Machine and Industry Analysis of Accidents

Description of Machines.	Industries.											Totals.	
	Woodworking.	Textile.	Refrigeration.	Printing.	Metal-working and Engineering.	Laundry.	Butchery.	Confectionery and Bakery.	Boxmaking.	Other Industries.	Total Accidents (Machines).	Fatal.	Non-fatal.
Circular saws	20	..	1	..	..	..	..	..	..	..	21	2	19
Planers	7	..	..	..	..	..	..	..	..	..	7	..	7
Shapers	7	..	..	..	..	..	..	..	..	..	7	..	7
Power press	..	..	..	7	11	..	..	..	1	5	24	..	24
Guillotines	..	..	..	..	2	..	..	..	..	..	2	..	2
Laundry machinery	..	..	..	..	..	..	..	..	..	..	..	..	..
Cranes and hoists	..	..	..	..	1	..	..	..	..	1	2	..	2
Lifts	..	..	1	1	..	..	..	..	1	1	4	2	2
Belting	2	..	3	..	..	..	..	..	..	..	5	..	5
Shafting	1	1	..	..	5	..	..	1	..	1	9	3	6
Gearing	..	1	..	..	..	..	..	2	1	..	4	..	4
Mincers and other cutting-machines	..	..	1	..	..	..	..	1	..	4	6	..	6
Other	2	4	..	..	6	..	..	3	..	8	23	..	23
	39	6	6	8	25	..	..	7	3	20	114	7	107
	Total accidents in each industry										Grand totals		

GENERAL HARBOUR REGULATIONS

For the year ended 31st March, 1946, 301 accidents were reported under Regulation 103 of the General Harbour Regulations. These accidents were suffered by persons engaged in the loading and unloading and repair of ships, and 5 accidents were fatal. The number of accidents for the previous year ended 31st March, 1945, was 276, of which 8 were fatal.

Of the 5 fatal accidents reported during 1945–46, 2 were caused by the victims inadvertently driving cargo-hauling motor-vehicles over the side of wharves into the water below. In two other cases the primary cause of death was fracture of lifting gear, and the fifth death was due to a fall down a ship's hold.

The following is an analysis of the accidents, and their causes:—

Handling goods	118
Persons slipping or falling	65
Persons struck by swinging or falling loads	69
Persons stepping on or striking fixed objects	3
Contact with power-driven machinery	1
Failures of gear	25
Not otherwise classified	20
Total	301

Emergency Regulations gazetted in 1942 to facilitate the speedier unloading of certain types of United States merchant ships have now been revoked with the passing of the conditions calling for the Emergency Regulations.

The maximum load which it is now permissible to lift on a single cargo whip is therefore reduced to 2 tons 12 cwt., in accordance with the General Harbour (Safe Working Loads) Regulations.

NEW ZEALAND STANDARDS INSTITUTE

The Department was again represented on the Executive Committee of the Standards Council and the Mechanical Engineering Divisional Committee, and a departmental representative attended Committee meetings throughout the year.

Draft specifications of Standards originating in New Zealand were examined, commented upon, and, where desirable, recommended for adoption as New Zealand Standards.

Consideration has been given also to some British Standard Specifications, and those adapted to local conditions have also been recommended for adoption as New Zealand Standards.

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

Examinations for certificates issued under this head were conducted at intervals during the year by Inspectors of Machinery throughout the country.

For the year ended 31st March, 1946, the candidates who presented themselves for examination totalled 478; of these, 392 passed and 86 failed, as compared with 354 successful candidates and 75 failures of the previous year.

In addition to the 392 certificates issued in 1945–46 to successful candidates, 88 certificates were issued as replacements, &c., under the provisions of sections 53, 59, and 62 of the Inspection of Machinery Act, 1928.

There is still a shortage of certificated engine-drivers, despite the increased number of certificates issued during 1945–46, and the shortage of certificated drivers has compelled the granting of permits to enable uncertificated drivers to take charge temporarily where they are favourably reported upon by the Inspectors of Machinery concerned.

An analysis of the certificates issued during the year, with the corresponding figures for 1944–45, is given hereunder :—

Class.	1945-46.	1944-45.
Service—		
First-class Engine-driver	8	10
Competency—		
Extra First-class Stationary Engineer	2	..
First-class Engine-driver	30	38
Second-class Engine-driver	234	199
Locomotive and Traction	57	62
Locomotive-engine Driver	7	5
Traction-engine Driver	15	16
Electric-tram Driver	116	93
Electric-tram Driver (One-man Car)	9	7
Steam-winding-engine Driver	2	1
Electric-winding-engine Driver	..	2
	480	433

Appended to this report is a statement of the number of candidates examined at each examination centre for the year ended 31st March, 1946, showing the number of successful and unsuccessful candidates.

STAFF

During the year under review the effort of the staff of the Marine Department, entailing as it did a quick change-over from wartime to peacetime economy, has been a meritorious one, made more arduous by the difficulty in obtaining casual employees and by the retirement of executive officers of the Department. In the latter category, Mr. B. W. Millier, Acting Secretary to the Department, retired on superannuation after over forty years' meritorious service. Appreciation of his lifelong work was conveyed at meetings of his associates and shipping interests. At the latter end of the year Messrs. G. E. Breeze, Chief Surveyor of Ships and Chief Inspector of Machinery, and A. E. Hefford, Chief Inspector of Fisheries and Director of Fishery Research, also retired on reaching the age limit. To these officers also is conveyed appreciation of a long and splendid record of service to the Department in particular and to the community in general.

FISHERIES

An abridged report on the working of the Fisheries Branch of the Department follows hereon.

I have, &c.,
W. C. SMITH, Secretary.

REPORT ON FISHERIES FOR THE YEAR ENDED 31ST MARCH, 1946

At the outset of this report it must be made clear that all the statistical data is for the calendar year 1945. This follows the practice adopted in 1944, for reasons given in last year's annual report, and it has been found that the adoption of the calendar in place of the financial year has overcome many difficulties of tabulation, bringing, as it does, the licensing year and the statistical year into line. As this report is mainly composed of statistics, with the balance of the text based on the figures, it becomes in effect a fishery report for the year 1945, although it is incorporated in the departmental report, which is for the year ending 31st March, 1946.

The estimated total quantity and value of the principal classes of fishery products marketed in the year 1945 are as follows :—

	Quantity.	Value. £
Wet fish	331,773 cwt.	558,404
Whitebait	8,698 cwt.	97,418
Oysters—		
Dredged	76,038 sacks.	57,028
Rock	5,476 sacks.	9,583
Mussels	13,156 sacks.	4,607
Crayfish	15,924 cwt.	27,449
Toheroa (canned products)	85,682 lb.	5,003
Whale-oil	750 tons.	21,500
Total values		£780,992

The detailed landings are summarized in Tables I to IX (pp. 44 to 53).

The total landings of wet fish show an increase of 23,536 cwt. over the previous year's total of 308,237 cwt., while the total value has increased by £35,450. The quantity of oysters dredged from Foveaux Strait has increased by 12,089 sacks, and a decrease of 910 sacks is shown for rock oysters. The crayfish total is up by 2,074 cwt., but the mussel figures show a decline of 2,234 sacks.

In the most important group, the "wet fish"—*i.e.*, all the ordinary fishes caught by all methods of sea fishing—the annual totals for successive years are as follows :—

Year.	Total Quantity. Cwt.	Total Value. £
1934–35	331,415	294,267
1935–36	363,448	313,106
1936–37	363,128	360,406
1937–38	355,687	413,516
1938–39	356,114	424,643
1939–40	339,231	416,480
1940–41	328,594	440,308
1941–42	326,863	458,393
1942–43	311,971	442,976
1943–44	294,445	489,268
1944	308,237	522,954
1945	331,773	558,404

The total weight of fish caught is starting to climb up again, and it is hoped that the 1946 total will be up to that of 1935–36, which can be taken as a good pre-war year. With the return of those units still on service or undergoing overhaul and reconversion after war service prior to resuming their normal calling, it is felt that the position in regard to fish-supplies will rapidly become normal.

As last year's report contained an exhaustive comparative analysis of the fishing statistics over a period of years, there is no point in again labouring the position after so short an interval. It will be seen that most of the tables offer comparative figures. In 1946 or 1947 when the trade has settled down after the disturbed war years, another analysis of the situation can be made which may be of some value to those interested in the industry.

Fishing-vessels and Personnel

The number of licensed fishing-vessels operating in 1945 was 721, the same as 1944. It should be remembered, however, that the total number is not the important factor, but the type and size of the vessels engaged. It is necessary, therefore, to check these details as given in Table I before drawing the conclusion that the fishing fleet is of the same fishing power as in the previous year.

From the table it will be seen that the Danish-seiners have dropped by 2: this is accounted for by vessels wrecked and not yet replaced. Steam-trawlers—the heaviest catching units of all—have increased by 1, due to the return of one of the Auckland trawlers from service; motor-trawlers have increased by 2, and 11 vessels were engaged in part-time trawling and part-time line-fishing; these are, in effect, additional to the trawler fleet, as in the old tables they would have been included as part-time trawlers instead of being placed in a separate category.

Whole-time net and line boats have increased from 168 to 211, and the part-time ones decreased to 278—to this figure one should add for comparative purpose the 11 part-time trawlers which engaged in line-fishing—leaving a gross decrease of 17 vessels. This is offset by the fact that several vessels in this class have been replaced by more up-to-date and efficient units. The oyster-dredging and mussel-dredging fleets remain the same as before at 9 and 3 respectively. The whole-time crayfishing vessels are the same, but a decline of 6 in the part-time section of this fishing is to be noted.

The whole-time fishermen increased from 711 to 877 and the number of part-time men declined from 641 to 536, an overall gain of 61. It can be stated here that 1946 will show a steady increase in both fishing-vessels and personnel. The time-lag after the cessation of hostilities has had the effect of putting off the resumption of fishing units from service and the return of personnel until the 1946 licensing year.

A number of fishing-vessels for which licenses will be issued are under construction and, it is hoped, will be in production in 1946. The supply of high-powered Diesel engines suitable for fishing-boats is still difficult, and is a major problem in the construction of new units and in the maintenance of the older vessels at their maximum efficiency.

Fish Landings

The total landings of fish and shell-fish landed at the various ports are shown in Table II.

Snapper, as always, is the most abundant species and the weight landed and the percentage in relation to the total weight are approximately the same as last year, being 109,009 and 32·86 per cent., as against 109,013 and 35·37 per cent. in 1944. Tarakihi shows another increase from 44,980 cwt. to 63,829 cwt., now providing 19·24 per cent. of the total landings, as against 14·59 per cent.

There has been a slight drop in the groper (hapuku) landings from 21,901 cwt. to 21,672 cwt., with a corresponding decline in the percentage of the total from 7·11 to 6·53. A decline of such order is, however, within the orbit of the variations from season to season and is not a matter of great concern.

The blue cod caught remains fairly steady at 19,160 cwt., representing 5·78 of the total.

The flatfish total (flounders, soles, brill, and "mixed flats") shows a substantial increase of 3,558 cwt., from 31,610 cwt. to 35,168 cwt., the soles accounting for the major part of the increase.

The relative position of the species of lesser importance can be seen in the table which follows. This table gives the weight and value of each species caught for the years 1944 and 1945. The main point of interest is that snapper and tarakihi combined furnish over 50 per cent. of all the fish caught.

Kind or Class of Fish.	Quantity.				Value.			
	Cwt.		Percentage of Total.		£		Percentage of Total.	
	1945.	1944.	1945.	1944.	1945.	1944.	1945.	1944.
Snapper	109,009	109,013	32·86	35·37	147,685	143,121	26·45	27·37
Tarakihi	63,829	44,980	19·24	14·59	97,007	68,902	17·37	13·18
Groper	21,672	21,901	6·53	7·11	62,446	66,795	11·18	12·77
Gurnard	20,354	17,764	6·14	5·76	21,683	21,120	3·89	4·04
Blue cod	19,160	19,069	5·78	6·19	47,288	41,680	8·47	7·97
Sole	17,990	15,095	5·42	4·90	52,671	46,820	9·43	8·95
Flounder	16,070	16,001	4·85	5·19	51,648	52,817	9·25	10·10
Barracouta	9,726	8,462	2·93	2·75	5,403	4,716	0·97	0·90
Red cod	8,971	6,331	2·70	2·05	5,956	6,289	1·07	1·20
Ling	8,202	7,628	2·47	2·47	16,879	17,565	3·02	3·36
Trevally	6,725	8,332	2·03	2·70	5,107	6,298	0·92	1·21
"Mixed rounds" ..	5,730	8,892	1·73	2·89	7,226	10,361	1·30	1·98
Elephant-fish ..	4,269	5,313	1·29	1·72	8,759	10,477	1·57	2·00
Mullet	3,517	3,096	1·06	1·01	4,015	3,571	0·72	0·68
Kahawai	2,330	2,166	0·71	0·70	1,805	1,693	0·32	0·32
Pioke	2,060	1,766	0·62	0·58	2,309	1,911	0·41	0·37
Butterfish	1,462	1,463	0·44	0·48	3,972	3,945	0·71	0·75
Sardine	1,458	4,281	0·44	1·39	1,025	3,122	0·18	0·60
Hake	1,349	1,031	0·41	0·33	3,762	2,895	0·68	0·55
Shark	1,335	..	0·40	..	1,328	..	0·24	..
"Mixed flats" ..	1,064	469	0·32	0·15	3,049	1,321	0·55	0·25
Moki	946	680	0·29	0·22	1,736	1,206	0·31	0·23
Parore	854	429	0·26	0·14	607	279	0·11	0·05
Kingfish	737	582	0·22	0·19	843	662	0·15	0·13
Swordfish	672	234	0·20	0·08	629	292	0·11	0·06
John-dory	381	527	0·12	0·17	502	620	0·09	0·12
Herring	373	190	0·11	0·06	684	311	0·12	0·06
Warehou	306	1,084	0·09	0·35	597	2,336	0·11	0·45
Whiting	287	44	0·09	0·01	201	66	0·04	0·01
Trumpeter	208	209	0·06	0·07	591	444	0·11	0·08
Mackerel	158	190	0·05	0·06	164	102	0·03	0·02
Garfish	148	47	0·04	0·02	297	105	0·06	0·02
Conger-eel	140	128	0·04	0·04	109	90	0·02	0·02
Skate	78	55	0·02	0·02	54	44	..	0·01
Whiptail	69	11	0·02	..	84	8	0·01	..
Brill	44	45	0·01	0·01	151	264	0·03	0·05
Perch	43	662	0·01	0·21	41	585	..	0·11
Maomao	24	22	..	0·01	35	36	..	0·01
Bonita	19	31	..	0·01	53	82	..	0·02
Frost-fish	4	4	..	..	3	3	..	..
Total ..	331,773	308,237	..	..	558,404	522,954	..	..

Methods of Capture

Of the total catch, 45,315 cwt. (13·66 per cent.) was landed from steam-trawlers, 69,953 cwt. (21·08 per cent.) from motor-trawlers, while motor-vessels (line and net fishing) accounted for 109,627 cwt. (33·04 per cent.) and row-boats 1,785 cwt. (0·54 per cent.).

The total quantity of wet fish caught by each of the common methods of fishing is shown below (the figures in parentheses represent the 1944 quantities and values):—

Method of Fishing.	Quantity.		Value.	
	Cwt.	Percentage of Total.		Percentage of Total.
Trawl ..	115,268 (75,216)	34.74 (24.40)	206,176 (153,541)	36·92 (29.36)
Danish-seine ..	105,093 (116,222)	31.68 (37·70)	139,597 (152,615)	25·00 (29·18)
Long and hand lines	72,226 (69,495)	21·77 (22.55)	152,483 (147,558)	27·31 (28·22)
Net and drag-nets	39,186 (47,304)	11·81 (15·35)	60,148 (69,240)	10·77 (13·24)
Totals ..	331,773 (308,237)	..	558,404 (522,954)	..

Landings at Ports

Of the total quantity of wet fish, 37·00 per cent. was landed at Auckland, 9·51 per cent. at Wellington, 7·70 per cent. at Port Chalmers, and 5·79 per cent. at Napier. In the following statement the total weights and values are given for some of the main ports alongside those for the previous two years, 1944 and 1943–44:—

Port.	Quantity.			Value.		
	1945.	1944.	1943–44.	1945.	1944.	1943–44.
	Cwt.	Cwt.	Cwt.	£	£	£
Russell	4,194	2,350	1,736	5,093	3,199	1,785
Whangarei	1,766	4,104	3,858	2,264	4,262	4,046
Auckland	122,789	111,078	103,882	156,979	138,872	129,904
Thames district	17,245	19,825	18,495	25,746	29,852	28,354
Tauranga and district	7,459	10,485	9,546	7,745	11,242	9,913
Gisborne	8,236	7,703	5,275	9,160	10,475	6,179
Napier	19,194	17,865	16,615	29,186	26,529	25,244
Wellington	31,554	14,019	14,775	63,445	33,548	36,054
Manukau Harbour	1,229	1,118	1,870	2,217	1,825	2,791
Picton	4,358	7,230	8,053	8,522	10,438	11,010
Lyttelton	11,430	16,221	14,050	26,764	42,527	34,755
Timaru	11,386	13,022	15,898	33,106	37,759	42,960
Moeraki	2,017	1,658	1,717	5,551	4,728	3,845
Nuggets district	4,250	2,307	2,892	10,969	4,931	5,429
Port Chalmers	25,533	23,264	21,523	36,225	38,808	32,621
Waikawa	2,610	1,564	2,896	6,757	2,992	5,411
Bluff, with Stewart Island ..	13,649	12,163	12,416	32,802	27,860	22,748
Westport	738	814	1,434	2,103	2,013	2,990
Motueka	1,097	1,358	895	1,979	2,208	1,476
Nelson	6,372	5,541	3,833	13,603	13,635	10,208
French Pass	3,278	2,880	2,988	9,188	6,778	7,567
Chatham Islands	2,078	4,420	4,326	1,868	3,721	3,332

Auckland.—Of the total of 122,789 cwt. of wet fish landed at Auckland, 97,608 cwt. was brought in by Danish-seine boats, of which 72,179 cwt. was snapper and 15,515 cwt. tarakihi. The steam-trawlers accounted for 19,553 cwt., made up mainly of snapper (8,063 cwt.), tarakihi (8,103 cwt.), and trevally (1,035 cwt.). Motor line-fishing boats landed 2,493 cwt., compared with 1,409 cwt. of the previous year, and the netting boats 3,092 cwt., compared with 2,303 cwt. for 1944.

The annual totals landed at Auckland over the last five years are given below :—

	1941–42.	1942–43.	1943–44.	1944.	1945.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	119,583	105,106	103,882	111,078	122,789
Snapper	87,028	73,604	75,153	79,844	81,706
Tarakihi	12,882	16,470	12,128	18,289	23,965
Flounder	8,151	3,904	5,489	1,857	2,047
Gurnard	1,375	1,447	1,361	3,206	5,570

The substantial increase in the total quantity of fish landed for the last year is mainly due to the operation of the steam-trawlers after some years absence on naval service.

Tauranga :—

	1941–42.	1942–43.	1943–44.	1944.	1945.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	4,368	7,926	9,546	10,485	7,459
Snapper	3,400	4,154	4,032	4,152	2,513
Tarakihi	102	290	29	1,057	1,289
Trevally	110	1,113	1,826	2,509	1,219
Kahawai	1	294	649	732	1,070

Set-net catches amounted to 3,861 cwt. (51·76 per cent. of the total), compared with 5,987 cwt. (57·1 per cent.) for 1944, of which 1,565 cwt. was snapper and 1,155 cwt. trevally. One vessel which had previously been engaged in purse-seining changed to trawling and landed 1,783 cwt. of fish, of which 54·68 per cent. was tarakihi and 29·44 per cent. snapper. The Danish-seine catch dropped considerably from 2,907 cwt. in 1944 to 418 cwt. in 1945—this was due to the fact that the one vessel engaged in this form of fishing was wrecked early in the year.

Napier :—

	1941–42.	1942–43.	1943–44.	1944.	1945.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	21,207	21,694	16,615	17,865	19,194
Tarakihi	6,809	6,005	4,931	8,966	9,744
Sole	1,385	2,165	914	1,710	1,036
Hapuka	2,011	660	861	986	1,443
Gurnard	3,437	5,825	4,263	4,621	5,362

The increase in the percentage of tarakihi compared with the total quantities landed for the past two years is more apparent than real, as previously a large percentage of tarakihi caught at this port was included under the heading "Mixed Round Fish." This is a common fault with the Napier returns.

Out of the total of 19,194 cwt. landed during 1945, 15,708 cwt. was brought in by motor-trawlers, of which 57·16 per cent. was tarakihi. The one Danish-seine boat accounted for 1,325 cwt., of which 57·66 per cent. was gurnard. The one steam-trawler brought in 621 cwt., compared with 1,706 cwt. for 1944.

Wellington.—The return of the two steam-trawlers accounted for a large increase in the amount of fish landed at Wellington throughout the year. The catch for these vessels was 20,241 cwt., compared with 851 cwt. for 1944, when one boat commenced fishing in December. Of this 20,241 cwt., 16,634 cwt. was tarakihi and 469 cwt. snapper. One motor-trawler fished for seven months and brought in 687 cwt. of fish, of which 212 cwt. was tarakihi. The Island Bay fishing fleet landed 9,762 cwt., in comparison

with 11,018 cwt. for the previous year. The net-fishing boats also showed a decrease from 771 cwt. to 598 cwt. in 1945, mainly accounted for by a drop in warehou from 232 cwt. in 1944 to 109 cwt. in 1945.

Lyttelton.—The total catch landed amounted to 11,430 cwt., valued at £26,764, which is a considerable drop from 16,221 cwt. and £42,527 for 1944, some of which may be accounted for by the fact that the boats were laid up for a month or more due to price negotiations. The main decrease was caused by the motor-trawl figures falling from 10,693 cwt. in 1944 to 7,344 cwt. in 1945, and the one steam-vessel declining from 4,875 cwt. to 3,827 cwt. in 1945. The figures for the main types of fish landed at Lyttelton for the last five years are given below :—

——	1941–42.	1942–43.	1943–44.	1944.	1945.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	14,287	16,504	14,050	16,221	11,430
Tarakihi	6,440	7,010	4,614	6,202	4,840
Ling	1,703	936	864	1,556	1,447
Elephant-fish	1,322	1,954	2,862	2,611	1,632
Gurnard	532	1,943	2,383	2,537	1,203
Red cod	1,950	1,128	451	191	46

Timaru.—The total fish landed at this port has shown a decrease over the last two years. Some of this may be accounted for by the fact that the boats were laid up for some time due to price negotiations. The annual catches by the various methods of fishing over the last five years are given below :—

——	1941–42.	1942–43.	1943–44.	1944.	1945.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	14,055	14,548	15,898	13,022	11,386
Motor-trawling	7,238	7,398	8,517	8,142	7,880
Danish-seining	3,053	2,797	2,508	1,804	1,292
Line-fishing (motor-vessels)	3,763	4,353	4,873	3,076	2,214

Port Chalmers.—No steam-trawler has yet replaced the one which was wrecked in 1944, although a new motor-trawler commenced operating in the middle of 1945. The lack of a steam-trawler has been responsible for the substantial drop in the catches of tarakihi from 3,166 cwt. in 1944 to 173 cwt. in 1945.

Of the 25,533 cwt. landed this year at Port Chalmers, 16,260 cwt. came from motor-trawlers and 9,091 from the line-fishing vessels. Of the former, 7,034 cwt. was red cod and 6,282 cwt. sole, and of the latter 7,402 cwt. was barracouta.

The tables for the main types of fish caught over the last five years are given below :—

——	1941–42.	1942–43.	1943–44.	1944.	1945.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Total quantity landed	29,724	33,603	21,523	23,264	25,533
Tarakihi	5,101	2,886	3,361	3,166	173
Sole	6,394	5,410	4,114	4,993	6,282
Red cod	6,952	10,377	4,501	4,033	7,605
Barracouta	5,599	9,878	5,157	6,300	7,502
Flounder	1,516	840	885	1,163	1,366

Exports and Imports

Imports of fish for the year amounted to 335¾ cwt. of tinned fish such as sardines, brisling, and sild, and 131½ cwt. of other fish otherwise preserved, with a total value of £5,141.

The total value of New Zealand fish and shell-fish exported in 1945 was £187,381, which represents a substantial increase on the previous year's figures of £126,976.

Totals for the principal classes of fishery products exported for the past three years are given below :—

	Quantity.			Value.		
	1943–44.	1944.	1945.	1943–44.	1944.	1945.
				£	£	£
Oysters, fresh ..	424 doz.	21,100 doz.	640 doz.	20	578	18
Fish, frozen ..	16,438 cwt.	16,628 cwt.	22,663 cwt.	70,019	73,500	104,046
Crayfish, frozen ..	..	1,921 cwt.	1,346 cwt.	..	6,608	6,462
Fish, smoked, dried, &c.	2,754 cwt.	3,319 cwt.	4,276 cwt.	16,574	20,476	26,390
Fish and shell-fish (tinned)	285,221 lb.	181,338 lb.	371,776 lb.	24,072	25,814	50,465
Total values ..	..	..	..	110,685	126,976	187,381

The following table shows the incidence of the principal kinds of fish exported for the year 1945 (the previous year's figures are given in parentheses) : —

Fish.	Quantity.		Value.	
	Cwt.	Cwt.	£	£
Blue cod	7,644	(3,530)	38,682	(18,117)
Red cod	3,255	(1,104)	3,255	(3,046)
Barracouta	2,369	(3,786)	8,883	(14,014)
Soles	2,207	(1,394)	11,452	(7,119)
Tarakihi	1,037	(959)	4,895	(4,030)
Flounder	947	(762)	5,374	(4,142)
Snapper	752	(1,029)	4,244	(6,044)

The above seven species represent 80·35 per cent. of the total weight of frozen fish exported and 73·8 per cent. of the total value.

The balance of the frozen-fish exports were made up of a very large number of species of fish.

Sardines

The landings of sardines at Picton again showed a decline, from 4,281 cwt. in 1944 to 1,458 cwt.

The pioneering work of locating the fish in due season and in worth-while quantities was carried forward and records kept of the conditions found.

Fish-liver Oil

This is a very important side of the industry and 1945 showed appreciable advances in the quantity of livers handled. The figures for 1945 were : Fish livers treated, 564,397 lb. ; and fish-liver oil produced, 25,023 gallons. A total of 22,007 gallons of fish-liver oil was exported. This amount included a carry-over of stock from the previous year.

The two companies which hold licenses from the Bureau of Industry to engage in the occupation have explored every avenue for supplies and set up or arranged for collecting stations wherever the possible supplies warranted such action.

Whaling

Four vessels with a total complement of nine men were engaged in the whale-fishing based on Marlborough Sounds and fourteen men were employed ashore at the whale-factory. A total of 107 whales, all hump-backs, were taken, and these yielded 750 tons of oil and about 100 tons of bone-dust. The first whale was taken on 4th June and the last on 10th August. July was the month in which most whales were captured. From the dates supplied it will be seen that the whales were again late in making their appearance, but the catch was appreciably better than last year, when the total number of whales was only 88.

Rock Oysters

The 1945 rock-oyster season yielded 5,476 sacks of oysters. This was a decline of 910 sacks on last year's total of 6,386 sacks, which was the highest since 1926. The drop was accounted for by shortage of skilled pickers at Bay of Islands and Kaipara. A heavy storm at the end of May aggravated the shortage of oysters by doing considerable damage to the Department's plant at Kaipara and Coromandel. Damage to the plant would have been much more serious but for the strenuous efforts of the Inspectors at both places.

Picking started on 14th May, the last oysters of the season being picked on 1st August.

The yield of oysters in sacks from each of the various areas was as follows: Bay of Islands, 2,003; Whangarei Harbour, 195; Kaipara Harbour, 907; Coromandel, 650; Great Barrier Island, 242; Hauraki Gulf, 1,479.

The quantities from Hauraki Gulf were obtained from the following areas: Motutapu, 97; Waiheke, 719; Ponui, 408; Pahiki, 118; Rotoroa, 120; Pakatoa, 17.

Area. *Oyster-cultivation for the Year ended 31st March, 1946*

I. Bay of Islands: 781,000 borers and 3,500 pupu destroyed, 214 square yards of rock cleared of dead shell, 1,130 square yards cleared of weed. Cost, £370 17s.

II. Whangarei Harbour: 291,500 borers and 1,500 pupu destroyed, 314 square yards of rock cleared of dead shell, 295 square yards cleared of weed. Cost, £82 12s. 8d.

IV. Takatu Point to Gull Point: 85,000 borers destroyed, 90 square yards of rock cleared of dead shell. No cost.

VI. Coromandel: 1,471,610 borers and 4,977 pupu destroyed, 8,840 square yards cleared of weed. Cost, £52 16s. 8d.

VIII. Rakino: 185,000 borers and 219 pupu destroyed. No cost.

XIII. Waiheke: 498,000 borers and 91 pupu destroyed, 1,211 square yards of rock cleared of dead shell, 220 square yards cleared of weed. No cost.

XIV. Ponui: 427,000 borers and 224 pupu destroyed, 316 square yards of rock cleared of dead shell. No cost.

XV. Pahiki Island: 28,000 borers and 33 pupu destroyed. No cost.

XVI. Great Barrier: 552,100 borers and 2,728 pupu destroyed, 251 square yards of rock cleared of dead shell. Cost, £65 17s. 8d.

Total for all areas: 4,319,210 borers and 13,272 pupu destroyed, 2,396 square yards of rock cleared of dead shell, 10,485 square yards cleared of weed. Cost, £572 4s.

With the cessation of hostilities, plans are being prepared for increased cultivation work, more particularly the formation of new beds in Kaipara Harbour.

The demand for rock oysters always exceeds the supply, so that the expenditure of funds on this type of work is fully justified.

Dredge Oysters: Foveaux Strait, 1945

The 1945 season was much more successful than that of 1944, the catch increased from 63,949 sacks to 76,038. As stated in the 1944 report, a co-operative survey was undertaken during the 1945 season, the oystermen, merchants, and the Government each providing part of the requirements. The investigation was in charge of Captain E. F. Watson, of Dunedin, who completed an arduous task under conditions not suitable for normal marine survey work. The main point at issue was the existence or otherwise of large beds of oysters west of a line drawn from Barracouta Head to Gull Rock. Unfortunately, the survey did not reveal any large beds of oysters in this area, other than those known previously. The experience, however, was well worth while, both in the results obtained and in the knowledge gained as to the best method of conducting future surveys.

Lack of trained staff at Head Office has precluded the working-up and assemblage of the meticulous reports submitted by Captain Watson, but it is hoped that at some future date this valuable information will be compiled and published in a form which will be of interest and value to all concerned.

Toheroas

The state of the main toheroa beaches, Ninety-mile, North Kaipara, Muriwai, and Waitarere, is much the same as detailed in the last annual report. The stocks on the Ninety-mile Beach are still a matter of concern to this Department. The North Kaipara, Muriwai, and Waitarere Beaches are in good order.

Mussels

The catch of mussels in the Thames-Coromandel-Auckland area fell from 15,390 sacks in 1944 to 13,156 sacks in 1945. The decline is accounted for in the main to the closure of certain grounds at Coromandel which were showing the effect of too intensive exploitation.

Paua

The one fisherman licensed specifically for this fishery took 30,209 pauas in the year 1945 and the flesh or "steaks" of 23,580 of them was sold as food. This was a very useful effort, the reward of continued hard work, enthusiasm, and close study of the habits of the paua by the man concerned.

Whitebait

The table given below summarizes the information obtained from the principal whitebait-fishing centres for the 1945 season.

Whitebait Fishery, 1945 Season

Inspector's Centre.	Rivers fished.	Method of Fishing.	Fishing began.	Best Month.	Number of Fishermen (Approximately).		Total Quantity caught (Approximately).
					Whole Time.	Part Time.	
							Cwt.
Auckland ..	Waikato	Hand-nets	July ..	Sept. ..	200	250	2,238
Auckland ..	Kaituna	Set-nets ..	July ..	Aug.–Sept.	20	30	31
Auckland ..	Rangitaiki, Tarawera ..	Hand-nets	July ..	Sept. ..	22	..	33
New Plymouth	Waitara, Awakino, Mokau, Waiongona, Mimi, Waiwakaiho, Urenui, Henui	Hand and set nets	July ..	Sept. ..	..	150	63
Wanganui ..	Turakina, Kai Iwi, Wangachu, Wanganui	Hand-nets	July ..	Sept. ..	..	15	6
Napier ..	Tukituku, Ngaruroro	Hand and set nets	July ..	Aug. ..	..	..	100
Blenheim ..	Wairau, Omaka, Opawa, Taumarina	Hand-nets	Aug. ..	Sept. ..	4	..	59
Christchurch	Waimakariri, Ashley, Saltwater, Rakaia, Opihi, Rangitata, Avon, Hurunui, Waiau, Orari, Waipara, Halswell, Styx	Hand and set nets	Aug. ..	Oct. ..	62	230	384
Dunedin ..	Molyneux, Taieri, Puerua, Owaka, Waikawa, Shag, Waikouaiti, Kakanui, Pleasant, Wainakarua, Tokomairiro, Waitaki	Hand-nets	Sept...	Oct. ..	10	20	185
Dunedin ..	Mataura, Oreti, Titiroa, Waihopai, Waimatuku, Otakau, Aparema, Waiau	Hand and set nets	Aug. ..	Oct. ..	30	40	175
Wataroa ..	Big Wanganui, Paringa, Jacobs, Mahitahi, Waitoto, Haast, Little Wanganui, Karangarua, Wataroa, Waitangi, Maori, Moeraki	Set-nets ..	Sept...	Oct. ..	100	25	2,432
Hokitika ..	Hokitika, Mahinapua Creek, tidal creeks at Three-mile, Arahura, Awatuna, Fishermen's Creek	Hand and set nets	Sept...	Nov. ..	49	231	1,203
Greymouth ..	Teremakau, Grey	Hand-nets	Aug. ..	Oct. Nov.	2	200	268
Westport ..	Buller, Orawaiti, Nile, Totara, Little Wanganui, Mokihinui, Karamea	Hand-nets	Aug. ..	Oct. ..	50	100	1,196
Takaka ..	Takaka	Hand-nets	July ..	Aug. ..	2	3	57
Motueka ..	Motueka, Moutere	Hand and set nets	Aug. ..	Oct.–Nov.	16	20	268
							8,698

The estimated total of 8,698 cwt. shows another substantial increase, Westland, as usual, being the main contributor. The administrative problems in connection with the whitebait fishery are not only complex in themselves, but are further complicated by the fact that so many people are affected by any particular move and the interests of each group clash violently with those of other groups.

Fresh-water Eels

Due to lack of staff, little was done in investigating the problems of the establishment of a commercial fresh-water-eel fishery. Some experimental work in canning and freezing eels has been carried out by the trade interests concerned, and it is hoped that 1946 will show a forward move in this field.

Reference to eel-canning will also be found in the marine research section of this report.

Quinnat Salmon

Last year's report covered the activities of the Hakataramea Station in 1945 and also the activities of the rod and net fishermen. It is proposed to bring this data into line with the rest of the report, so that the next lot of statistics will appear in the 1946 report. The salmon season has continually overlapped the financial year, and in the past it was only the late preparation of the report, months after the close of the financial year, which has enabled this data to be included.

Any person who desires the 1946 season's figures urgently can obtain them on application to the Department.

Atlantic Salmon

The same remarks as for quinnat salmon apply in this case.

Fresh-water Research

Up to the close of the 1945–46 year the two Biologists were either still with the Armed Forces or on furlough leave. Both of them will be back during 1946, and plans are being made for a reorganization of the fresh-water side of the Department's activities.

Marine Research

The various activities of the Marine Biologist were carried forward throughout the year. It is not perhaps sufficiently recognized that marine biological research is a long-term process, and working out the life-history of any particular species may take several years. Each seasonal change has to be observed and recorded in its turn and seasonal variations noted before all the problems can be elucidated.

The highlight of the Biologist's year was a visit to the Chatham Islands. As this fishing area has not been visited by a Marine Biologist for over twenty years, the report on the trip is of such interest and value that the opportunity is taken to publish portion of it here.

Chatham Islands Fishery

A visit was paid to the islands to determine the prospects of the fishing industry. Transport to and about the Chathams is bad. The time taken from Wellington via Lyttelton was nine and a half days to Waitangi. To Kaiangaroa coastwise a further seven days. The return journey to Waitangi was made overland by jogger, a locally made machine with two rubber-tired motor wheels and comfortable seat drawn by two horses. The thirty miles from Kaiangaroa to Waitangi took eight hours over what must be classed among the worst roads in the world. Best travelling was over open undulating fields, and at low water the two-mile stretch of beach before Waitangi, the roads for the most part being 6 in. to 18 in. deep in mud, which is very hard going on both horses and passengers.

Paua.—Good supplies of living pauas were found on all the rocky sections of the north and eastern shores between Wharekauri and Okawa Point; they are the dominant shell-fish in the coastal zone, and in many places the beach is thickly strewn with the dead shells.

Sharks.—Two large sharks were seen, probably *Carcharodon carcharias,* and during the summer months it is reported that many small sharks come close inshore, where they are sometimes caught for sport. If suitable collecting methods were organized there are good prospects of establishing a sizeable liver-oil industry. All the islanders connected with the sea for a livelihood are said to know how to kill sharks by a knife thrust behind the pectoral fin—as sharks are a menace, and it is not safe to venture far in a small boat. Most launches have at some time been attacked by a big shark.

Seals.—They are said to be increasing and to feed on blue cod—a large bull which was shot at Okawa Point had only three octopuses in the stomach, the largest having tentacles 15 in. long, so seals may at least be said to compete with cod for food. There is not a vast number on the mainland, and from Okawa Point to Kaiangaroa, the only part where seals were seen, it is estimated that there were less than one hundred, about fifty at Okawa Point, and thirty at Te Whakaru Island. Reports indicated that at times colonies of two hundred were to be seen on the mainland in this vicinity.

Blue Cod.—This was the principal interest of the visit. Chatham Island blue cod are at least equal and probably superior to the best landed in New Zealand and Stewart Island. The fish caught were mostly over 14 in. in total length, and the average weight, headed and gutted, in four commercial samples was in all cases over 1¾ lb. The rate of growth is approximately the same as the fastest-grown fish so far examined from Cook and Foveaux Straits regions.

Prior to 1931 there were twelve fishing-boats at the Chathams, but when the fish-carrier "South Sea" commenced operations the number of vessels increased to eighteen. During the past years the fleet has dwindled, some boats because of the absence of regular transport having sailed to New Zealand to fish, with the result that it will probably take some time before the fishing fleet reaches its previous strength and high standard. At present there are only five or six fishing-boats at the Islands. The "Silver Dawn" during my visit was completely wrecked when she broke from her mooring in a northerly storm.

The original fishing settlement was Port Hutt, the best anchorage at the island, and the western reef, about twelve miles distant, was for many years an excellent fishing-ground and is said to-day to yield the largest cod in in-shore waters. There is, however, no land for farming near to Port Hutt and living conditions are not satisfactory. Freezers were subsequently erected at Owenga and Kaiangaroa, on the south-east and north-east coasts respectively. Anchorage in both places is poor, and there is no wharf at either place; the stores or fish are landed from ship or launch to surf-boat, then into a dray drawn by three horses into the tide and so ashore. Loading cannot proceed when there is much swell. The Owenga freezer is not now operating. In 1931 the "South Sea" commenced trading to the Chathams, six boats fishing exclusively for her.

The chief advantage of a large vessel from which the launches fished was that a change in weather which would make fishing impossible for shore-based vessels could be countered by a change to another part of the coast. Little fishing was done from the "South Sea," but this is a development which may be possible for subsequent ventures; it appears to be the only satisfactory manner in which off-shore grounds may be fished. When the "South Sea" was loaded (or coal had run low) she returned to Wellington and the fishermen to their homes till next trip.

Although it has been stated on several occasions that fishing was showing signs of depletion, it is probable that the fishing-grounds at and around the Chathams would support at least one shore station and two vessels of the "South Sea" type. Fishing would not always yield such rich harvests as during the first years, and the average size of the cod would fall, particularly on the more accessible grounds, but full cargoes would probably be obtained in reasonable time.

New codding-grounds continue to be found close to the land, and it is said that whaling-vessels at one time awaited the arrival of whales about fifty miles to the south of the Chathams, and good cod were to be found there also.

Pilchards

The Marine Biologist continued his investigations on the pilchard fishery in Marlborough Sounds. The catches have not been large, and a high proportion was salted instead of being canned because of the difficulty experienced in transporting the fish from Te Rawa, in Pelorus Sound, to the cannery at Picton.

Toheroas

Two inspections of the North Auckland west coast beaches were made. On the Ninety-mile Beach toheroas are gradually reappearing to the north of the Waipapakauri road in some abundance, but they are small, few being over 3 in. long. Even with careful husbanding of supplies it will be two years before moderate numbers of good-sized toheroas are available. The tuatua, although leaving the southern end of the beach, are still present in dense beds farther north. There are practically no toheroas north of Mangonui Bluff.

On the south end of the North Kaipara Beach a considerable mortality of toheroas, both large and small, occurred some time prior to 22nd March, 1946. The reason for the large number dying was because the beds were rather near high-water mark and the tide did not cover them for several days during the hot weather. Some of the toheroas finally endeavoured to move to a lower position and had the tongues and siphons bitten off by fish, with the result that although still living, they were unable to dig into the sand and so continued to wash about in the surf. Those seen were so large that the birds were unable to lift them off the beach in order to drop them from a height—their usual method of breaking the shell. The beds on this beach are very well stocked.

The south end of Muriwai is depleted to a similar degree that existed in 1937 when there were few beds on the southern ten miles. From eighteen to twenty-six miles north of the road there are still good stocks. The effects of commercial digging which were carried out in the two previous years appear more serious than is actually the case. It was anticipated that the good stocks of 1942–43 would decline naturally, and this has occurred. It is probable, also, that 1947 will see the lowest stock on Muriwai for many years. A reasonably good fixing of young toheroas occurred in 1945 and may be expected to yield a good increase in the supply over 3 in. by 1948.

Canning Experiments

A successful series of experiments in canning pauas (*Haliotis australis* and *H. iris*) were completed. *Haliotis* species are widely distributed; in the Channel Islands they are called ormers, and in the United States of America, where they are canned, abalones. Shells of *H. australis* over 6½ in. long have been obtained from Stewart Island.

Canning whole, with only the viscera removed, does not make a very attractive pack, the product being a dark green and the liquid somewhat slimy, although they were classed as satisfactory to eat by some people. In this pack the "fringe" or sensory margin of the mantle, which extends almost all round this shell-fish, is hard in the fresh state, but becomes jelly-like when canned and appears to contribute the viscid substance to the liquid. For the best product produced the fringe was removed, about ⅛ in. thickness cut from the foot, and the sides trimmed to remove all trace of black or green colour. The resulting meat is quite white. Pauas treated in this way and canned whole or minced were equally good, the meat being tender and the flavour rich. Some observers classed them as superior to toheroas.

Experiments were continued on canning eels: samples were obtained from the Hutt and Manawatu Rivers, and from Lake Ferry, covering long and short finned, migrants and non-migrants. Packs were prepared in several different ways, including eels in agar, vinegar, and oil, and smoked eel. The latter product is a delicacy which in flavour is difficult to better and is considered equal to the best New Zealand marine products such as canned whitebait, toheroas, or oysters.

Apart from smoked eel, the straight pack of large long-finned eels with the addition of salt only gave the most satisfactory product for New Zealand, although eels in oil may be a desirable product where there is a market for an oily fish. A report on the canned-fish industry, with the results of experiments, is being prepared.

Legislation

In this field there were very important changes. In November the Fisheries Amendment Act, 1945, became law. Concurrently the fishing-side of the industry was delicensed under the Industrial Efficiency Act, the wholesale, retail, and export of fish having just previously been delicensed.

The effect of the new legislation is to bring the whole of the licensing of fishermen and fishing-boats under the control of the Sea-fisheries Licensing Authority. This replaces the dual control of the Bureau of Industry and Marine Department which had existed since 1937. As a matter of interest it should be pointed out that this dual control was brought into force while the Sea-fisheries Investigation Committee, under the chairmanship of Mr. James Thorn, M.P., was collecting its evidence throughout New Zealand and compiling its report. There was never any intention of leaving the dual control in existence, but the outbreak of war prevented any further action being taken until this year and the dual control had to remain in force to keep the position in check until the Fisheries Act could be amended.

The change over was effected very smoothly considering the individual nature of the licenses, the large number of licenses, and their scattered distribution.

It was decided that owing to the late passage of the legislation—November—it was not practicable to decentralize the issue of licenses, as the licensing year commenced on 1st January, 1946, and with the closeness of the holiday season there would be no time to get the licenses printed and instructions issued in time for the main rush of applications in January. It is hoped that in 1946 the issue of renewal licenses will be done by the local officer in at least the main ports. In some of the smaller ports the difficulty arises that the officer in charge is an official of another Department, in some cases already overloaded with his own job plus other part-time appointments. The issue of new licenses or the authorization of a variation to any license must always remain the responsibility of the Licensing Authority. The passage of the Amendment Act was followed by the Sea-fisheries (Boats and Licenses) Regulations 1945. These set out the details of the licensing system. A copy of these regulations is issued gratis to every licensee.

One note of warning must be struck here, and that is that fishermen should not buy boats or alter the power of the engines installed without the permission of the Licensing Authority. In too many cases a larger boat is bought or a more powerful engine installed and then the permission of the Authority is sought. In the case of those ports where the fishing power of the existing fleet is already near the danger mark, sooner or later some one will find his request refused and will suffer financial loss. After so many years of licensing, the people in the industry cannot plead ignorance on this point, and they are quite well aware that any effort to replace an obsolete unit will meet with favourable consideration from the Licensing Authority, provided the new unit is not so fundamentally different from the old one as to endanger the fishing-grounds.

In regard to ordinary fishery regulations, these have been so amended and added to since the last consolidation in 1939 that it has been found necessary to undertake another revision, and the results of this will, it is hoped, be brought out in 1946. The revision of such complex regulations is, however, a major task which cannot be done quickly by an over-busy staff.

Staff

With the cessation of hostilities we are looking forward to having the staff back at full strength in 1946. It is proposed also to go ahead with the programme of expansion which was started just before the outbreak of war. With the high intensity of commercial operations right round the coasts of New Zealand, part-time Inspectors, with only occasional visits from fully trained Inspectors, are quite inadequate to cope with the inquiries and demands for investigations. Many of the districts require a thorough overhaul after the enforced laxity of the war years if our fisheries are to be preserved.

The retirement of Mr. A. E. Hefford, who joined the Department in 1925 as Fishery Expert and who has been Chief Inspector of Sea-fisheries and Director of Fishery Research since 1927, will take place just after the close of the financial year. This long period of service in the Marine Department by an officer with wide experience overseas has been of great value to New Zealand in laying the foundation for a scientific fisheries administration.

The year 1945 was mainly a war year and the final cessation of hostilities came too late in the year for there yet to have been time for the industry or the administration to get back on to a peacetime basis. The year 1946 can be forecast as largely a year of readjustment and settling down to normal peacetime functions of both the industry and the administration, and it is hoped that by the end of that year not only will definite progress have been made, but that long-term plans will have received consideration both as regards policy and rational utilization of our fishery resources.

M. W. YOUNG,
Acting Chief Inspector of Fisheries.

TABLE I.—SHOWING THE NUMBER OF FISHING-VESSELS AND THE NUMBER OF FISHERMEN AND OTHER PERSONS ENGAGED IN THE INDUSTRY AT EACH PORT FOR THE YEAR ENDED 31ST DECEMBER, 1945

Name of Port or District.	Vessels licensed. 1st January, 1945, to 31st December, 1945.			Vessels engaged in Fishing for Wet Fish.												Vessels engaged in Shell-fishery.						Number of Fishermen.	
				Motor-vessels Danish-seining.		Steam-trawlers.		Motor-trawlers.		Motor-vessels Set-net and Line-fishing.		Boats engaged in Part-time Trawling and Part-time Line-fishing not included in Previous Columns.	Rowing-boats.			Oyster-dredging Vessels.		Mussel-dredging Vessels.		Crayfishing-vessels.			
	Total Number.	Number Operating.	Number not Operating.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.		Whole Time.	Part Time.		Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.	Whole Time.	Part Time.
North Island																							
Awanui and district	12	9	3	..	..	..	..	..	..	3	6	..	..	..		..	..	..	..	..	..	8	7
Mangonui	14	9	5	..	..	..	..	..	..	3	7	..	..	..		..	..	..	..	..	2	4	10
Whangaroa ..	7	7	..	..	..	..	..	..	..	3	3	..	..	1		..	..	..	..	..	1	5	7
Russell	45	28	17	..	..	..	..	..	..	10	12	..	1	4		..	..	..	..	..	3	21	21
Whangarei ..	14	9	5	..	..	..	..	..	..	3	6	..	..	..		..	..	..	..	..	2	8	8
Auckland	103	75	28	35	5	1	1	..	..	4	20	..	..	5		..	..	1	1	4	2	142	64
Thames district ..	32	31	1	..	1	..	..	..	..	21	6	..	..	2		..	..	..	1	..	..	54	12
Coromandel ..	4	3	1	..	..	..	..	..	..	1	1	..	..	1		..	..	..	..	..	..	1	3
Mercury Bay ..	9	8	1	..	..	..	..	..	..	1	7	..	..	..		..	..	..	..	3	2	10	3
Whangamata ..	7	6	1	..	..	..	..	..	..	..	6	..	..	..		..	..	..	..	..	2	..	9
Waihi Beach ..	10	6	4	..	..	..	..	..	..	2	4	..	..	..		..	..	..	..	..	..	2	5
Tauranga and district	33	18	15	..	..	..	..	..	1*	10	6	..	..	1		..	..	..	..	1	2	27	12
Whakatane ..	5	5	..	1	..	..	..	..	..	3	1	..	..	..		..	..	..	..	..	1	11	1
Ohiwa Harbour, Opotiki, and Cape Runaway	10	9	1	..	..	..	..	..	..	2	4	..	..	3		..	..	..	..	..	..	3	9
Gisborne	15	13	2	..	..	..	..	2	..	2	4	..	..	..		..	..	..	..	2	5	13	10
Napier	35	29	6	1	..	..	1	10	3	2	7	2	..	3		..	..	..	..	2	5	40	23
Castlepoint ..	6	3	3	..	..	..	..	..	..	..	3	..	..	..		..	..	..	..	..	1	..	4
Wellington ..	42	28	14	..	..	2	..	1	..	14	7	..	1	2		..	..	..	..	6	2	91	6
Makara	3	1	2	..	..	..	..	..	..	1	..	..	..	..		..	..	..	..	1	..	2	..
Paremata	15	10	5	..	..	..	..	..	..	5	5	..	..	1		..	..	..	..	..	2	12	7
Paraparaumu Beach	5	3	2	..	..	..	..	..	..	1	2	..	..	..		..	..	..	..	..	..	2	3
Manawatu Heads ..	12	6	6	..	..	..	..	..	..	1	..	..	..	5		..	..	..	..	..	..	2	5
Tangimoana ..	4	4	..	..	..	..	..	..	..	..	4	..	..	..		..	..	..	..	..	..	..	8
Wanganui ..	16	12	4	..	..	..	..	..	..	3	8	..	..	1		..	..	..	..	..	..	5	14
New Plymouth ..	15	8	7	..	..	..	..	..	..	2	6	..	..	..		..	..	..	..	..	4	3	6
Kawhia	3	3	..	..	..	..	..	..	..	3	..	..	..	..		..	..	..	..	..	..	5	..
Raglan	5	4	1	..	..	..	..	..	..	1	3	..	..	..		..	..	..	..	..	..	1	4
Manukau Harbour ..	13	11	2	..	..	..	..	..	..	6	5	..	..	..		..	..	..	..	..	1	9	8
Kaipara	24	22	2	..	..	..	..	..	..	10	11	..	..	1		..	..	..	..	..	..	9	15
Hokianga	10	8	2	..	..	..	..	..	..	1	6	..	..	1		..	..	..	..	..	..	2	9

South Island																								
Havelock	23	22	1	..	..	..	..	10	4	2	7	..	..	..	..	..	..	..	..	..	..	19	11
Picton	23	16	7	..	..	..	..	..	..	7	9	..	..	..	..	..	..	..	..	6	..	17	12
Blenheim (Wairau)	3	3	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	1	..	2	4
Kaikoura	17	14	3	..	..	..	..	..	1	6	5	..	..	..	..	..	..	..	2	7	..	14	6
Lyttelton	27†	17	10	..	..	1	..	6	3	..	5	..	..	2	..	..	..	..	..	1	..	23	14
Akaroa	21	9	12	..	..	..	..	1	..	..	7	..	..	1	..	..	..	..	..	3	..	2	10
Lake Ellesmere	30	18	12	..	..	..	..	..	..	1	5	..	1	11	..	..	..	..	..	..	..	7	19
Timaru	28	27	1	1	1	..	..	8	5	6	1	5	..	..	..	..	..	..	..	..	..	41	11
Oamaru	11	8	3	..	..	..	..	..	..	7	1	..	..	..	..	..	..	..	..	..	..	12	2
Moeraki	12	12	..	..	..	..	..	..	..	10	2	..	..	..	..	..	..	..	2	1	..	12	2
Karitane	8	8	..	..	..	..	..	..	..	..	7	1	..	..	..	..	..	..	4	4	..	11	4
Port Chalmers	45	32	13	..	..	..	..	13	3	7	7	..	..	2	..	..	..	..	..	..	..	41	21
Taieri Mouth	3	3	..	..	..	..	..	..	2	..	1	1	..	..	..	..	..	..	..	..	..	2	4
Nuggets district	11	9	2	..	..	..	..	4	4	1	..	1	..	..	..	..	..	..	..	..	..	10	4
Waikawa	5	5	..	..	..	..	..	3	1	1	..	..	..	..	..	..	..	..	..	..	..	7	2
Invercargill	4	1	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2
Bluff	26	20	6	..	..	..	..	..	..	4	8	..	..	..	9	..	..	..	..	..	..	54	21
Stewart Island	40	34	6	..	..	..	..	..	..	20	18	..	..	..	..	..	..	..	..	..	..	51	25
Riverton district	7	6	1	..	..	..	..	..	..	3	2	..	..	1	..	..	..	..	..	..	..	6	6
Hokitika	3	1	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Greymouth	4	3	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	5	1
Westport	14	7	7	..	..	1	1	..	4	..	..	..	..	..	..	..	..	..	..	1	..	2	10
Golden Bay	5	4	1	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	1	..	3	1
Motueka	12	11	1	..	..	..	..	..	..	2	8	..	..	1	..	..	..	..	..	..	..	5	16
Nelson	23	13	10	4	..	..	1	1	1	2	5	..	..	1	..	..	..	..	..	1	..	13	7
French Pass	30	27	3	..	..	..	..	..	..	9	17	1	..	..	..	..	..	..	..	..	..	18	27
Chatham Islands	3	3	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	8	..
Totals	966	721	245	42	7	6	4	61	35	211	278	11	3	51	9	..	1	2	27	63	877	536

* Also licensed for purse-seining. † Excludes fishing-boats licensed for whitebait

TABLE II.—SHOWING THE VARIOUS KINDS OF FISH CAUGHT AND APPROXIMATELY THE TOTAL QUANTITIES OF FISH AND SHELL-FISH LANDED AT THE FISHING PORTS FOR THE YEAR ENDED 31ST DECEMBER, 1945

Name of Port or District.	Principal Kinds of Fish caught.	Quantity landed (Fish).	Total Value (Fish).	Shell-fishery (excluding Toheroa).							Grand Total Value.
				Oysters.	Value.	Mussels.	Value.	Crayfish.	Value.	Total Value (Shellfish).	
North Island		Cwt.	£	Sacks.	£	Sacks.	£	Cwt.	£	£	£
Awanui and district	Q,A,K ..	1,534	1,924	..	..	..	..	4	10	10	1,934
Mangonui ..	A,K ..	571	814	..	..	..	..	92	223	223	1,037
Whangaroa ..	A,Y ..	779	1,044	..	..	..	..	67	123	123	1,167
Russell	A,K,Z ..	4,194	5,093	..	..	..	..	149	243	243	5,336
Whangarei ..	A,Q,C ..	1,766	2,264	..	..	..	..	123	259	259	2,523
Auckland ..	A,B,H,Q,E	122,789	156,979	5,476	9,583	11,657	4,083	1,385	2,950	16,616	173,595
Thames district ..	A,E,H ..	17,245	25,746	..	..	1,499	524	..	..	524	26,270
Coromandel ..	A ..	168	247	..	..	..	..	..	..	..	247
Mercury Bay ..	A,C ..	971	1,644	..	..	..	..	1,104	2,409	2,409	4,053
Whangamata ..	B,A ..	127	217	..	..	..	..	58	143	143	360
Waihi Beach ..	A,B ..	259	342	..	..	..	..	..	..	..	342
Tauranga and district	A,B,Q,Y	7,459	7,745	..	..	..	..	64	68	68	7,813
Whakatane ..	A,Q ..	1,423	2,122	..	..	..	..	81	225	225	2,347
Ohiwa Harbour, Opotiki, and Cape Runaway	A ..	651	1,041	..	..	..	..	..	..	..	1,041
Gisborne	B,H ..	8,236	9,160	..	..	..	..	849	1,620	1,620	10,780
Napier	B,H,C,F	19,194	29,186	..	..	..	..	922	1,640	1,640	30,826
Castlepoint ..	C ..	60	199	..	..	..	..	26	38	38	237
Wellington ..	B,C,G,M,N	31,554	63,445	..	..	..	..	3,725	7,661	7,661	71,106
Makara	S ..	308	752	..	..	..	..	183	426	426	1,178
Paremata ..	C,G ..	2,853	7,243	..	..	..	..	158	372	372	7,615
Paraparaumu Beach	A,C ..	497	1,244	..	..	..	..	..	..	..	1,244
Manawatu Heads ..	A ..	193	546	..	..	..	..	..	..	..	546
Tangimoana ..	A ..	30	89	..	..	..	..	..	..	..	89
Wanganui ..	A,Y ..	528	1,092	..	..	..	..	..	..	..	1,092
New Plymouth ..	A,C ..	2,301	5,432	..	..	..	..	167	508	508	5,940
Kawhia	E,A ..	375	1,112	..	..	..	..	..	..	..	1,112
Raglan	E ..	163	500	..	..	..	..	..	..	..	500
Manukau Harbour ..	K,E ..	1,229	2,217	..	..	..	..	21	70	70	2,287
Kaipara	E,K ..	2,220	5,866	..	..	..	..	..	..	..	5,866
Hokianga ..	K,E ..	941	1,189	..	..	..	..	..	..	..	1,189
South Island											
Havelock	E,D,I ..	1,701	6,605	..	..	..	..	..	..	..	6,605
Picton	C,X,D ..	4,358	8,522	..	..	..	..	848	1,634	1,634	10,156
Blenheim (Wairau) ..	F,I ..	716	1,493	..	..	..	..	145	106	106	1,599
Kaikoura	G,C ..	1,960	4,773	..	..	..	..	856	1,681	1,681	6,454
Lyttelton ..	B,J,G,H,E	11,430	26,764	..	..	..	..	153	230	230	26,994
Akaroa	H,G,B ..	1,433	3,936	..	..	..	..	705	1,285	1,285	5,221
Lake Ellesmere ..	E ..	764	2,964	..	..	..	..	..	..	..	2,964
Timaru	J,F,H,E,C	11,386	33,106	..	..	..	..	1	1	1	33,107
Oamaru	C ..	1,860	4,576	..	..	..	..	..	..	..	4,576
Moeraki	C,D ..	2,017	5,551	..	..	..	..	1,222	999	999	6,550
Karitane	N,D ..	1,186	1,610	..	..	..	..	2,757	2,471	2,471	4,081
Port Chalmers ..	I,N,F,E,G	25,533	36,225	..	..	..	..	2	3	3	36,228
Taieri Mouth ..	F ..	714	2,045	..	..	..	..	..	..	..	2,045
Nuggets district ..	F ..	4,250	10,969	..	..	..	..	..	..	..	10,969
Waikawa	F ..	2,610	6,757	..	..	..	..	1	1	1	6,758
Invercargill ..	D ..	51	126	..	..	..	..	..	..	..	126
Bluff	D ..	3,303	7,834	76,038	57,028	..	..	..	..	57,028	64,862
Stewart Island ..	D ..	10,346	24,968	..	..	..	..	..	..	..	24,968
Riverton district ..	D ..	529	1,099	..	..	..	..	..	..	..	1,099
Hokitika	W ..	33	64	..	..	..	..	..	..	..	64
Greymouth ..	F ..	651	1,646	..	..	..	..	..	..	..	1,646
Westport	F,H ..	738	2,103	..	..	..	..	6	13	13	2,116
Golden Bay ..	A ..	761	1,536	..	..	..	..	..	..	..	1,536
Motueka	A,H ..	1,097	1,979	..	..	..	..	1	2	2	1,981
Nelson	H,A,E,F	6,372	13,603	..	..	..	..	19	35	35	13,638
French Pass ..	D,C,A ..	3,278	9,188	..	..	..	..	..	..	..	9,188
Chatham Islands ..	D ..	2,078	1,868	..	..	..	..	..	..	..	1,868
Totals ..	..	331,773	558,404	81,514	66,611	13,156	4,607	15,924	27,449	98,667	657,071

KEY TO THE SYMBOLS USED

A = Snapper; B = Tarakihi; C = Groper; D = Blue cod; E = Flounder; F = Sole; G = Ling; H = Gurnard; I = Red cod; J = Elephant-fish; K = Mullet; L = Moki; M = Hake; N = Barracouta; O = Warehou; P = John-dory; Q = Trevally; R = Pioke; S = Butterfish; T = Trumpeter; U = Whiting; V = Kingfish; W = Herring; X = Sardine; Y = Kahawai; Z = Conger-eel.

TABLE III.—SHOWING THE QUANTITIES OF DIFFERENT KINDS OF FISH CAUGHT BY THE DIFFERENT METHODS OF FISHING FOR THE YEAR ENDED 31ST DECEMBER, 1945

	Trawl.						Danish Seine.		Other Nets.					
	Steam.		Motor.		Total.		Motor.		Motor.		Row-boat.		Total.	
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Barracouta	989	728	199	65	1,188	793	2	1	5	5	4	3	9	8
Blue cod	30	44	9	27	39	71	24	54	..	..	..	..	..	..
"Bonita" (*Brama*)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Brill	..	..	44	151	44	151	..	..	..	..	..	..	..	..
Butterfish (greenbone)	..	..	..	..	..	..	..	..	1,451	3,936	11	36	1,462	3,972
Conger-eel	..	..	2	2	2	2	..	..	6	4	1	1	7	5
Elephant-fish	492	1,228	3,366	6,695	3,858	7,923	118	308	136	367	12	7	148	374
Flounders	5	18	5,046	19,090	5,051	19,108	3,286	10,070	6,850	19,378	883	3,092	7,733	22,470
Frost-fish	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Garfish	..	..	..	..	..	..	12	42	135	254	1	1	136	255
Gurnard	1,273	1,361	9,640	12,149	10,913	13,510	7,797	6,822	1,266	898	..	..	1,266	898
Hake	428	1,115	143	499	571	1,614	..	..	..	..	..	..	..	..
Hapuku (groper)	367	936	536	1,803	903	2,739	196	463	14	22	..	..	..	..
Herring	..	..	..	..	..	..	..	..	170	156	53	100	223	256
John-dory	258	254	74	176	332	430	46	69	3	3	..	..	3	3
Kahawai	4	3	34	31	38	34	..	..	1,704	1,215	41	45	1,745	1,260
Kingfish	..	..	..	..	..	..	135	154	154	152	2	3	156	155
Ling	352	958	1,978	4,123	2,330	5,081	17	45	1	2	..	..	1	2
Mackerel	125	133	..	..	125	133	..	..	30	28	3	3	33	31
Maomao	..	..	..	..	..	..	..	..	14	23	..	..	14	23
Moki	367	720	218	365	585	1,085	..	..	203	377	73	138	276	515
Mullet	..	..	..	..	..	..	..	..	3,480	3,973	37	42	3,517	4,015
Parori	..	..	..	..	..	..	..	..	845	602	4	2	849	604
Perch	..	..	1	1	1	1	..	..	..	..	..	..	..	..
Pioki	..	..	533	486	533	486	512	663	570	721	..	..	570	721
Red cod	179	204	7,874	4,955	8,053	5,159	21	42	1	1	160	102	161	103
Sardine	..	..	..	..	..	..	..	..	1,458	1,025	..	..	1,458	1,025
Shark	761	713	8	5	769	718	5	6	167	211	..	..	167	211
Skate	4	3	28	19	32	22	..	..	..	..	..	..	..	..
Snapper	8,534	11,270	2,308	3,892	10,842	15,162	73,163	94,315	14,467	18,698	41	89	14,508	18,787
Sole	751	2,318	16,289	46,757	17,040	49,075	950	3,596	..	..	..	..	..	..
Swordfish (marlin)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tarakihi	27,728	47,638	19,174	27,536	46,902	75,174	16,183	20,809	52	102	..	..	52	102
Trevally	1,183	976	48	34	1,231	1,010	1,819	1,316	3,531	2,635	49	35	3,580	2,670
Trumpeter	..	..	190	536	190	536	..	..	..	..	..	..	..	..
Warehou	25	47	..	..	25	47	..	..	221	423	60	127	281	550
Whiptail	64	80	1	1	65	81	..	..	..	..	..	..	..	..
Whiting	287	201	..	..	287	201	..	..	..	..	..	..	..	..
Mixed flat fish	25	80	839	2,314	864	2,394	64	178	136	477	..	..	136	477
Mixed round fish and all fish not specified	1,084	1,106	1,371	2,330	2,455	3,436	743	644	668	616	13	18	681	634
Totals	145,315	72,134	69,953	134,042	115,268	206,176	105,093	139,597	37,738	56,304	1,448	3,844	39,186	60,148

TABLE III.—SHOWING THE QUANTITIES OF DIFFERENT KINDS OF FISH CAUGHT BY THE DIFFERENT METHODS OF FISHING FOR THE YEAR ENDED 31ST DECEMBER, 1945—*continued*

	Lines.								Grand Total.	
	Steam.		Motor.		Row-boat.		Total.			
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Barracouta	..	..	8,526	4,600	1	1	8,527	4,601	9,726	5,403
Blue cod	..	..	19,097	47,163	..	..	19,097	47,163	19,160	47,288
"Bonita" (*Brama*)	..	..	19	53	..	..	19	53	19	53
Brill	..	..	..	..	..	..	..	..	44	151
Butterfish (greenbone)	..	..	..	..	..	..	..	..	1,462	3,972
Conger-eel	..	..	131	102	..	..	131	102	140	109
Elephant-fish	..	..	145	154	..	..	145	154	4,269	8,759
Flounders	..	..	..	..	..	..	..	..	16,070	51,648
Frost-fish	..	..	4	3	..	..	4	3	4	3
Garfish	..	..	..	..	..	..	..	..	148	297
Gurnard	..	..	377	452	1	1	378	453	20,354	21,683
Hake	..	..	778	2,148	..	..	778	2,148	1,349	3,762
Hapuku (groper)	..	..	20,518	59,098	41	124	20,559	59,222	21,672	62,446
Herring	..	..	150	428	..	..	150	428	373	684
John-dory	..	..	..	..	..	..	..	..	381	502
Kahawai	..	..	530	500	17	11	547	511	2,330	1,805
Kingfish	..	..	438	524	8	10	446	534	737	843
Ling	..	..	5,854	11,751	..	..	5,854	11,751	8,202	16,879
Mackerel	..	..	..	..	..	..	..	..	158	164
Maomao	..	..	10	12	..	..	10	12	24	35
Moki	..	..	80	132	5	4	85	136	946	1,736
Mullet	..	..	..	..	..	..	..	..	3,517	4,015
Parori	..	..	5	3	..	..	5	3	854	607
Perch	..	..	42	40	..	..	42	40	43	41
Pioki	..	..	445	439	..	..	445	439	2,060	2,309
Red cod	..	..	736	652	..	..	736	652	8,971	5,956
Sardine	..	..	..	..	..	..	..	..	1,458	1,025
Shark	..	..	394	393	..	..	394	393	1,335	1,328
Skate	..	..	46	32	..	..	46	32	78	54
Snapper	..	..	10,244	18,961	252	460	10,496	19,421	109,009	147,685
Sole	..	..	..	..	..	..	..	..	17,990	52,671
Swordfish (marlin)	..	..	672	629	..	..	672	629	672	629
Tarakihi	..	..	683	902	9	20	692	922	63,829	97,007
Trevally	..	..	95	111	..	..	95	111	6,725	5,107
Trumpeter	..	..	18	55	..	..	18	55	208	591
Warehou	..	..	..	..	..	..	..	..	306	597
Whiptail	..	..	4	3	..	..	4	3	69	84
Whiting	..	..	..	..	..	..	..	..	287	201
Mixed flat fish	..	..	..	..	..	..	..	..	1,064	3,049
Mixed round fish and all fish not specified	..	..	1,848	2,510	3	2	1,851	2,512	5,730	7,226
Totals	..	..	71,889	151,850	337	633	72,226	152,483	331,773	558,404

TABLE IV.—SHOWING APPROXIMATELY QUANTITIES OF DIFFERENT KINDS OF FISH LANDED AT CERTAIN PORTS DURING YEAR ENDED 31ST DECEMBER, 1945

—	Awanui.	Russell.	Whangarei.	Auckland.	Thames.	Tauranga.	Whakatane.	Gisborne.	Napier.	Wellington.	Paremata.	New Plymouth.	Manukau Harbour.	Kaipara.	Picton.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Barracouta	..	2	..	490	..	2	..	..	..	527	..	5	..	..	59
Blue cod	8	23	1	114	..	10	..	1	..	109	2	2	..	..	293
" Bonita " (*Brama*)	..	..	..	..	..	..	..	..	..	19	..	..	..	..	..
Butterfish	2	..	4	375	1	..	..	..	..	311	74	..	..	..	148
Brill	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Conger-eel	..	..	..	..	..	..	..	..	..	53	6	..	..	..	31
Elephant-fish	..	..	..	..	..	..	..	..	..	141	..	..	..	..	1
Flounder	1	111	7	2,047	4,246	1	110	54	266	4	6	..	433	1,485	1
Frost-fish	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..
Garfish	..	39	..	92	..	..	..	..	..	..	..	..	..	..	17
Gurnard	..	15	..	5,570	1,171	116	78	1,167	5,362	342	..	15	7		1
Hake	..	..	..	122	..	..	..	..	..	928	25	..	..	..	1
Hapuku (groper)	146	152	160	1,330	9	151	17	359	1,443	5,403	1,835	235	..	..	1,947
Herring	..	..	..	171	..	..	..	..	17	..	..	..	..	..	..
John-dory	..	2	..	229	..	..	..	28	..	78	..	..	..	..	..
Kahawai	116	192	151	263	218	1,070	..	..	7	39	12	2	..	7	15
Kingfish	14	124	10	216	4	240	..	..	2	10	..	38	1	..	..
Ling	..	9	..	..	..	7	..	6	36	3,208	488	..	..	..	10
Mackerel	..	..	..	144	..	..	..	..	..	14	..	..	..	..	..
Maomao	7	14	..	..	..	..	..	..	..	..	..	..	..	..	..
Moki	..	..	..	..	..	..	..	62	80	507	45	..	..	..	4
Mullet	225	1,149	14	402	3	2	..	3	..	..	..	..	505	417	..
Parore	..	450	69	140	..	155	..	..	..	..	..	..	..	..	..
Perch	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pioke	..	..	2	611	403	30	9	..	..	105	145	11	44	4	..
Red cod	..	..	..	..	..	..	..	..	..	209	..	29	..	..	1
Sardine	..	..	..	..	..	..	..	..	..	3	..	..	..	..	1,455
Shark	..	105	90	830	..	1	..	..	..	67	5	1	..	15	164
Skate	..	..	..	..	..	..	..	..	..	46	..	..	..	..	..
Snapper	390	1,362	859	31,706	10,413	2,513	964	132	520	519	45	1,956	172	259	15
Sole	..	..	..	4	..	..	..	59	1,036	11	..	..	..	..	..
Swordfish	..	228	..	..	..	444	..	..	..	..	..	..	..	..	..
Tarakihi	..	16	..	23,965	..	1,289	32	6,308	9,744	16,857	9	..	..	..	20
Trevally	602	61	387	3,297	666	1,219	135	..	..	244	31	..	22	..	..
Trumpeter	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..
Warehou	..	..	..	..	..	..	..	..	..	194	66	..	..	..	..
Whiptail	..	..	..	..	..	..	..	..	..	69	..	..	..	..	..
Whiting	..	..	..	..	..	..	..	..	..	287	..	..	..	..	..
Mixed flat fish	..	14	..	63	50	4	..	23	557	29	..	..	..	..	6
Mixed round fish and kinds not specified	23	126	12	778	61	205	78	34	124	1,205	59	7	45	33	169
Totals	1,534	4,194	1,766	122,789	17,245	7,459	1,423	8,236	19,194	31,554	2,853	2,301	1,229	2,220	4,358

TABLE IV.—SHOWING APPROXIMATELY QUANTITIES OF DIFFERENT KINDS OF FISH LANDED AT CERTAIN PORTS DURING YEAR ENDED 31ST DECEMBER, 1945—*continued*

—	Kaikoura.	Lyttelton.	Akaroa.	Timaru.	Oamaru.	Moeraki.	Port Chalmers	Nuggets.	Waikawa.	Bluff.	Stewart Island.	Westport.	Nelson.	French Pass.	Chatham Islands.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Barracouta	40	2	..	9	..	7	7,502	..	..	..	..	..	147	87	..
Blue cod	26	31	..	61	170	549	156	45	121	2,899	9,294	..	96	1,751	2,011
"Bonita" (*Brama*)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Butterfish	43	1	5	..	..	..	..	..	..	..	6	..	21	225	..
Brill	..	11	..	..	..	..	32	1	..	..	..	..	..	..	..
Conger-eel	..	1	..	..	..	..	..	..	..	..	..	..	..	46	..
Elephant-fish	6	1,632	38	2,155	..	..	200	..	..	..	..	..	2	5	..
Flounder	..	512	97	1,819	..	..	1,366	214	94	39	..	..	870	..	..
Frost-fish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Crayfish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gurnard	..	1,203	431	1,879	..	..	358	39	5	..	..	126	2,081	34	..
Hake	5	234	3	6	1	..	6	..	..	..	..	1	17	..	..
Hapuku (groper)	535	318	164	1,275	1,548	1,336	829	94	36	135	433	72	221	554	67
Herring	..	10	..	..	..	..	..	..	..	..	..	..	86	..	..
John-dory	..	..	..	..	..	..	2	..	..	..	..	..	39	..	..
Kahawai	2	..	..	2	..	3	3	..	..	..	..	..	7	13	..
Kingfish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ling	1,099	1,447	193	1,047	17	24	503	8	3	33	4	10	..	1	..
Mackerel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maomao	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Moki	13	102	15	1	18	3	..	..	..	..	..	..	9	13	..
Mullett	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Parore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Perch	..	..	..	..	9	26	1	..	..	..	..	..	1	5	..
Pioke	1	7	..	57	..	..	375	..	..	..	..	..	223	2	..
Red cod	..	46	13	432	97	64	7,605	9	3	..	..	..	18	1	..
Sardine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shark	..	..	..	1	..	2	..	..	..	..	..	..	..	19	..
Skate	..	3	..	23	..	..	2	..	..	..	..	..	..	1	..
Snapper	47	3	..	..	..	..	1	..	..	..	..	2	2,034	287	..
Sole	3	379	32	1,903	..	..	6,282	3,838	2,320	..	..	414	446	..	..
Swordfish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tarakihi	58	4,840	193	44	..	1	173	1	..	..	..	8	3	48	..
Trevally	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Trumpeter	10	1	189	..	..	2	3	..	..	..	..	..	..	..	..
Warehou	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whiptail	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whiting	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mixed flat fish	..	101	..	154	..	..	16	..	..	..	..	2	14	..	..
Mixed round fish and kinds not specified	72	546	60	518	..	..	118	1	28	197	609	104	53	169	..
Totals	1,960	11,430	1,433	11,386	1,860	2,017	25,533	4,250	2,610	3,303	10,346	738	6,372	3,278	2,078

TABLE V.—SHOWING TOTAL QUANTITIES OF WET FISH LANDED AT EACH OF THE CHIEF FISHING PORTS EACH MONTH OF THE YEAR 1945

Port or District.	January.	February.	March	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
North Island	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Awanui and district	97	112	293	172	173	160	162	74	152	49	48	42	1,534
Mangonui	23	10	33	35	16	27	48	31	23	137	101	87	571
Whangaroa	108	113	119	82	34	73	39	31	44	46	47	43	779
Russell	344	276	441	404	297	221	377	248	356	420	446	364	4,194
Whangarei	163	117	118	316	143	45	194	124	226	146	115	59	1,766
Auckland	7,815	7,400	9,130	8,065	8,488	10,462	12,722	10,576	11,153	12,730	12,545	11,703	122,789
Thames district	1,627	1,669	2,228	2,100	592	807	984	1,259	2,043	1,904	1,633	399	17,245
Coromandel	15	19	25	22	8	18	9	10	12	12	10	8	168
Mercury Bay	130	131	232	167	48	125	..	..	1	1	73	63	971
Whangamata	7	6	5	4	2	..	..	13	13	14	25	38	127
Waihi Beach	96	23	25	22	22	16	6	23	6	4	8	8	259
Tauranga and district	510	764	1,250	667	419	323	424	356	536	880	684	646	7,459
Whakatane	90	121	169	154	80	67	141	98	179	187	109	28	1,423
Ohiwa Harbour, Opotiki, and Cape Runaway	66	106	54	8	29	39	34	41	38	78	89	69	651
Gisborne	371	485	227	228	342	469	872	1,209	717	910	1,456	950	8,236
Napier	1,110	927	1,091	934	475	790	1,795	2,759	2,379	1,824	3,442	1,668	19,194
Castlepoint	17	..	2	3	1	8	..	..	4	8	11	6	60
Wellington	2,262	2,328	3,399	2,648	2,999	2,692	2,820	2,536	1,907	2,732	3,361	1,870	31,554
Makara	23	54	14	23	37	24	40	66	11	5	5	6	308
Paremata	585	282	94	281	240	303	297	72	62	199	203	235	2,853
Paraparaumu Beach	79	51	43	52	41	38	53	35	26	14	42	23	497
Manawatu Heads	30	48	14	31	6	6	13	13	7	10	8	7	193
Tangimoana	3	3	2	4	..	..	4	1	3	4	3	3	30
Wanganui	39	75	16	61	60	35	84	51	32	24	26	25	528
New Plymouth	276	193	111	115	124	276	217	63	82	104	217	523	2,301
Kawhia	36	52	40	44	34	32	30	24	16	17	26	24	375
Raglan	13	24	9	13	14	11	11	10	12	12	16	18	163
Manukau Harbour	147	142	88	106	79	76	120	81	144	91	86	69	1,229
Kaipara	134	225	245	195	140	210	179	171	211	217	171	122	2,220
Hokianga	73	75	154	112	67	104	85	76	54	44	63	34	941
South Island													
Havelock	13	22	44	243	316	283	371	164	104	108	18	15	1,701
Picton	751	610	261	376	386	383	276	167	81	136	626	305	4,358
Blenheim (Wairau)	24	101	173	141	33	58	57	9	51	21	25	23	716
Kaikoura	166	54	188	116	88	9	21	122	432	230	388	146	1,960
Lyttelton	443	817	1,207	943	1,421	4	913	1,084	777	1,345	1,524	952	11,430
Akaroa	130	92	134	142	81	7	8	44	189	243	259	104	1,433
Lake Ellesmere	143	126	139	145	80	5	18	24	18	23	18	25	764
Timaru	1,262	825	1,038	1,208	1,012	13	395	830	978	1,064	1,554	1,207	11,386
Oamaru	350	136	296	188	136	33	37	38	153	59	194	240	1,860
Moeraki	181	164	243	262	201	149	61	72	155	176	220	133	2,017
Karitane	98	107	254	204	34	1	..	4	1	114	190	179	1,186
Port Chalmers	2,124	3,589	3,626	3,532	2,277	252	996	652	720	1,803	3,883	2,079	25,533
Taieri Mouth	114	55	87	119	4	..	17	22	24	4	117	151	714
Nuggets district	684	424	319	173	20	109	71	229	174	426	997	624	4,250
Waikawa	198	118	47	90	74	256	177	290	438	420	265	237	2,610
Invercargill	12	..	..	..	..	32	2	4	1	..	..	..	51
Bluff	647	655	118	138	237	393	381	473	134	22	57	48	3,303
Stewart Island	310	1,933	217	1,137	1,338	2,349	1,063	1,313	473	119	94	..	10,346
Riverton district	86	126	15	36	30	34	28	84	12	22	14	42	529
Hokitika	4	6	2	3	3	3	3	3	..	..	..	6	33
Greymouth	53	64	19	32	76	134	70	72	37	14	29	51	651
Westport	41	44	35	51	45	151	80	70	25	93	74	29	738
Golden Bay	61	67	92	139	198	82	20	8	12	50	8	24	761
Motueka	51	74	131	124	200	127	64	25	30	24	88	159	1,097
Nelson	398	270	377	364	624	806	863	404	576	732	571	387	6,372
French Pass	411	343	236	252	386	614	271	142	107	203	197	116	3,278
Chatham Islands	..	495	178	258	163	98	104	417	212	103	..	..	2,078
Totals	25,044	27,148	29,146	27,485	24,473	23,842	28,127	26,817	26,413	30,377	36,479	26,422	331,773

TABLE VI.—SHOWING QUANTITIES OF THE MAIN SPECIES OF FISH LANDED AT THE CHIEF FISHING PORTS IN EACH MONTH OF THE YEAR ENDED 31ST DECEMBER, 1945

——	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Auckland	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Flounder	269	29	25	26	21	97	139	135	164	556	485	101	2,047
Gurnard	381	298	337	248	397	512	401	386	623	831	554	602	5,570
Snapper	4,247	4,876	6,379	6,313	7,208	8,591	9,024	6,375	7,191	7,684	6,703	7,115	81,706
Tarakihi	2,221	1,487	1,744	753	280	462	2,535	3,065	3,520	2,591	3,592	2,715	24,965
Trevally	158	413	238	381	185	377	304	179	275	257	282	248	3,297
Thames													
Flounder	1,306	962	462	578	119	55	14	44	68	236	193	209	4,246
Gurnard	40	34	86	119	114	138	127	170	93	79	143	28	1,171
Snapper	273	663	1,659	1,339	329	545	778	943	1,707	1,305	755	117	10,413
Trevally	2	6	17	21	21	18	21	52	62	61	370	15	666
Tauranga													
Kahawai	63	22	120	86	113	30	..	3	28	229	152	224	1,070
Snapper	268	423	397	309	124	52	103	94	152	229	212	150	2,513
Tarakihi	2	4	283	2	..	..	64	148	201	247	157	181	1,289
Trevally	18	53	271	215	155	171	179	20	25	68	39	5	1,219
Gisborne													
Gurnard	150	85	51	73	108	42	24	25	81	142	228	158	1,167
Tarakihi	140	350	87	96	197	410	814	1,168	575	709	1,085	677	6,308
Napier													
Groper	34	155	105	48	26	141	287	279	151	58	106	53	1,443
Gurnard	402	218	452	533	204	127	322	595	576	586	964	383	5,362
Sole	170	55	138	60	23	7	23	44	58	96	239	123	1,036
Tarakihi	380	444	304	97	92	424	1,088	1,792	1,554	989	1,828	752	9,744
Wellington													
Hake	79	60	131	102	36	13	16	13	45	254	126	53	928
Groper	436	328	179	284	253	460	753	460	529	670	462	589	5,403
Ling	135	121	160	313	704	690	556	201	82	86	79	81	3,208
Tarakihi	1,298	1,384	2,596	1,310	1,572	957	1,168	1,546	728	1,174	2,186	938	16,857
Picton													
Barracouta	2	1	2	3	46	1	2	1	1	..	..	..	59
Blue cod	76	42	12	46	15	..	5	2	17	6	25	47	293
Groper	126	201	197	120	252	341	169	23	10	108	240	160	1,947
Sardine	527	339	..	156	..	..	..	..	..	..	346	87	1,455
Lyttelton													
Elephant-fish	178	165	188	119	131	..	62	64	144	221	205	155	1,632
Gurnard	34	51	203	139	56	..	7	188	246	113	124	42	1,203
Ling	54	163	74	93	104	3	92	59	67	330	364	44	1,447
Tarakihi	11	58	136	372	872	..	660	727	269	495	675	565	4,840
Timaru													
Elephant-fish	391	103	86	51	112	2	4	4	24	413	695	270	2,155
Flounder	314	83	83	126	124	..	88	238	229	152	153	229	1,819
Groper	212	181	178	211	124	2	..	..	..	15	160	192	1,275
Gurnard	106	124	257	351	187	..	69	114	231	166	200	74	1,879
Ling	105	92	178	232	171	2	10	24	16	22	76	119	1,047
Sole	84	185	192	151	89	3	145	350	294	128	160	122	1,903
Port Chalmers													
Barracouta	74	119	1,171	1,545	294	..	..	3	..	512	2,810	974	7,502
Flounder	96	108	69	109	205	56	166	94	109	104	130	120	1,366
Red cod	1,239	2,437	1,010	872	907	72	222	111	38	320	139	238	7,605
Sole	335	561	990	588	563	63	422	260	475	677	680	668	6,282
Groper	99	119	94	100	99	32	94	32	10	103	33	14	829
Stewart Island													
Blue cod	235	1,647	189	986	1,207	2,183	997	1,240	445	93	72	..	9,294
Groper	29	139	16	68	71	77	18	5	1	3	6	..	433
Nelson													
Flounder	72	41	40	80	125	157	41	44	63	102	79	26	870
Gurnard	74	54	96	103	205	263	356	221	346	236	86	41	2,081
Snapper	161	83	162	131	235	171	127	52	72	289	326	225	2,034
Sole	1	38	36	30	7	14	183	65	58	..	..	14	446

TABLE VII.—SHOWING THE NUMBER OF SACKS AND VALUE OF THE OYSTERS OBTAINED IN THE DOMINION DURING THE YEAR ENDED 31ST DECEMBER, 1945

Locality.	Quantity.	Value.
DREDGE OYSTERS		
	Sacks.	£(N.Z.)
Foveaux Strait	76,038	57,028
ROCK OYSTERS		
Bay of Islands	2,003	9,583
Whangarei Harbour	195	
Kaipara Harbour	907	
Hauraki Gulf*	1,479	
Coromandel	650	
Great Barrier Island	242	
Total	5,476	..
Grand total	81,514	66,611

* Pahiki, 118; Motutapu, 97; Rotoroa, 120; Pakatoa, 17; Ponui, 408; Waiheke, 719.

TABLE VIII.—SHOWING THE NUMBER AND SPECIES OF WHALES TAKEN OFF THE NEW ZEALAND COAST, WITH QUANTITY OF PRODUCTS, FOR THE YEAR ENDED 31ST DECEMBER, 1945

Whaling-station.	Number of Whales taken.	Species.	Yield of Oil.	Quantity of Other Products.
			Tons.	Tons.
Marlborough Sounds (Picton)	107	Humpbacks	750	100 (bonedust)

TABLE IX.—SHOWING THE TOTAL QUANTITY AND VALUE OF FISH AND SHELL-FISH IMPORTED INTO AND EXPORTED FROM NEW ZEALAND DURING THE YEAR ENDED 31ST DECEMBER. 1945

Fish and Shell-fish imported

Kind of Fish.	Quantity.	Value.
		£(N.Z.)
Sardines, brisling, and sild (tinned) ..	37,500 lb.	2,491
Other fish—		
Smoked, dried, or salted	129 cwt.	2,633
Preserved	288 lb.	17
		5,141

Fish and Shell-fish exported

Kind of Fish.	Exporting Ports.	Quantity.	Value.
			£(N.Z.)
Oysters, fresh	Auckland	180 doz.	4
	Other ports	460 doz.	14
	Total ..	640 doz.	18

Fish and Shell-fish exported—continued

Kind of Fish.	Exporting Ports.	Quantity.	Value.
			£(N.Z.)
Blue cod, frozen	Auckland	81 cwt.	529
	Wellington	167 cwt.	1,094
	Dunedin	112 cwt.	569
	Other ports	7,284 cwt.	36,490
	Total	7,644 cwt.	38,682
Flounder, frozen	Auckland	180 cwt.	1,046
	Wellington	102 cwt.	582
	Dunedin	452 cwt.	2,536
	Other ports	213 cwt.	1,210
	Total	947 cwt.	5,374
Snapper, frozen	Auckland	389 cwt.	2,092
	Wellington	363 cwt.	2,152
	Total	752 cwt.	4,244
Tarakihi, frozen	Auckland	262 cwt.	1,198
	Wellington	544 cwt.	2,826
	Dunedin	231 cwt.	871
	Total	1,037 cwt.	4,895
Red cod, frozen	Auckland	1 cwt.	6
	Wellington	123 cwt.	571
	Dunedin	2,414 cwt.	6,250
	Other ports	717 cwt.	1,846
	Total	**3,255 cwt.**	8,673
Hapuku	Auckland	120 cwt.	668
	Wellington	61 cwt.	390
	Dunedin	398 cwt.	2,048
	Other ports	119 cwt.	616
	Total	698 cwt.	3,722
Barracouta, frozen	Auckland	94 cwt.	481
	Wellington	626 cwt.	3,263
	Dunedin	1,429 cwt.	4,376
	Other ports	220 cwt.	763
	Total	2,369 cwt.	8,883
Sole, frozen	Dunedin	1,575 cwt.	8,154
	Other ports	632 cwt.	3,298
	Total	2,207 cwt.	11,452
Crayfish, frozen	Auckland	38 cwt.	206
	Wellington	826 cwt.	4,236
	Dunedin	482 cwt.	2,020
	Total	1,346 cwt.	6,462

Fish and Shell-fish exported—continued

Kind of Fish.	Exporting Ports.	Quantity.	Value.
			£(N.Z.)
Other kinds*, frozen	Auckland	584 cwt.	3,020
	Wellington	1,849 cwt.	10,110
	Dunedin	512 cwt.	2,093
	Other ports	809 cwt.	2,898
	Total ..	3,754 cwt.	18,121
Total exports of frozen fish (including crayfish) from New Zealand	..	24,009 cwt.	110,508
Smoked, dried, pickled, or salted ..	Auckland	362 cwt.	2,041
	Wellington	2,899 cwt.	18,266
	Dunedin	736 cwt.	4,479
	Other ports	279 cwt.	1,604
	Total ..	4,276 cwt.	26,390
Preserved in tins—			
Oysters	Auckland	1,649 lb.	179
	Wellington	233 lb.	18
	Other ports	42 lb.	2
	Total ..	1,924 lb.	199
Whitebait	Auckland	118,217 lb.	23,833
	Wellington	18,081 lb.	3,861
	Lyttelton	5,240 lb.	1,207
	Dunedin	55,772 lb.	10,354
	Other ports	517 lb.	92
	Total ..	197,827 lb.	39,347
Toheroa	Auckland	15,800 lb.	1,291
	Wellington	228 lb.	22
	Total ..	16,028 lb.	1,313
Mussels	Auckland	3,579 lb.	201
Crayfish	Auckland	4,076 lb.	487
	Wellington	216 lb.	27
	Dunedin	21,600 lb.	2,520
	Total ..	25,892 lb.	3,034
Clam chowder	Auckland	124,648 lb.	6,117
Other kinds	Auckland	1,878 lb.	254
Value of total exports of New Zealand fish and shell-fish	..	..	187,381

* Includes mussels, 48 cwt., value £272; abalone, 2 cwt., value, £28.

TABLE X.—RETURN OF LAND ENGINEERS', ENGINE-DRIVERS', AND ELECTRIC-TRAM DRIVERS' EXAMINATIONS HELD THROUGHOUT NEW ZEALAND DURING THE YEAR ENDED 31ST MARCH, 1946, SHOWING THE NUMBER OF SUCCESSFUL AND UNSUCCESSFUL CANDIDATES

Place.	Extra First Class.		First Class.		Second Class.		Loco-motive Traction.		Loco-motive.		Traction.		Winding.				Electric-tram Driver.		Total.		Grand Total.
													Steam.		Electric.						
	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	P.	F.	
Auckland ..	1	4	3	3	37	13	..	..	..	..	1	..	..	..	..	..	33	6	75	26	101
Christchurch	..	..	2	..	16	3	1	..	..	..	5	..	..	..	..	..	37	..	61	3	64
Dunedin ..	..	..	..	..	13	2	4	..	1	..	1	1	..	..	..	..	7	..	26	3	29
Gisborne ..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Greymouth ..	..	..	..	..	7	2	2	..	2	..	..	..	2	..	..	..	..	..	13	2	15
Hamilton ..	..	1	3	1	25	7	4	..	..	..	..	..	..	..	..	..	..	..	32	9	41
Invercargill ..	..	..	2	1	13	2	2	..	..	..	..	..	..	..	..	..	3	..	20	3	23
Napier ..	..	..	..	..	11	3	1	1	..	..	1	..	..	..	..	..	..	..	13	4	17
Nelson ..	..	..	1	..	10	4	..	..	..	..	..	..	..	..	..	..	..	..	11	4	15
New Plymouth	..	..	1	..	26	15	..	..	..	..	..	..	..	..	..	..	3	1	30	16	46
Palmerston North	..	..	1	..	11	3	..	..	..	..	1	..	..	..	..	..	..	..	13	3	16
Timaru ..	..	..	..	..	6	..	..	..	1	..	2	..	..	..	..	..	..	..	9	..	9
Wanganui ..	..	..	1	..	6	3	..	..	..	..	..	..	..	..	..	..	7	..	14	3	17
Wellington ..	1	..	12	3	22	5	..	..	..	..	..	..	..	..	..	..	30	1	65	9	74
Whangarei ..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3
Other places	..	..	..	..	13	1	1	..	..	..	1	..	..	..	..	..	..	..	15	1	16
Totals ..	2	5	27	8	220	63	15	1	4	..	12	1	2	..	..	..	120	8	392	86	478

TABLE XI.—SUMMARY OF EXAMINATIONS FOR CERTIFICATES AS MASTERS AND MATES FOR THE YEAR ENDED 31ST MARCH, 1946

Class of Certificate.	Auckland.				Wellington.				Totals.				Total Examinations.
	P.	P.P.	F.	P.F.	P.	P.P.	F.	P.F.	P.	P.P.	F.	P.F.	
Foreign-going Masters and Mates	29	27	..	9	8	8	1	6	37	35	1	15	88
Home-trade Masters and Mates	23	8	3	1	6	..	..	..	29	8	3	6	46
Master River Steamer ..	14	..	1	..	2	..	1	..	16	..	2	..	18
Examination in Compass Deviation	1	..	1	..	2	..	1	..	3	..	2	..	5
Square Rigged Endorsement	1	..	..	..	..	..	..	..	1	..	..	..	1
Fore and Aft Endorsement ..	1	..	..	..	..	..	..	..	1	..	..	..	1
New Zealand Pilot ..	..	..	..	..	1	..	..	..	1	..	..	..	1
Totals	69	35	5	10	19	8	3	6	88	43	8	21	161

TABLE XII.—SUMMARY OF EXAMINATIONS OF MARINE ENGINEERS FOR THE YEAR ENDED 31ST MARCH, 1946

Class of Certificate.	Auckland.				Wellington.				Christchurch.				Dunedin.				Other Places.			Totals.			Grand Total.
	P.	P.P.	F.	P.F.	P.	P.P.	F.	P.F.	P.	P.P.	F.	P.F.	P.	P.P.	F.	P.F.	P.	F.	P.	P.P.	F.	P.F.	
IMPERIAL VALIDITY																							
1st and 2nd Class Steam	..	6	..	2	9	10	..	9	2	5	1	3	..	2	..	..	..	..	11	23	1	14	49
1st and 2nd Class Motor	..	..	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	..	5
1st and 2nd Class Steam Endorsement	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	3
1st and 2nd Class Motor Endorsement	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
	..	6	..	2	16	12	..	9	2	5	1	3	..	2	..	..	..	..	18	25	1	14	58
VALID IN NEW ZEALAND ONLY																							
3rd Class Steam	14	..	9	..	18	..	10	..	2	..	3	..	1	..	1	..	..	..	35	..	23	..	58
River Steam ..	5	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	7	..	..	..	7
1st and 2nd Coastal Motor	8	..	3	..	8	..	..	..	1	..	..	..	..	..	..	..	..	..	17	..	3	..	20
River Oil ..	31	..	1	..	12	..	1	..	5	..	1	..	3	..	..	..	37	3	88	..	6	..	94
	58	..	13		39	..	11	..	8	..	4	..	4	..	1	..	38	3	147	..	32	..	179
Totals ..	58	6	13	2	55	12	11	9	10	5	5	3	4	2	1	..	38	3	165	25	33	14	237

TABLE XIII.—SUMMARY OF CASUALTIES TO SHIPPING REPORTED TO THE MARINE DEPARTMENT DURING THE YEAR ENDED 31ST MARCH, 1946

Nature of Casualty.	On or near Coasts of Dominion.			Outside Dominion.			Total Number of Casualties reported.		
	Number of Vessels.	Tonnage.	Number of Lives lost.	Number of Vessels.	Tonnage.	Number of Lives lost.	Number of Vessels.	Tonnage.	Number of Lives lost.
Strandings—									
Total loss ..	..	..	..	..	..	..	..	..	..
Damaged ..	10	3,276	..	..	..	..	10	3,276	..
Undamaged ..	5	3,444	..	..	..	..	5	3,444	..
	15	6,720	..	..	..	..	15	6,720	..
Fires—									
Total loss ..	..	..	..	..	..	..	..	..	..
Damaged ..	3	3,652	..	..	..	..	3	3,652	..
Undamaged ..	..	..	..	..	..	..	..	..	..
	3	3,652	..	..	..	..	3	3,652	..
Collisions—									
Total loss ..	..	..	..	..	..	..	..	..	..
Damaged	6	11,249	..	..	..	..	6	11,249	..
Undamaged	..	..	..	..	..	..	..	..	..
	6	11,249	..	..	..	..	6	11,249	..
Miscellaneous, including damage by heavy seas, breakdown of machinery, &c.	16	2,866	..	2	6,888	..	8	9,754	..
Total casualties ..	30	24,487	..	2	6,888	..	32	31,375	..

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